

## Prognostic Significance of Spouse *We* Talk in Couples Coping With Heart Failure

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Recent research suggests that marital quality predicts the survival of patients with heart failure (HF), and it is hypothesized that a communal orientation to coping marked by first-person plural pronoun use (*we* talk) may be a factor in this. During a home interview, 57 HF patients (46 men and 16 women) and their spouses discussed how they coped with the patients' health problems. Analysis of pronoun counts from both partners revealed that *we* talk by the spouse, but not the patient, independently predicted positive change in the patient's HF symptoms and general health over the next 6 months and did so better than direct self-report measures of marital quality and the communal coping construct. *We* talk by the patient and spouse did not correlate, however, and gender had no apparent moderating effects on how pronoun use predicted health change. The results highlight the utility of automatic text analysis in couple-interaction research and provide further evidence that looking beyond the patient can improve prediction of health outcomes.

*Keywords:* marriage, close relationships, heart disease, coping, text analysis

A growing body of research highlights the key role of close relationships in successful coping with heart disease and other forms of chronic illness. For example, in a study of 189 heart-failure (HF) patients and their spouses from Michigan, a composite measure of marital quality predicted the patient's survival over the next 8 years independent of baseline illness severity (Rohrbaugh, Shoham, & Coyne, 2006). The two marital quality components predicting best in this study—the observed affective quality of the couple's actual interaction (positivity/negativity ratio) and the reported frequency of their “useful discussions” about the patient's illness—illustrate potentially distinct processes through which marital quality may have its effect.

On the one hand, consistent with other research on marriage and health, receipt of social emotional support or exposure to marital conflict could buffer or exacerbate stress via direct physiological pathways (Gallo, Troxel, Matthews, & Kuller, 2003; Kiecolt-

Glaser & Newton, 2001; Ryff & Singer, 2000). The useful-discussion finding, on the other hand, highlights a less studied and more instrumental dimension of couple coping behavior reminiscent of what Lyons, Mickelson, Sullivan, and Coyne (1998) called “communal coping” (p. 579; cf. Acitelli & Badr, 2005; Berg & Upchurch, 2007; Bodenmann, 2005; Lewis et al., 2006). In essence, such a communal or cooperative problem-solving process involves appraising a stressor (the patient's heart condition) as “our” issue rather than “yours” or “mine” and taking cooperative “we”-based action to address it (Lyons et al., 1998).

Although marital researchers have used both observational and self-report methods to link communal aspects of specific dyadic relationships to relationship outcomes (Acitelli & Badr, 2005; Buehlman, Gottman, & Katz, 1992; Mills, Clark, Ford, & Johnson, 2004), recent developments in the arena of automatic text analysis may hold special promise for illuminating connections between close relationships and health (Pennebaker, Mehl, & Niederhoffer, 2003; Simmons, Gordon, & Chambless, 2005; Slatcher & Pennebaker, 2006). In particular, use of first-person plural pronouns (*we*, *us*, *our*) in the context of couple communication appears to mark relational commitment, shared identity, and effective problem solving by relationship partners (Agnew, Van Lange, Rusbult, & Langston, 1998; Simmons et al., 2005). In the present study, we hypothesize that partners' *we* talk might also mark an effective communal approach to coping with a serious health problem such as chronic heart failure, paying dividends in terms of predicting a favorable course of the patient's illness.

At an individual level, research using automatic text analysis software such as Linguistic Inquiry and Word Count (LIWC; Pennebaker, Francis, & Booth, 2001) has shown that easily countable linguistic features of transcribed narratives can predict (or postdict) such diverse aspects of adaptation as physical health change (Pennebaker, Mayne, & Francis, 1997), responses to trauma (Cohn, Mehl, & Pennebaker, 2004; Stone & Pennebaker,

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2002), recovery from anorexia (Lyons, Mehl, & Pennebaker, 2006), and even whether poets commit suicide (Stirman & Pennebaker, 2001). It is important to note that a unique methodological advantage of a text analysis approach to studying coping and support processes may be that it is less vulnerable to social desirability bias than traditional interview and questionnaire approaches are, especially for measuring a highly evaluative construct such as the quality of social relations (Pressman & Cohen, 2007).

In a review of word-use research, Pennebaker et al. (2003) emphasized the value of studying particles, that is, filler parts of speech (e.g., prepositions, articles, and especially pronouns) that linguistically carry little or no conversational content but on a psychological level often serve to mark emotional states, social identity, and cognitive styles. Because pronouns and other particles reflect linguistic style rather than content, they may be less a product of conscious word choice than regular verbs or nouns (e.g., emotion words) are and thus may reflect more fundamental psychosocial processes (Pennebaker et al., 2003). Thus, in one of few applications of text analysis to heart patients, Scherwitz and colleagues linked *self-involvement*, defined by elevated frequency and density of first-person singular pronoun use, to Type A risk behavior and clinical outcomes of coronary heart disease (Scherwitz & Canick, 1988). Other studies show shifts from first-person singular to plural pronoun use by bloggers (Cohn et al., 2004) and former mayor Rudolph Giuliani (Pennebaker & Lay, 2002) coincident with the communal crisis of September 11, 2001, suggesting that *I* talk and *we* talk may be subtle markers of individual versus communal self-construal, at least in the context of talking about an upsetting life event.

Indirect evidence that pronoun use could have adaptive significance for couples came from Buehlman et al.'s (1992) observational coding of *we-ness versus separateness* during conjoint oral-history interviews. Judges' ratings of couple *we-ness*, based largely on partners' tendency to use *we* rather than *he*, *she*, or *I* when recounting their marital history, correlated with concurrent positive interaction behavior and predicted both marital satisfaction and divorce over the next 4 years (cf. Gottman & Levenson, 1999). Unfortunately, because pronoun use was only one component of the *we-ness* measure, the Buehlman et al. results do not demonstrate that *we* talk alone predicted positive marital outcomes.

More definitive data on pronouns in marital interaction come from Simmons et al.'s (2005) study comparing LIWC pronoun counts with observed and reported marital quality in a sample of 59 couples where one spouse had a diagnosed anxiety disorder. During face-to-face problem-solving discussions, first-person plural pronoun use by both partners correlated with independently coded positive problem-solving behavior during the same interaction, even after controlling for general behavioral negativity, which correlated strongly with second-person *you* talk.<sup>1</sup> Although *we* talk was not related to marital satisfaction, Simmons et al. (2005) concluded that first-person plural pronoun use does predict (or at least reflect) better cooperative problem solving—and, consistent with our communal coping hypothesis, they suggested that partners who used such pronouns more often “had a greater sense of shared responsibility or stake in the problem discussed, which may have helped them collaborate more effectively” (p. 935).

The present study differs from and extends previous plural pronoun research in a number of ways. First, our dependent variables concern the status and course of a serious physical health problem rather than concurrent marital functioning or later marital outcomes. Chronic HF, the end stage for many forms of heart disease, is an increasingly prevalent, costly condition that makes stringent demands on patients and their families (MacMahon & Lip, 2002; Rohrbaugh et al., 2002). Although treatments have improved dramatically, HF continues to be associated with shortened life expectancy (up to 50% mortality 5 years after diagnosis), frequent hospitalizations, and diminished quality of life (Chin & Goldman, 1998; Masoudi et al., 2004).

Second, rather than studying problem-solving discussions about relationship conflicts in the laboratory (as Simmons et al., 2005, did), we examined partners' first-person pronoun use during an open-ended home interview about how they cope(d) with the patients' heart failure. Thus, in line with Buehlman et al. (1992), the conversations were more interviewer focused than partner focused and typical of what a clinician might encounter during an assessment or therapy session.

Third, we compared nonreactive pronoun markers of communal coping derived from automatic text analysis with a direct self-report measure of the same construct. If the text-analysis approach is indeed more implicit and less vulnerable to social-desirability reporting bias (Pennebaker et al., 2003; Pressman & Cohen, 2007), the *we* talk measures may have greater prognostic value than self-reported communal coping or relationship quality for predicting future health change.

Fourth, in addition to analyzing singular and plural first-person pronouns in the aggregate, we distinguished their active and passive forms (*I* talk vs. *me/my* talk, *we* talk vs. *us/our* talk).<sup>2</sup> As Pennebaker et al. noted in their (2003) review, interest in the active–passive pronoun-use distinction goes back at least to William James (1890), although its pragmatics remain largely uninvestigated. Here, in keeping with the distinction between active and passive forms of coping with health problems, we examined possible differences in the adaptive implications of *we* talk and *us/our* talk (as well as *I* talk and *me/my* talk) for patients with HF.

Fifth, we considered the possibility that personal pronoun use by the patient's spouse, as well as by the patient, makes an independent contribution to predicting the course of cardiac illness. Precedence for distinguishing such partner effects and actor effects with HF patients comes from our studies of the Michigan sample referenced in the first paragraph, where the spouse's confidence in the patient's ability to manage the illness predicted 4-year survival over and above what the patient's own self-efficacy ratings could

<sup>1</sup> First-person singular pronouns (*I-focus*) in the Simmons et al. (2005) study were unrelated to partners' interaction quality but tended to correlate positively with marital satisfaction. The latter result is inconsistent with findings by Sillars, Shellen, McIntosh, and Pomegranate (1997), who counted pronouns during a nonclinical marital interaction task that may have pulled less negativity.

<sup>2</sup> Although linguists distinguish these as *subjective* and *objective* pronoun types, we believe *active* and *passive* better capture their difference at a psychological level.

predict (Rohrbaugh et al., 2004).<sup>3</sup> Would a spouse's communal orientation to coping with HF likewise have as much or more adaptive significance than a communal orientation by the patient? Or does effective communal coping require balanced *we* talk by both partners (i.e., is it a true couple-level phenomenon)? These, too, are questions the present study attempts to address.

Finally, although the present (Arizona) sample included relatively few female patients, gender implications of *we* talk are difficult to ignore. Apart from apparent gender differences in overall pronoun use (Mehl & Pennebaker, 2003; Newman, Groom, Handelman, & Pennebaker, 2008) and possibly inherent gender differences in communal orientation (Taylor, 2006), the Michigan HF studies found marital functioning more important to the survival of female patients than male patients (Coyne et al., 2001; Rohrbaugh et al., 2006; cf. Krumholz et al., 1998). The latter finding is consistent with a broader literature suggesting that associations between marital quality and health tend to be stronger for women than for men (Kiecolt-Glaser & Newton, 2001; Saxbe, Repetti, & Nishina, 2008). If marital *we* talk does predict how patients adapt to heart disease, the results might also suggest possible gender differences that could involve either the recipient or the provider of communal coping.

To summarize, we hypothesized that first-person plural pronoun use (*we* talk) by one or both partners during an open-ended conjoint interview would predict the course of the patient's HF symptoms over a 6-month period and do so better than (or at least independently from) direct self-reports of marital quality and communal coping. Additional exploratory questions, for which specific hypotheses would be premature, concerned (a) the relative contributions of *we* talk by patients and spouses (whether independent actor or partner effects emerge and whether adaptive *we* talk is a couple-level phenomenon), (b) relative contributions of the active first-person plural pronoun form (*we*) compared with passive first-person plural forms (*us*, *our*), and (c) the possible role of gender in moderating predictive associations between pronoun use and patient health change.

## Method

### Overview

HF patients and their spouses participated in a brief, open-ended interview focusing on how they had coped with the patients' heart conditions. We then used first-person pronoun patterns (singular vs. plural, active vs. passive) derived from LIWC analysis of each partner's interview responses to predict changes in the patient's symptom severity and general health over the next 6 months. Baseline self-report measures of marital quality, communal coping, and psychological distress were available as well, and we examined these as potential covariates of pronoun use that might explain predictive associations with the patient's well-being.

### Participants

Participants were 60 HF patients (43 men, 17 women) and their opposite-sex spouses recruited primarily from University of Arizona cardiology clinics. All patients carried a confirmed HF diagnosis and had a left ventricular ejection fraction (LVEF), usually documented by echocardiogram during the previous 6 months, of

less than or equal to 40 ( $M = 29.1$ ,  $SD = 8.7$ ). At the time of the home interview, mean New York Heart Association (NYHA) functional class was 2.3 ( $SD = 0.8$ ) on a 1–4 scale, with 13.3%, 55.0%, 20.0%, and 11.6% of the patients in Classes I, II, III, and IV, respectively (Domanski, Garg, & Yusuf, 1994). On average, HF had been diagnosed 4.8 years earlier ( $SD = 5.1$ ) and heart problems 11.5 years earlier ( $SD = 9.8$ ). HF is a complex diagnosis with diverse etiology, and we do not have systematic information on the variety of etiological pathways represented in the sample. Available data do, however, indicate that almost half (42%) of the patients had experienced myocardial infarction, and prevalence rates for diabetes and hypertension were 32% and 25%, respectively. Although 50% of the patients had been hospitalized and 42% had made an emergency room visit in the previous 6 months, all were outpatients at the time of the home interview.

Mean ages of patients and spouses were 67 ( $SD = 11.7$ ) and 65.6 ( $SD = 10.7$ ) years, respectively, and couples had been married an average of 34.8 years ( $SD = 16.7$ ). The patient sample was predominantly White (85%), well-educated (40% were college graduates), and affluent ( $M$  zip code income was at the 65th percentile in the year 2000).

### Procedure

During visits to each couple's home, research assistants interviewed the patient and spouse both separately and conjointly. Speech samples for LIWC analysis, transcribed separately for each partner, came from responses to two open-ended questions asked in conjoint format near the end of the home visit: (a) "As you think back on how the two of you have coped with the heart condition, what do you think you've done best? What are you most proud of?" and (b) "Looking back on your own experiences, what suggestions or advice could you offer other heart patients and their families?" Interviewers directed these questions to the couple, encouraged elaboration with reflective prompts, and allowed time for both partners to answer. Two couples did not participate in the conjoint coping interview because of patient fatigue, and the audio recorder malfunctioned for a third couple, so a total of 57 transcripts (from 41 male- and 16 female-patient couples) were available for analysis.

The baseline home visit also provided detailed assessments of the patient's HF symptoms (rated by both partners) and his or her general health, measured by the 36-Item Short-Form Health Survey (SF-36; McHorney, Ware, & Raczek, 1993). Other psychosocial variables included the patient's perceived self-efficacy to manage the illness and parallel (individual) reports of communal coping, marital quality, and psychological distress obtained from each partner. Six months later, in separate telephone interviews with both partners, we again assessed the patient's HF symptoms and general health.

Participants provided their informed consent at the beginning of the home interview. All aspects of the study were conducted in compliance with procedures established by the University of Arizona Human Subjects Committee.

<sup>3</sup> Conceptually, this finding approximates what Kenny (1996) and others called a *statistical partner effect*, distinguished here from the complementary *actor effect* represented by the patient's score predicting his or her own health outcome independent of the spouse's score.

## Measures

**Pronoun use.** Automatic text analyses performed with the LIWC software (Pennebaker et al., 2001) produced separate counts of all pronoun types used by the patient and spouse in each couple. The LIWC presents variables in a relative metric, as percentages of a participant's total number of transcribed words, and a separate pronoun dictionary permitted further distinctions among active versus passive personal pronouns. To address the main research questions, we focused narrowly on first-person pronouns and based statistical analyses on proportion variables calculated to represent (a) each partner's use of first-person plural (*we* talk) and singular (*I* talk) pronouns relative to all personal (first-, second-, and third-person) pronouns; (b) each partner's use of first-person pronouns that were plural rather than singular (*we/I* ratio), with total first-person pronouns as the denominator; and (c) each partner's use of pronouns that were plural active (*we* active) plural passive (*us/our* passive), singular active (*I* active), and singular passive (*me/my* passive), again with total first-person pronouns as a denominator. The first set of pronoun variables allowed for examining patient and spouse *I* talk and *we* talk independently in the same analysis, whereas the remaining variables (*we/I* ratio, *we* active, *us/our* passive, etc.) captured the relative balance of plural versus singular first-person pronouns. We also examined total words and total pronouns as covariates of the proportion variables, although this had little impact on the results.

**Report measures of communal coping.** The individual patient and spouse interviews each included two questions based on the Lyons et al. (1998) communal coping construct. The patient items were (a) "When you think about problems related to your heart condition, to what extent do you view those as 'our problem' (shared by you and your spouse equally) or mainly your own problem?" and (b) "When a problem related to your heart condition arises, to what extent do you and your partner work together to solve it?" Both items had a 1–5 response scale, bipolar in the first case (from 1 = *my problem* to 5 = *our problem*) and unipolar in the second (from 1 = *not at all* to 5 = *always*). Items for the spouse were directly parallel but referred to "your partner's heart condition." Although the two items correlated only modestly ( $r = .41$  for patients and  $.26$  for spouses), we nonetheless averaged them to provide a self-report *communal coping* score for each partner (patient  $M = 4.1$ ,  $SD = 1.0$ ; spouse  $M = 4.6$ ,  $SD = 0.6$ ).

**Patient outcomes.** The two dependent variables, each related to the patient's health and assessed at both baseline and follow-up, were *HF symptoms* and *SF-36 health status*. The measure of HF symptoms reflected patient and spouse ratings of the extent to which the patient experienced eight specific symptoms in the previous month. The symptoms were (a) fatigue or lack of energy for normal activities; (b) difficulty breathing, especially with exertion; (c) waking up breathless at night; (d) swelling in ankles and feet; (e) chest pain; (f) heart flutter (fibrillation); (g) dizziness or fainting; and (h) nausea, with abdominal swelling or tenderness. The patient and spouse conjointly rated the presence of each symptom on a three-level scale (*not at all*, *some*, *a lot*) during the baseline interview, and they did so again separately at follow-up, with good interrater agreement (intraclass  $r = .73$ ). Half of the patients ( $n = 30$ ) also completed the Kansas City Cardiomyopathy Questionnaire (Green, Porter, Bresnahan, & Spertus, 2000) at baseline, and the *Functional-Status* scale from this validated in-

strument correlated highly with our HF symptoms measure ( $r = -.79$ ). Internal consistency of the HF symptoms scale was good at both baseline ( $\alpha = .79$ ) and follow-up ( $\alpha = .84$ ). Mean symptom scores, based on summing averaged patient and spouse scores, were 15.0 ( $SD = 3.7$ ) at baseline and 12.3 ( $SD = 2.8$ ) at follow-up.

To capture the patient's overall health, we used physical and mental component summary scores from the widely used SF-36 (McHorney et al., 1993; Ware, 2000). At baseline, norm-based scores for physical and mental health were 43.0 ( $SD = 19.1$ ) and 56.7 ( $SD = 19.4$ ), and, at follow-up, the respective scores were 49.2 ( $SD = 24.2$ ) and 67.0 ( $SD = 21.1$ ). Because scores for the physical and mental components correlated highly at baseline ( $r = .63$ ) and follow-up ( $r = .78$ ), we averaged them into a composite SF-36 health status variable for the main analyses.

Not surprisingly, HF symptoms and SF-36 health status also correlated significantly and substantially with each other at both baseline ( $r = -.57$ ,  $p < .001$ ) and follow-up ( $r = -.66$ ,  $p < .001$ ). Test-retest stability for the two measures was moderately high ( $r_s = .64$  and  $.71$ , respectively), and residual scores reflecting change from baseline to follow-up correlated as well ( $r = .53$ ,  $p < .01$ ). Less expected were significant improvements from baseline to follow-up for both HF symptoms,  $t(56) = -8.76$ ,  $p < .001$ , and SF-36 health,  $t(56) = 4.05$ ,  $p < .001$ .

**Marital quality and psychological distress.** The patient and spouse also completed two brief measures of marital quality: Hendrick's (1988) seven-item Relationship Assessment Scale (RAS) and Heavey, Larson, Zumtobel, and Christensen's (1996) seven-item Constructive Communication Scale (CCS). Internal consistency was good for both measures (all  $\alpha_s > .80$ ). In addition, mean RAS item scores for patients and spouses were near the upper end of the 1–5 response scale ( $M_s = 4.4$  and  $4.4$ ,  $SD_s = 0.6$  and  $0.7$ , respectively), suggesting that couples in this sample tended to be fairly well satisfied with their longstanding marriages. Because correlations between RAS and CCS scores were moderately high for both patients ( $r = .61$ ) and spouses ( $r = .64$ ), we used the mean  $z$  score for these two variables as an index of *marital quality* for each partner.

The last variable examined as a possible covariate of first-person pronoun use was *psychological distress*, operationalized via a 25-item version of the Hopkins Symptom Checklist (HSCL-25) used in previous research with HF couples (Rohrbaugh et al., 2002). As in previous studies, internal consistency was high ( $\alpha = .93$ ), and a nontrivial proportion of participants (37% of the patients and 20% of their spouses) scored in a range associated with a diagnosis of anxiety or depression (Hesbacher, Rickels, Morris, Newman, & Rosenfeld, 1980).

## Results

### Patterns of Pronoun Use

Descriptive statistics for patient and spouse pronoun variables appear in Table 1. In the top panel, raw pronoun proportions based on total word counts indicate that first-person plural pronouns (*we*, *us*, *our*) occurred with relatively low frequency, making up less than 2.5% of all transcribed words from the interview. In fact, 7 patients and 3 spouses used no plural first-person pronouns at all. The relative first-person proportion variables in the bottom part of Table 1 (*we* talk, *I* talk, *we/I* ratio, etc.) have higher values,

Table 1  
Means, Standard Deviations, and Ranges of Pronoun Variables for Patients and Spouses

Category	Patients			Spouses		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
Raw proportions						
1st person plural	1.7	1.4	0–6	2.3	1.6	0–8
Active ( <i>we</i> )	1.3	1.2	0–5	1.9	1.4	0–8
Passive ( <i>us, our</i> )	0.3	0.4	0–2	0.4	0.4	0–2
First-person singular	7.5	2.5	2–13	5.2	2.1	1–12
Active ( <i>I</i> )	5.7	2.0	1–12	4.2	1.7	1–8
Passive ( <i>me, my</i> )	1.8	1.1	0–5	1.0	0.8	0–4
Second person	2.3	1.2	0–5	3.0	1.6	0–8
Third person	3.1	2.0	0–10	4.0	2.1	0–9
All personal pronouns	17.8	3.2	5–26	18.0	2.5	10–24
Total word count ( <i>N</i> )	490.0	353.4	21–1767	556.2	480.7	98–2502
Adjusted proportions						
<i>We</i> talk ( <i>we, us, our</i> )	9.3	8.5	0–37.8	12.7	8.3	0–43.7
<i>I</i> talk ( <i>I, me, my</i> )	43.0	14.9	10.8–100	28.8	10.1	5.7–62.0
<i>We/I</i> ratio	18.0	15.7	0–77.8	29.9	16.7	0–73.7
<i>We</i> active	14.4	12.5	0–50.1	25.1	15.1	0–68.4
<i>Us/our</i> passive	3.2	4.7	0–27.7	4.3	4.1	0–14.3
<i>I</i> active	63.0	17.2	13.9–100	57.1	15.8	26.3–100
<i>Melmy</i> passive	19.0	10.2	0–50	13.0	8.9	0–36.4

*Note.* Top panel shows raw proportions of total transcribed words by pronoun category for the patient and spouse. Bottom panel has adjusted proportions for variables used in the main statistical analyses: *We* talk and *I* talk proportions are based on total personal pronouns; *we/I* ratio and active–passive proportions are based on total first-person pronouns, with *we/I* ratio representing plural first-person pronouns divided by all first-person pronouns.

reflecting different denominators, and were used in the main analyses. Because the distributions of these variables tended to be negatively skewed, we applied arcsine transformations to improve normality and used these transformed values in all analyses.

To examine mean-level differences in pronoun use and total word use, we performed mixed-model analyses of variance (ANOVAs) with couple as the unit of analysis (Maguire, 1999) using the SPSS 16 general linear model statistical module. The speaker's role (patient vs. spouse) was a within-couple effect in these models, whereas patient gender was a between-couple effect. Some of the models also included pronoun type (e.g., *I* talk vs. *we* talk, *we* active vs. *we* passive) as a within-case variable to examine possible main effects and interactions involving this factor. Although ANOVAs for total word count and total personal pronouns revealed no significant main effects or interactions, those comparing pronoun types found greater use of first-person pronouns by patients than spouses,  $F(1, 56) = 12.2, p < .001$ , and greater use of both second-person pronouns,  $F(1, 56) = 7.36, p = .009$ , and third-person pronouns,  $F(1, 56) = 4.83, p = .032$ , by spouses compared with patients.

ANOVAs focusing specifically on first-person singular and plural pronouns found significant within-case effects for role and pronoun type(s) as well as several Role  $\times$  Type interactions. Thus, including transformed *we* talk and *I* talk proportions in the same analysis confirmed the higher prevalence of *I* talk,  $F(1, 55) = 166.06, p < .001$ , and yielded a significant Role  $\times$  Type interaction,  $F(1, 55) = 20.57, p < .001$ . Tests for simple effects related to this interaction revealed significant differences for all pairs of means, with patients showing more *I* talk than spouses ( $M = 43.0$  vs.  $28.8, p < .001$ ; see Table 1) and spouses showing more *we* talk than patients ( $M = 12.7$  vs.  $9.3, p = .024$ ). A similar ANOVA

incorporating the active–passive dimension (e.g., *we* active, *us/our* passive) likewise indicated a preponderance of active over passive pronouns,  $F(1, 55) = 246.28, p < .001$ . In addition, a significant Role  $\times$  Type (active–passive) interaction for plural pronouns reflects differential use of *we* active and *us/our* passive pronouns by spouses and patients,  $F(1, 55) = 13.76, p < .001$ , with spouses exceeding patients in *we* active talk ( $M = 25.1$  vs.  $14.4, p < .001$ ) but not in *us/our* talk ( $M = 4.3$  vs.  $3.2, p = .167$ ). Strikingly, the patient's gender, either alone or in interaction with role and/or pronoun type, had no significant statistical effects in any of these analyses ( $ps > .1$ ). In other words, gender appeared to make little difference in how patients and spouses used personal pronouns when discussing the patients' illness.

Further pronoun analyses examined correlations between the proportion measures and between the spouses. Not surprisingly, the *we* talk and *I* talk proportions tended to correlate negatively with each other, although somewhat more so for patients ( $r = -.44, p < .001$ ) than for spouses ( $r = -.20, p > .1$ ). However, there was essentially no association between patient and spouse pronoun use for *we* talk ( $r = -.09$ ), *I* talk ( $r = .05$ ), or the *we/I* ratio ( $r = -.05$ ). Thus, if plural pronouns do mark communal coping, they appear to do so in a manner that does not represent a reciprocal, couple-level process.

#### Other Correlates of We Talk and Patient Health Change

The last set of preliminary analyses aimed at identifying correlates of the *we* talk predictor variables and of change in the two dependent patient-health variables from baseline to follow-up. Here we were interested not only in demographic and clinical characteristics but also in the self-report measures of communal

coping and marital quality that relate most directly to the study hypotheses. One reason for doing this was to identify possible control variables (covariates) that might later explain links between *we* talk and health change.

On the one hand, correlational analyses found essentially no relationships between the *we* talk indices and either partner's gender, age, or education, nor were there any significant associations between *we* talk and concurrent clinical variables such as HF symptoms, SF-36 health status, NYHA class, LVEF, illness duration, recent hospitalization, or the patient's psychological distress. On the other hand, the self-report measure of communal coping did tend to correlate with the *we/I* ratio for patients ( $r = .32, p < .05$ ), although not for spouses ( $r = .13, ps > .1$ ), and the *we/I* ratio correlated with the marital quality scores of both partners ( $rs = .28$  and  $.26$ , respectively,  $ps < .05$ ). It is interesting that actor-partner regression analyses indicated also that one partner's plural pronoun use predicted the other's perception of marital quality over and above any actor effect ( $bs$  for both *we/I* ratios =  $.32, ps < .05$ ).

To identify possible predictors of patient health change, we computed partial correlations with the respective dependent variables, controlling their status at baseline. Although some clinical variables (e.g., NYHA class, LVEF, psychological distress, marital quality) correlated substantially with patient health at baseline, only two—marital quality and psychological distress—appeared to predict HF symptoms or SF-36 health status prospectively: Partial  $rs$  were  $-.48$  and  $-.42$  for patient and spouse marital quality predicting HF symptom change ( $ps < .01$ ),  $.35$  and  $.35$  for HSCL-25 patient and spouse distress predicting HF symptom change ( $ps < .05$ ), and  $.30$  and  $.40$  for marital quality predicting SF-36 health change (spouse  $p < .05$ ).

Of note, the self-report measure of communal coping was unrelated to HF symptoms at baseline ( $rs = -.15$  and  $-.09$  for patients and spouses), and it did not predict change in HF symptoms during the follow-up period (partial  $rs = -.03, -.01$ ). Communal coping did, however, correlate with reported marital quality ( $rs = .59$  and  $.39$  for patients and spouses,  $ps < .05$ ), suggesting that, in the self-report domain, these are related but distinct constructs (cf. Bodenmann, 2005).

### Pronoun Predictors of Patient Health Change

To address the main research questions, we first performed a multiple regression analysis for each of the two patient outcomes, with patient and spouse *we* talk, patient and spouse *I* talk, and the patient's gender as predictors. The regression models also included a baseline measure of the relevant outcome to capture residualized change, and predictors were centered to minimize collinearity of interaction terms (Aiken & West, 1991). Despite our interest in gender as a putative moderator, no two- or three-way interactions involving pronoun variables and the patient's biological sex were statistically significant in these (or any other) analyses, so we report simplified regression results with gender excluded. Similarly, because including total word count and/or personal pronouns as covariates had no appreciable effect on regression results, we exclude those variables as well.

Table 2 presents standardized beta weights from the regression analyses for the two patient health outcomes. Note here that negative beta weights reflect positive (healthy) change for HF symptoms (i.e., symptom reduction), whereas the opposite applies

Table 2  
Standardized Betas and Significance Levels for Pronoun Predictors of Patient Health Change

Predictor variable	Dependent variables (patient health)			
	HF symptoms		SF-36 health status	
	$\beta$	$p$	$\beta$	$p$
Baseline score for DV	.63	<.001	.71	<.001
Patient <i>I</i> talk	-.01	>.1	.18	.074
Spouse <i>I</i> talk	.02	>.1	.19	.045
Patient <i>we</i> talk	.15	>.1	.07	>.1
Spouse <i>we</i> talk	-.29	.012	.23	.014

*Note.* Multiple regression analyses performed separately for each dependent variable (DV) at follow-up included the baseline DV score to predict residualized change. Pronoun predictor variables are proportions based on dividing the each partner's singular and plural first-person pronouns by the total number of personal pronouns they used. Proportion variables received arcsine transformation to improve normality. HF = heart failure; SF-36 = 36-Item Short-Form Health Survey (McHorney, Ware, & Raczek, 1993).

for SF-36 health status. For both dependent variables, *we* talk by the spouse predicted positive changes in the patient's health independent of what the patient's own plural pronoun use predicted. In fact, the spouse's *we* talk was the only significant predictor of change in the patient's HF symptoms, although betas for *I* talk by both partners were also in the direction of predicting positive change in the patient's general health. In neither case, however, was the patient's *we* talk associated with his or her own health change, and partner (spouse) effects on the patient's well-being were generally more in evidence than actor effects.

Follow-up analyses narrowed the focus of prediction to relative use of plural versus singular first-person pronouns. Including both partners' *we/I* ratio scores appeared to sharpen the spouse (partner) effect for HF symptoms ( $b = -.33, p = .002$ ) but weaken it for the SF-36 measure of general health ( $b = .10, p > .10$ ). Incorporating the active-passive dimension suggested further that we active pronouns predicted HF symptoms ( $b = -.24, p = .034$ ), whereas *us/our* passive pronouns did not ( $b = -.13, p > .10$ ), although parallel effects were again not evident for SF-36 health status (both  $bs = .02$  and  $.15$ , respectively,  $ps > .10$ ).

Additional regression analyses explored the relative contributions of patient and spouse *we* talk directly, along with the predictive potential of combining the two partners' scores. For HF symptoms, a partner discrepancy score created by subtracting the patient's *we/I* ratio score from the spouse's score showed a significant effect on patient health change ( $b = -.27, p = .011$ ), whereas a couple-level (mean) *we/I* ratio had a somewhat weaker effect ( $b = -.18, p = .085$ ). As with other analyses based on the *we/I* ratio, there were no associations between these couple-level variables and changes in the patient's general (SF-36) health. In summary, we found little evidence that patient and spouse *we* talk had interchangeable consequences for the patient's health.

### Pronoun Prediction With Additional Covariates

A final set of regression analyses tested the possibility that third (control) variables might account for the associations between *we*

talk and HF symptom change and compared the prognostic significance of pronoun and self-report indicators of the communal coping construct. To pursue this, we focused on the *we/I* ratio, the pronoun variable most predictive of HF symptom change, and used stepwise regression to examine the effect of adding a control variable to the actor-partner model. On the basis of finding relatively few substantial correlates of *we* talk and/or symptom change, one might expect these analyses to have low yield, which, in fact, was the case. None of the clinical variables we examined as potential covariates (e.g., NYHA class, LVEF, illness duration, psychological distress) reduced the statistical partner effect of spouse *we/I* ratio, nor did either the self-report measure of communal coping, which, as noted above, had no direct main effect on symptom change, or the partners' reports of marital quality that, when taken separately, had predicted the symptom-change criterion.

### Discussion

The results suggest that *we* talk in couples coping with HF has prognostic significance for the patient's health. As hypothesized, the use of first-person plural pronouns during a conjoint discussion about coping with the patient's heart condition predicted positive change in HF symptoms over the next 6 months. Strikingly, however, this result appeared for *we* talk by the spouse and not the patient, creating a statistical partner effect in the absence of a corresponding actor effect. Exploratory analyses suggested further that the spouse using the active first-person plural pronoun (*we*) contributed more to predicting symptom change than passive first-person plural forms (*us*, *our*), although this was not the case for predicting change in the patient's general health. The patient's (or spouse's) gender, however had no moderating effects on any results obtained.

More broadly, the *we* talk findings provide further evidence that a communal orientation by at least one partner in a committed relationship can have adaptive consequences, not only for the dyad as a unit (Buehlman et al., 1992; Simmons et al., 2005) but also for the other partner's health. This highlights an instrumental dimension of coping with chronic health problems, grounded in specific dyadic processes (Berg & Upchurch, 2007; Revenson, Kayser, & Bodenmann, 2005), that complements a much larger body of research on marital conflict and receipt of social emotional support. From a methodological perspective, the results also add to growing evidence of transitive partner effects on individual health (Ruiz, Matthews, Scheier, & Shulz, 2006; cf. Rohrbaugh et al., 2004), wherein one person's behavior predicts another person's health outcome over and above what the same behavior by the actor can predict (Kenny, 1996). The presence of such statistical partner effects implies interpersonal influence but usually leaves the mechanism of that influence unclear.

Perhaps the most important methodological implication of this preliminary study concerns the potential utility of automatic text analysis in research on couples and health. Because most studies in this area rely on self-reports of key constructs such as marital quality and coping styles, measurement may be vulnerable to social-desirability reporting bias in ways that automatic text analysis is not (Pennebaker et al., 2003; Pressman & Cohen, 2007). Consistent with this idea, our results suggest that *we* talk as an implicit marker of communal coping had greater prognostic value

in predicting the course of HF symptoms than either direct self-reports of the same construct (communal coping) or reports of general marital quality. However, this finding held for only one partner in the couple (the spouse), and ambiguities remain about how best to validate plural pronoun use as a marker of the communal coping construct (e.g., *we* talk did correlate significantly with direct reports of communal coping, but only for patients).

It seems likely that adaptive implications of marital pronoun use depend on situational factors such as the nature of predicted outcomes and the interactional contexts from which speech samples are derived. Extrapolating from previous research, one would expect *we* talk by both partners to predict future marital stability (Buehlman et al., 1992) or correlate with concurrent adaptive problem solving (Simmons et al., 2005). But when the criterion (outcome) variable concerns one person's health problem and the pronoun speech sample focuses on that, an asymmetrical pattern of prediction from partner pronoun use may be less unusual.

Other important boundary conditions for our findings involve the manner of eliciting partner speech samples. For example, in contrast to Simmons et al.'s (2005) procedure, where couples discussed a disagreement with no interviewer present, the pronoun samples in our study came from responses to supportive, open-ended interview questions about how the couple had coped with the patient's illness. Compared with a conflict discussion, our interview questions probably pulled for more positive, collaborative verbalizations—perhaps especially from a patient's spouse, whose role as a helper may be implicitly defined by questions about coping with the patient's illness. In any case, the present results leave open the question of whether *we* talk sampled in a different, less collaborative context would similarly predict patient health outcomes. Further, it is not known how stable (traitlike) *we* talk proportions might be across different interactional contexts—for example, when partners talk to versus about each other with an interviewer absent versus present during a conflictual versus cooperative task. These are questions for future research.

The results also hint that the relative frequency of *we* talk and *I* talk (the *we/I* ratio variable) predicted change in HF symptoms better than it did change in the patient's general health, a difference that was less evident when we analyzed *we* talk and *I* talk separately. It may be, therefore, that *we* talk in the context of discussing a specific illness has particular prognostic significance for coping with that illness. Consistent with this idea, the patient's response to a single self-efficacy follow-up question ("How confident are you that you can do what you need to do to manage your illness?") showed essentially the same partner effects for spouse *we*-ratio as the HF symptoms measure did.<sup>4</sup>

Still, the results are ambiguous about the extent to which *we* talk marks the kind of communal coping construct we envisioned. On the basis of the Michigan study findings, particularly those linking useful discussions to patient survival (Rohrbaugh et al., 2006), we had conceptualized communal coping as a key couple-level component of marital quality, but this does not fit well with either the asymmetry of patient and spouse prediction results (partner effects with no actor effects) or the fact that patient and spouse *we* talk

<sup>4</sup> This single-item self-efficacy measure was less adequate psychometrically than the two main dependent variables, and we excluded it from the main analyses to avoid inflating Type I error.

scores were essentially uncorrelated. An alternative interpretation is that *we* talk in the context studied here says most about the caretaking posture of an individual partner—in this case, the patient's spouse. This was especially evident in the higher rates of *I* talk by patients and *we* talk by spouses, which fits the idea that interview questions about the patient's illness served to highlight the spouse's support role.

Also unexpected was the absence of detectable gender differences: Male- and female-patient couples did not differ in how often the partners used various types of pronouns, and, more relevant to clinical concerns, there was no gender moderation of any predictive association between *we* talk and patient health change. On the basis of previous research (e.g., Kiecolt-Glaser & Newton, 2001; Rohrbaugh et al., 2006), one would expect a marital process reflecting relationship quality (if *we* talk indeed represents that) to have greater consequences for the health of women than for the health of men. Unfortunately, the imbalance of male and female patients in the sample (41 vs. 16) probably limited our ability to detect such effects—for example, by restricting the heterogeneity of spousal support for female patients.

This study has several additional limitations, the most important of which may be the lack of hard outcome measures not dependent on participants' self-reports. Although the HF symptoms measure combined the reports of both partners (and therefore may be on firmer ground than the patient's solo SF-36 score), we have no assurance that reported symptom change over only 6 months is itself prognostic of long-term survival, nor is it clear why the patients' symptoms and general health appeared to improve over that time. One possible explanation is methodological, in that the first interview was face-to-face and the second telephonic. A second is that periodic assessment contacts with project staff were in some way therapeutic.<sup>5</sup>

Another study limitation is that the sample was small and probably not representative of the larger population of HF patients, even those who are married. For example, compared with the Michigan sample we studied earlier (Rohrbaugh et al., 2006), the Arizona patients were more educated and affluent and apparently also more stable medically, as suggested by the fact that far fewer of them died in the 2 years following the initial assessment. We may therefore have sampled a restricted range of (high) couple functioning, although it is unclear if this would bias the results toward or away from our findings.

A final limitation, inherent in automatic text analysis itself, is that simple word counts cannot account for semantic contextual markers related to dimensions such as irony, sarcasm, and multiple meanings of the same word (Mehl, 2006). However, this limitation may be offset by the relative imperviousness of text analysis to potentially biasing effects of social desirability and shared method variance. It could even be that the latter feature helped to make possible our detection of the dominant (spouse *we* talk) partner effect, as shared method variance in self-report studies usually biases results toward actor effects.

The main clinical implication of this study is that looking beyond the patient can help to predict the likely course of a heart patient's health. Specifically, it may be valuable for clinicians to pay close attention to a spouse's use of first-person plural pronouns when he or she discusses the patient's heart condition; open-ended interview prompts such as those used by our research interviewers should be sufficient for eliciting this. It is unclear if

the results generalize to other health problems, and we do not yet know how *we* talk by one or both partners maps onto other coping attitudes or behaviors. To the extent that *we* talk does reflect a communal orientation to coping, interventions that specifically attempt to promote such a posture—for example, by attending to reinforcing partners' recollections of how they have successfully resolved difficulties together in the past—may have special benefit for couples coping with chronic illness (Martire & Schulz, 2007; Revenson et al., 2005; Shoham, Rohrbaugh, Trost, & Muramoto, 2006).

<sup>5</sup> In addition to the baseline and follow-up interviews, research staff had regular phone contact with each patient and spouse for a period of 2 weeks, beginning about 2 months after the initial assessment, to collect daily-diary data.

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