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Patient and spouse perceptions of the patient's heart disease and their associations with received and provided social support and undermining

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Abstract

Previous research has consistently documented the contribution of both illness perceptions and social support to adjustment to illness. This study combines these two approaches by examining: (1) Do patient and spouse perceptions of the patient's heart disease differ? (2) Are each partner's perceptions of the patient's disease associated with his/her perceptions of spouse support and undermining? (3) Are differences between patient and spouse perceptions of the patient's heart disease associated with spouse support and undermining? (4) Are there specific patterns of patient and spouse perceptions that are related to support/undermining? Fifty heart disease patients and their spouses reported overall similar illness perceptions. Spouses who held relatively negative illness perceptions reported providing more support and more undermining whereas patients with negative perceptions reported less received support. In addition, the data revealed several specific combinations of patient/spouse perceptions that were associated with support/undermining (e.g., lower support perceived by patients with a long disease timeline, whose spouses perceived a shorter timeline). In conclusion, patients' and spouses' illness perceptions are related to the support they receive and provide, respectively, and therefore should both be targeted in interventions.

Keywords: *Illness perceptions, illness representations, self-regulation, spouses, social support, social undermining*

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Introduction

The way people perceive health threats influences the way they react to them and cope with them and therefore ultimately affects physical and psychological outcomes. This is the basic tenet of the self-regulation model (SRM; Leventhal, Nerenz, & Steele, 1984). A growing number of studies in patients facing a variety of illnesses and health threats, based on the SRM, support the importance and role of illness perceptions (Hagger & Orbell, 2003; Petrie & Weinman, 1997). However, little attention had been paid to the social context in which these processes take place, despite the fact that according to this theory, the self-regulation process 'does not take place in a social vacuum; rather, it is interpersonal as well as intrapersonal' (Leventhal et al., 1997, p. 37). There is a constant exchange between the self-regulation system and the context in which it takes place (Leventhal, Leventhal, & Contrada, 1998). Therefore, the main objective of the current study is to assess the extent to which patient and partner perceptions of heart disease are related to the extent of spouse support in coping with the disease.

The SRM suggests several ways in which illness perceptions could be related to spouse support: First, the patient's self-regulation process is embedded in a social context so that the reactions of family members could affect patients' interpretation of their health condition and their ways of coping with it (Leventhal et al., 1998). Patients' perceptions of their condition could also affect their expectations regarding spouse support and therefore their appraisal of such support. Second, spouses also engage in a self-regulation process, in which their own perceptions of the patient's disease influence their ways of coping, including supportive behaviors, as well as their ideas about what would constitute effective support. Third, discrepancies between patient and spouse illness perceptions could affect spouse support and its perception by the patient.

Studying the relationship between spouse support and illness perceptions is important because of the documented role of social support, in general, and spouse support, in particular, in coping with health threats (Schmaling & Goldman Sher, 2000). Specifically for heart disease, being married or supported in other ways has been found to be associated with survival and lower recurrence in longitudinal studies (Reifman, 1995). Among younger adults, both positive and negative social ties have been associated with levels of fibrinogen, a risk factor for heart disease (Davis & Swan, 1999). Social support has also been linked with better functional and emotional outcomes among cardiac patients over time (King, Reis, Porter, & Norsen, 1993), partly because it leads to more adaptive coping on the patient's part (Holahan, Moerkbak, & Suzuki, 2006; Holahan, Moos, Holahan, & Brennan, 1997). Therefore, studying the links between illness perceptions and spouse support may reveal ways in which interventions aimed at patient and spouse perceptions could also influence spouse support.

Family members' illness perceptions

When faced with a disease, patients and their close ones each seek to create a cognitive framework within which they interpret the illness experience (Gray, Fitch, Phillips, Labrecque, & Fergus, 2000). Thus, family members also form subjective perceptions of the patient's illness. Similar to the patients' perceptions, family members' perceptions also refer to the dimensions of illness suggested by the commonsense model of illness (Leventhal et al., 1997): Its identity (label and symptoms), causes, timeline, consequences, and controllability. The structure of spouse illness perceptions and the reliability of each dimension are similar to those reported from patient studies and they are also only partially related to objective measures of illness (Barrowclough, Lobban, Hatton, & Quinn, 2001).

Family members' illness perceptions affect their own well-being (Barrowclough et al., 2001) as well as the patients' well-being (Benyamini, Gozlan, & Kokia, 2004; Moser & Dracup, 2004). Most studies that compared patients' and family members' perceptions have focused on the degree of congruence between these perceptions as a correlate or predictor of various patient outcomes. For example, similarities in positive perceptions, in contrast with dissimilarities or with similarities in negative perceptions, have been found to predict better recovery from myocardial infarction (MI; Figueiras & Weinman, 2003). In addition, the well-being of patients with cardiac symptoms has been associated with overall ratings of their health that were similar to the way their wives rated them (Franks, Hong, Pierce, & Ketterer, 2002); and the degree of dissimilarity between partners in the perception of Addison's disease and Chronic Fatigue Syndrome has been found to be associated with several indicators of functioning (Heijmans, de Ridder, & Bensing, 1999).

Several studies have also examined two opposing patterns of dissimilarity: spouse 'maximization', i.e., a more negative perception of the patient's health than that of the patient him/herself, and spouse 'minimization' of the seriousness of the patient's disease as compared with the patient's perception. For example, in the Franks et al. (2002) study, spouse maximization in regard to general health status was related to lower patient well-being. In other studies, both patterns have been related to various adaptive outcomes and psychological states, depending on the disease and the specific illness cognition examined (Cremeans-Smith et al., 2003; Heijmans et al., 1999; Richards et al., 2004). In addition, similarity between parents' perceptions of their adolescent child's disease has been related to the adolescents' reports of better well-being (Salewski, 2003). Dissimilarities in the illness perceptions of patients and spouses have also been associated with spouses' levels of distress (Richards et al., 2004). In sum, even though patient and family members' illness perceptions often concur (e.g., Heijmans et al., 1999; Weinman, Petrie, Sharpe, & Walker, 2000), disagreement between them could affect both partners' adjustment to the disease and its impact on their lives.

Spouse support: Positive and negative interactions

There is ample research showing that a supportive spouse can be an important resource in coping with illness. However, patients seek both support and independence (Leventhal, Leventhal, & Van Nguyen, 1985) and thus may perceive both positive and negative sides of their spouse's actions. Even supportive spouses could at times be critical or create more strain (Vinokur & Vinokur-Kaplan, 1990). MI survivors and their spouses reported feelings of distress and efforts to support and help each other, which were often hampered by negative interactions and miscarried helping efforts (Stewart, Davidson, Meade, Hirth, & Makrides, 2000). In fact, the presence of negative family interactions may have more impact on the patient's adjustment than the presence or absence of positive interactions (Helgeson, 1993b; Manne & Zautra, 1990). Specifically for heart disease, studies have shown partners to engage in activities of surveillance and over protectiveness of the patient, possibly as an expression of guilt or a manifestation of their need to manage their own anxiety (Thompson, Ersser, & Webster, 1995), especially in face of a 'minimizing' patient (Stern & Pascale, 1979). Since spouses have been found to be distressed for longer periods than patients following an MI (Rose, Suls, Green, Lounsbury, & Gordon, 1996), their worry could have lasting effects on the couple's interactions concerning the disease.

Therefore, the current study will examine both positive and negative facets of interactions between patients and spouses regarding the patient's heart disease: spouse support and spouse undermining. Both concepts stem from the same transactional perspective, which defines *social support* as transactions with others that provide the recipient with emotional support, affirmation of the self, appraisal of the situation, instrumental support, and information, and *social undermining* as behaviors directed toward the target person that display negative affect (anger, dislike), negative evaluation of the person (criticism), and behaviors that hinder the attainment of instrumental goals (Vinokur, Price, & Caplan, 1996).

Another important distinction regarding social support is that between support received by the patient and support provided by the spouse. Traditionally, research on social support and health has assessed social support as reported by the person receiving it, while research on caregiving has assessed social support as reported by the person providing it. Since patient and spouse perceptions of the illness as well as the degree of congruence between them can potentially affect both the provision of support by the spouse and its perception by the patient, we will examine four types of reports of spouse behavior in relation to the patient's disease, following Vinokur and Vinokur-Kaplan (1990): The patients' reports of support and undermining received from their spouses and the spouses' reports of support and undermining, which they have provided.

Study population

All participants were elderly people who were diagnosed with some type of heart disease but were not currently coping with acute events related to the disease.

The rationale for this choice of the study population was two-fold. First, most studies of the perceptions of heart disease have recruited patients soon after an MI and have therefore focused on the initial adjustment period. Leventhal et al. (1985) suggested that patients' and family members' perceptions of the disease are likely to be quite similar within the initial crisis period whereas over time they are more likely to differ. Similarly, spouse support has been found to erode over time (Bolger, Foster, Vinokur, & Ng, 1996). Living with an illness over long periods of time requires adjustment at the personal and couple level (Svedlund & Danielson, 2004) and a continuing dialogue and negotiation surrounding health and lifestyle issues and management of daily life (Grand, Grand-Filaire, & Pous, 1993). We chose to study couples not at the acute stage of the disease because very little is known about living with heart disease over time.

Second, many studies of the perceptions of heart disease have focused on middle-aged men and on recovery, typically defined by return to work. Studies that have included spouses have focused on male patients and their female spouses, thus possibly confounding actor-observer reactions to illness with gender differences (e.g., Coyne & Smith, 1991; Waltz, Badura, Pfaff, & Schott, 1988). Family dynamics surrounding illness and lifestyle issues could be different across ages (Reich & Zautra, 1995) and genders (Badger, 1992). Therefore, we chose to study elderly couples since at older ages there are more women among coronary heart disease (CHD) patients and most men and women are fully or at least partly retired.

Research questions

On the basis of the SRM, regarding possible ways in which illness perceptions are related to spouse support, along with the literature reviewed, the following research questions were formulated:

- (I) *Do patient and spouse perceptions of the patient's heart disease differ and in what ways?* Following previous reports of similarities between partners' perceptions of chronic disease (Richards et al., 2004; Roberto, Gold, & Yorgason, 2004), including causal attributions of heart disease (Bar-On & Cristal, 1987; Weinman et al., 2000), we expect to find many similarities. However, studies have also reported that a certain percentage of couples hold dissimilar illness perceptions (Figueiras & Weinman, 2003; Heijmans et al., 1999).
- (II) (a) *Are patients' perceptions of their heart disease associated with their perceptions of their spouse's support and undermining?* (b) *Are spouses' perceptions of the patient's heart disease associated with their reports of support and undermining, which they provide?* Patients who perceive their disease negatively (e.g., strong identity, chronic timeline, severe consequences) may expect much support and feel that they are receiving insufficient support and are experiencing undermining whereas partners who perceive the patient's disease negatively may feel that they are providing support yet also admit to

being critical and undermining, possibly because they feel that the patient is not taking their condition seriously enough.

- (III) *Are differences between patient and spouse perceptions of the patient's heart disease associated with spouse support and undermining?* Spouse maximization of the seriousness of the illness could lead to overprotection on the part of the spouse and therefore also to criticism of the patient's behavior while minimization could result in the spouse feeling less need to provide support and the patient feeling misunderstood and criticized.
- (IV) *Are there specific patterns of patient and spouse perceptions, in addition to maximizing/minimizing, that are likely to be associated with support and undermining?* This question is based on the suggestion of Figueiras and Weinman (2003) who noted that there were few differences in outcomes between patients from couples with a similar positive and those with a conflicting representation of MI. Therefore, they proposed that it may make a difference which member of the couple has the more positive view.

Method

Participants

Participants were 50 couples in which one and only one of the partners was diagnosed with some form of CHD. In 38% of the couples, the woman was the patient. Participants' mean age was 78.1 (SD = 6.9). All but one patient were over 65 (the one exception was a 62-year-old retired woman) and most (84%) were not working. The participants' mean level of education was 11.9 years (SD = 3.7). Patients and spouses did not differ significantly in their age or level of education.

Instruments

Illness perceptions were assessed using a modified version of the Illness Perception Questionnaire (IPQ; Weinman, Petrie, Moss-Morris, & Horne, 1996). The IPQ was developed to fit diverse patient populations and has been tested on different chronic illness populations, including patients with heart disease. The IPQ assesses several dimensions of the illness perception, using the following subscales: (1) the *identity* subscale was comprised of two parts: (a) symptoms – this subscale included 14 symptoms, 11 from the original IPQ and 3 that are more specific to heart disease ('pain' was replaced by 'chest pains'; 'quick heart beat' and 'sweating' were added). Participants were asked to mark each symptom which they (their partner) experienced *as part of their (their partner's) heart disease*; and (b) acceptance of identity – this subscale was added to the current study in order to capture the additional component of the illness identity in the commonsense model, its label. Since the label, 'heart disease', was by definition of the sample known to the participants, we used three items to assess the degree to which they accepted this identity as part of their own identity: (i) 'When I think of myself, my heart disease comes to mind', (ii) 'Thoughts about my heart disease suddenly cross my mind' (spouse version: 'I find my partner thinking of his/her

heart disease'), (iii) 'I act as if my heart disease never happened' (reverse coded; $\alpha = 0.70$ for the patients and 0.72 for spouses; all reliabilities reported are for the present sample); (2) The *timeline* subscale included three items that referred to the perception of the patient's heart disease as chronic versus short-lasting ($\alpha = 0.71$ for the patients and 0.69 for spouses); (3) The *consequences* subscale included five items ($\alpha = 0.70$ for both patients and spouses) that referred to the perceived severity of the disease and its impact on the patient's life; (4) the *personal controllability* subscale included three items ($\alpha = 0.62$ for patients and 0.70 for spouses) that referred to perceived personal control over the heart disease problem and its symptoms. These subscales include several changes from the original IPQ: the data were collected before the revised version of the IPQ was published (IPQ-R, Moss-Morris et al., 2002) but analyzed after it was published. We removed two items from the consequences subscale and two from the controllability subscale because they decreased the internal reliabilities of these scales; these were items that were also omitted from the IPQ-R. We used only personal controllability items.

In addition, we assessed perceived causes of the patient's heart disease, focusing on stress and lifestyle (the two most common causes mentioned in studies of attributions for heart disease – see review by French, Senior, Weinman, & Marteau, 2001). We used items from the two main factors identified by Weinman et al. (2000) in both patient and spouse data. Stress was assessed with one item because the stress factor in that study included two additional work-related items which were irrelevant in our elderly sample; lifestyle was based on the five-item lifestyle factor from that study, which included poor diet, being overweight, eating fatty-food, smoking, and lack of exercise ($\alpha = 0.68$ for patients and 0.72 for spouses). All items were rated on a 5-point scale from 1 = 'strongly disagree' to 5 = 'strongly agree', except for the identity subscale, which was rated on a yes/no response scale. Several items were reversed according to the IPQ coding instructions, so that high scores indicated a strong identity/acceptance of identity, chronic timeline, severe consequences, strong belief in personal controllability, and greater attribution to lifestyle or stress.

Spouse support and *spouse undermining* were assessed using scales from Vinokur and Vinokur-Kaplan (1990), which include nine items for support ($\alpha = 0.80$ for patients and 0.83 for spouses) and six items for undermining ($\alpha = 0.70$ for patients and 0.69 for spouses). The scales were adapted to ask specifically about support and undermining in coping with heart disease. Support items asked about the provision of information and encouragement in coping with the disease, caring, understanding, helping, etc.; undermining items asked about spouse reactions such as criticism, anger, and disagreement with the patient's lifestyle, way of coping, and attention to the illness. Patients were asked about received support, i.e., they rated the degree to which their spouse provided the behavior indicated in each item. Spouses were asked about provided support, i.e., they rated the degree to which they engaged in each type of support/undermining behavior. All items were rated on a scale from 1 = 'not at all' to 5 = 'very much' so that high scores indicated more support/undermining.

Procedure

Recruitment was aimed at elderly adults in order to reach similar numbers of female and male patients and not to bias the study with differences related to work status. However, since it is not easy to find couples in which one and only one has been diagnosed with heart disease and both partners are willing and cognitively capable of participating in a research interview, recruitment was carried out in several ways: (1) Several health clinics in retirement housing centers were contacted (all residents of these centers were independently living elderly). The clinic personnel determined which resident couples were eligible for participation in the study according to their medical records and contacted them. Following their agreement to participate, the residents provided their contact information, which was forwarded to the researchers. Thirty-one couples (62%) were recruited in this fashion from six retirement centers; (2) Ten additional couples (20%) included a patient who had undergone coronary artery bypass surgery about a year before the interview. These patients were contacted by the nurse in a clinic that provided follow-up care after the surgery; (3) Nine additional couples were recruited by the snowball method, using initial contacts located by the interviewers. These were community residents and the information on their heart disease was self-reported (all but one of these patients reported having had an MI and/or a bypass surgery).

Interviews were conducted at the participants' homes by two interviewers who interviewed both members of the couple simultaneously but in separate rooms in order to ensure the confidentiality and independence of their responses. This is important, especially in light of Thompson et al.'s (1995) experience with heart disease patients and their spouses: they interviewed couples together and, after the fact, regarded this as a limitation, since participants may have been less open when discussing some issues in front of their partner.

The interviewer first explained the purpose of the study and then asked the participant to sign an informed consent form. Due to the age of the participants, the interviewer provided the participant with response scales in large print. S/he then read aloud each question and noted the response on the questionnaire.

Statistical analyses

Mean scores of the items in each subscale were computed and used in the following analyses to test the four research questions: (1) The differences between the two groups, patients and spouses, on these scores were tested using paired samples *t*-tests; (2) Correlations were computed between the study measures within and between the two groups. Differences between the two groups in the sizes of the correlations were tested using Fisher's *Z* transformations; (3) Difference scores in the illness perceptions were computed by subtracting the spouse's rating from the patient's rating so that positive difference scores indicate spouse minimization and negative difference scores indicate spouse maximization; (4) A series of multiple linear regression analyses were conducted in which the amount of variance in each measure of support and undermining explained by

patient and spouse illness perceptions and the interaction between them were tested separately for each type of perception. In order to limit the extent of multicollinearity in these analyses we centered the variables at their means by standardizing them (Cohen & Cohen, 1983). Significant interaction effects were decomposed using simple slopes analyses based on the regression equations: we computed predicted support/undermining scores for four combinations of patient/spouse illness perception scores – patient low/spouse low, patient low/spouse high, patient high/spouse low, and patient high/spouse high (where high and low are defined as two standard deviations above and below the mean for each measure in each group, respectively).

Due to the size of the sample we also conducted power analyses using Gpower software (Erdfeelder, Faul, & Buchner, 1996), which showed a power of 0.80 for a correlation of $r=0.34$ or higher and a power of 0.71 for a medium-sized correlation of $r=0.30$. For the regression analyses, there is a power of 0.82 for multiple correlations (R^2) of 0.20 or more. Therefore, for all smaller correlations, there is a substantial risk of type II error, i.e., of failing to find a relationship that exists in the population. In addition, due to the risk of type I error when conducting multiple tests, i.e., reporting a relationship that does not exist in the population, we mainly discuss patterns of relationships across several illness perceptions.

Results

The differences and correlations between patients' and spouses' perceptions of the patient's heart disease provide answers to our *first research question* (Table I); overall, the partners' perceptions concurred, and even when they differed significantly in their level, they were strongly correlated. The latter pattern was apparent in the illness identity measures; patients reported fewer symptoms

Table I. Means and standard deviations (SD) of study measures and t -tests and correlations comparing patient's ($n=50$) and spouse's data ($n=50$).

Measure	Range of response scale	Patients'		Spouses'		t -value	Correlation
		Mean	(SD)	Mean	(SD)		
Identity (symptoms)	1–14	4.76	(2.77)	5.72	(3.62)	–2.11*	0.52***
Acceptance of identity	1–5	2.45	(1.00)	2.81	(1.12)	–2.23*	0.40**
Timeline	1–5	3.51	(1.05)	3.23	(1.01)	1.67	0.36**
Consequences	1–5	2.47	(0.90)	2.56	(0.85)	–0.73	0.49***
Personal control	1–5	3.34	(0.93)	3.48	(1.03)	–0.71	0.05
Caused by lifestyle	1–5	2.29	(0.82)	2.06	(0.79)	1.76	0.36*
Caused by stress	1–5	3.44	(1.33)	3.50	(1.25)	–0.27	0.23
Spouse support	1–5	3.14	(0.92)	3.48	(0.98)	–2.13*	0.25
Spouse undermining	1–5	1.75	(0.71)	1.93	(0.76)	–1.62	0.43***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

related to their heart disease and lower acceptance of the illness identity in comparison with their spouses, but nonetheless, patients with a stronger identity were more likely to have a spouse who also reported a strong patient illness identity. Patient and spouse perceptions of the perceived controllability of the disease were unrelated. In addition, patients reported receiving less support than their spouses reported giving. Finally, patient and spouse reports of undermining were correlated.

Table II presents correlations among the measures in each group. The correlations between various illness perceptions were in the direction expected; for example, among patients and spouses, a stronger identity and a longer timeline were correlated with more severe consequences. Among patients only, a longer timeline also correlated with less personal control. None of these correlations differed significantly between the samples. It is interesting to note that the patients' perceptions of spouse support and undermining were negatively correlated whereas support and undermining were uncorrelated among spouses.

Our *second research question* involved the associations between illness perceptions and spouse support (Table II). Among patients, a more *positive* illness perception, i.e., a shorter timeline and more personal control, was related to reports of receiving *more* support from their spouse. In contrast, among spouses, a more *negative* illness perception, i.e., a stronger identity and more severe consequences, was related to reports of providing *more* support. In addition, patients who perceived a stronger identity reported receiving more undermining. Spouses who perceived a stronger identity and those who attributed the disease to lifestyle or stress also reported providing more undermining.

We also computed correlations between patients' illness perceptions and spouses' reports of support/undermining and vice versa (data not shown). All but one of these correlations were nonsignificant (the exception was a positive correlation between spouse identity and undermining as reported by the patient; $r = 0.33$, $p < 0.05$).

Our *third research question* investigated the correlations of the differences between patients and spouses in their illness perceptions and their reports of support and undermining (Table III). The results were in line with those presented in Table II; spouse maximization of the identity, identity acceptance, and timeline (i.e., a more negative perception than the patient's) was related to spouse provision of *more* support, whereas patient minimization regarding timeline (shorter compared with spouse) and controllability (greater) was correlated with patients' ratings of *more* support received. Spouses who attributed the illness to lifestyle more than the patient did also reported providing more support *and* more undermining. Undermining reported by the patient was unrelated to any other difference score.

Our *fourth research question* involved the relation between specific patterns of patient and spouse illness perceptions and the support measures. The regression analyses testing these relationships are presented in Table IV. In many of these models, the results resembled those reflected in the correlations presented above: spouse's provision of support was related only to their own perceptions of the

Table II. Correlations among study measures (patients' data above the diagonal, spouses' data below the diagonal; $n = 50$ for each group).

Measure	Identity	Acceptance of identity	Timeline	Consequences	Personal control	Caused by lifestyle	Caused by stress	Spouse support	Spouse undermining
Identity	–	0.55***	0.19	0.61***	-0.22	0.20	0.19	-0.06	0.37**
Acceptance of identity	0.50***	–	0.12	0.53***	-0.04	0.20	0.19	0.08	0.23
Timeline	0.33*	0.22	–	0.29*	-0.28*	0.07	0.28*	-0.40**	0.17
Consequences	0.58***	0.73***	0.37**	–	0.08	0.17	0.36*	0.01	0.27
Personal control	0.12	0.11	-0.05	0.18	–	-0.09	0.04	0.54***	-0.18
Caused by lifestyle	0.17	0.19	-0.23	0.08	-0.02	–	0.05	-0.04	0.10
Caused by stress	0.46**	0.37**	0.26	0.53***	0.34*	0.23	–	-0.11	0.23
Spouse support	0.36*	0.35**	0.15	0.44**	0.15	0.25	0.42**	–	-0.32*
Spouse undermining	0.36*	0.23	-0.06	0.19	0.09	0.41**	0.31*	0.20	–

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table III. Correlations between patient–spouse differences^a in illness perceptions and spouse support ($n = 50$).

Difference between patient and spouse in the perception of . . .	Spouse support reported by the . . .		Spouse undermining reported by the . . .	
	Patient	Spouse	Patient	Spouse
Identity	-0.21	-0.30*	-0.05	-0.19
Acceptance of identity	-0.07	-0.30*	0.13	-0.05
Timeline	-0.41**	-0.30*	0.03	0.07
Consequences	-0.19	-0.27	0.22	-0.05
Personal control	0.31*	0.02	-0.03	-0.16
Caused by lifestyle	0.01	-0.28*	-0.02	-0.33*
Caused by stress	-0.15	-0.26	0.02	-0.17

^aIllness perception differences scores were computed by subtracting the spouse's rating from the patient's rating so that positive difference scores indicate spouse minimization and negative difference scores indicate spouse maximization.

* $p < 0.05$; ** $p < 0.01$.

patient's illness identity, acceptance of the identity, and consequences and their attribution to lifestyle and their reports of undermining were also related to their attributions to lifestyle; patients' perceptions of received support were related to their perceptions of a (shorter) timeline and to their own feelings of controllability. In addition, several models revealed a significant interaction between patients' and spouses' illness perceptions, indicating that there is a specific combination of these perceptions that significantly differs in the level of spouse support or undermining.

Patients who reported receiving less support were those who perceived the illness to be chronic whereas their spouses perceived a short timeline (Figure 1a). When patients and spouses were consistent in their attributions to lifestyle (high or low), the patient perceived less support (Figure 1b) and more undermining (Figure 1f), and conversely, when only one partner attributed the disease to lifestyle, the patient perceived more support and less undermining. Spouses provided most support when both partners attributed the disease to stress and least support when they did not attribute the disease to stress but the patient did (Figure 1c).

Perceptions of controllability were related to undermining as reported by the spouse; it was lowest when the patient but not the spouse perceived high controllability (Figure 1d). Spouses also reported less undermining in couples in which both partners perceived low consequences (Figure 1e).

Discussion

Following the diagnosis of a serious illness such as heart disease, both patients and their partners reconstruct the past in an attempt to understand how and why it happened, thus forming an intelligible, coherent story (Cowie, 1976). However, the patient and the spouse may form different stories. Our data showed that

Table IV. Summary of multiple linear regression analyses of patient and spouse illness perceptions and their interaction as variables explaining the variance in patient and spouse reports of spouse support ($n = 50$ patients and 50 spouses).

Illness perception	Identity		Acceptance of identity		Timeline		Consequences		Personal control		Cause lifestyle		Cause Stress	
	Received (patient)	Provided (spouse)	Received (patient)	Provided (spouse)	Received (patient)	Provided (spouse)	Received (Patient)	Provided (spouse)	Received (patient)	Provided (spouse)	Received (patient)	Provided (spouse)	Received (patient)	Provided (spouse)
Spouse support														
Patient (P)	-0.29	0.31	0.03	-0.11	-0.31*	-0.32	-0.12	-0.09	0.54***	0.17	0.11	-0.16	-0.02	0.07
Spouse (S)	0.23	0.40*	0.13	0.40*	0.16	0.26	0.27	0.48**	0.04	0.15	0.03	0.34*	0.16	0.46**
P × S	0.12	-0.45	-0.02	-0.04	0.33*	-0.09	-0.01	0.05	-0.09	0.12	-0.50**	-0.13	0.26	0.30*
R^2	0.05	0.18*	0.02	0.14*	0.29**	0.09	0.05	0.21**	0.30**	0.07	0.23**	0.11	0.08	0.26**
Spouse undermining														
Patient (P)	0.57	0.36	0.21	0.12	0.03	-0.07	0.32	0.05	-0.19	-0.19	-0.01	-0.17	0.15	-0.04
Spouse (S)	0.18	0.31	-0.02	0.18	0.13	-0.04	-0.07	0.22	-0.11	0.12	0.04	0.45*	0.17	0.28
P × S	-0.33	0.30	0.09	0.02	-0.20	-0.23	-0.14	-0.29*	0.09	0.35*	0.40**	0.09	-0.10	-0.12
R^2	0.18*	0.15*	0.06	0.06	0.07	0.05	0.10	0.12	0.06	0.15	0.16*	0.20*	0.08	0.10

* $p < 0.05$, ** $p < 0.01$; *** $p < 0.001$.

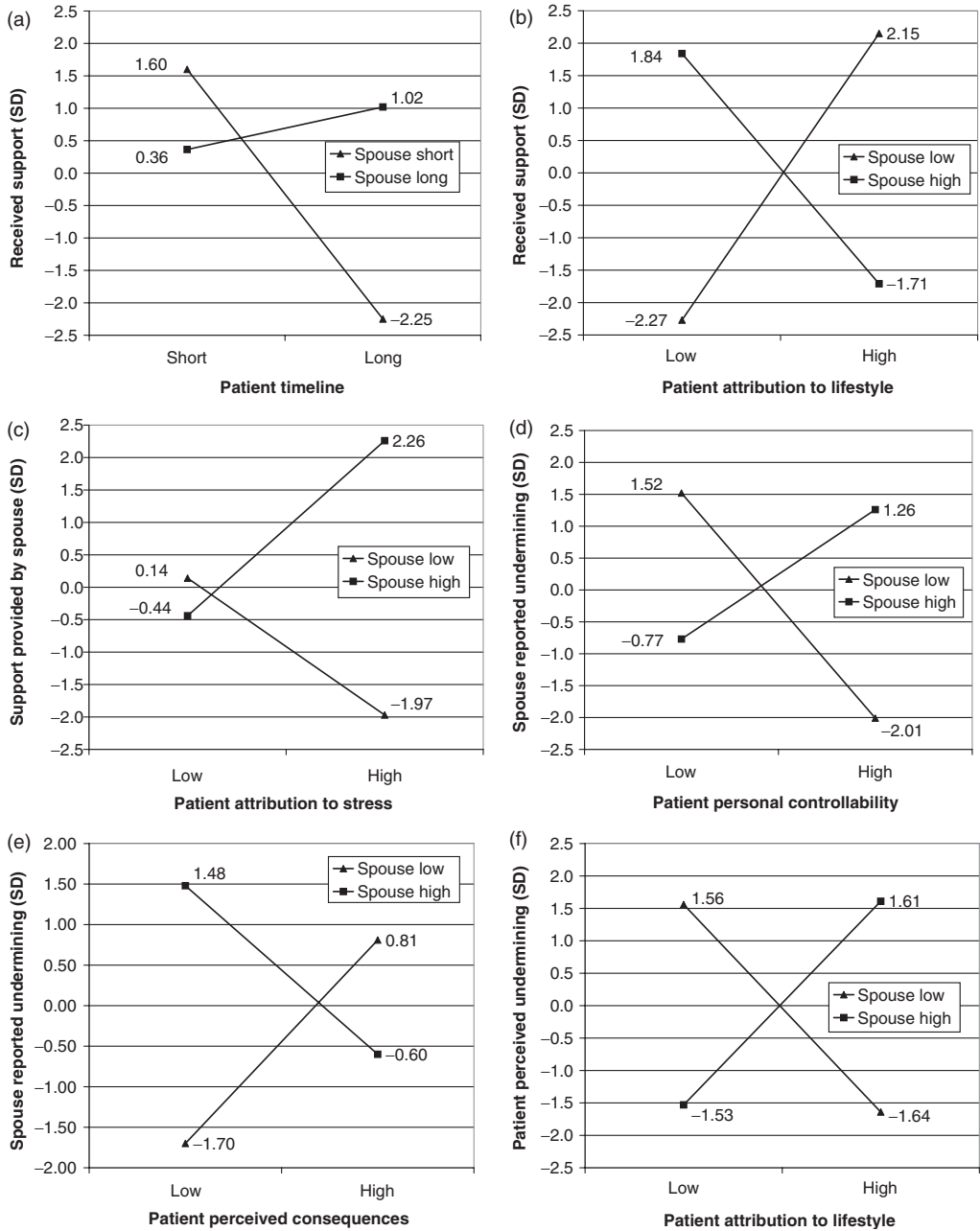


Figure 1. Simple slopes analyses of patient and spouse illness perceptions that interacted in their effects on spouse support (Figure 1a-c) or undermining (Figure 1d-f). Note: Y axes represent standardized scores on support/undermining computed for low (-2 SD) and high (+2SD) patient and spouse illness perception scores. X axes represent the patients' perceptions, and the separate lines in each figure represent low and high spouse perceptions.

spouses' perceptions, similar to the patients', are internally reliable and intercorrelated in theoretically logical ways and therefore can be studied and compared with the patients' perceptions. The main findings provide initial answers to the four research questions, as described below.

- (1) *Do patient and spouse perceptions of the patient's heart disease differ?* Patients' and spouses' perceptions of the patient's heart disease were mostly similar, with one exception – patients reported a weaker illness identity. This difference may be due to an actor–observer attribution bias, which led spouses to form a coherent picture of the disease as part of their view of the patients' identity, i.e., a dispositional attribution that can reduce the uncertainty involved. Patients, in contrast, were less likely to do so as they had more to gain from a weaker and hence possibly a more flexible view of their disease.
- (2) *Are illness perceptions associated with perceptions of spouse support and undermining?* Spouses who perceived the patient's disease negatively and were more likely to attribute it to stress reported that they provided *more* support but also *more* undermining. In contrast, patients who perceived the disease negatively reported receiving *less* support. In addition, spouse's attributions to lifestyle were also related to more undermining, which is reasonable – if they believed that lifestyle factors caused the disease, they were probably more attentive to, and critical of, the patient's current lifestyle. In general, correlations between illness perceptions and support/undermining were more evident in the spouses' data; among patients, only two illness perceptions were correlated with support. Spouse behaviors may be more closely related to their perceptions whereas patients may have judged received support in coping with the disease in a wider context, not only in light of their subjective perceptions of the illness. Another possible explanation for the relationship between positive patient perceptions, such as their perception of personal controllability, and their reports of greater spouse support may be that patients who believe they have control also recruit support more actively or, in general, cope more actively and therefore need less support (and then, compared with their needs, they feel sufficiently supported).
- (3) *Are differences between patient and spouse perceptions of the patient's heart disease associated with spouse support and undermining?* Most of the findings were similar to those described above, showing that more negative spouse perceptions (spouse maximization) were related to more support provided by these spouses. However, as noted before by Heijmans et al. (1999), who used dissimilarity scores, there may be a methodological problem with these scores since spouses' maximizing or minimizing may have been due to already extreme scores of some of the participants. In addition, this method contrasts couples with differing views of the illness with couples with similar views, thus ignoring possible differences between partners' similar positive views and similar negative views, as reported by Figueiras and Weinman (2003).
- (4) *Are there specific patterns of patient and spouse perceptions, in addition to maximizing/minimizing, that are associated with support and undermining?*

Due to the large number of analyses involved, this part of the study should be considered exploratory. Two general conclusions emerge. First of all, even when controlling for the other partner's perceptions, spouse negative perceptions of the disease were related to greater provision of support; spouse attribution to lifestyle was related to more undermining; and patient controllability was related to greater perceived support. Second, the findings show the plausibility of using tests of interactions between patients' and spouses' perceptions as a method that overcomes the potential problems with difference scores noted earlier and enables one to identify specific combinations of patient and spouse perceptions that have a unique contribution to support or undermining. For example, patients perceived less support when they perceived their disease to be chronic while their spouses believed in a shorter timeline; when the patient perceived the timeline to be short, their perception of spouse support did not vary with the spouse's timeline perception. These findings suggest that spouse minimization may give the patient a feeling of not being taken seriously, in line with Heijmans et al. (1999) study that found spouse minimization to be in general more detrimental to patients than maximization.

In addition, when patients attributed the illness to stress, spouses who held the same attribution provided more support compared with spouses who did not attribute the disease to stress. Stress may be perceived as an attribution that does not carry blame but requires support to cope with. When both partners agree, this may reflect their knowledge of a serious source of stress in the patient's pre-disease life.

Spouses provided more support and more undermining when they attributed the disease to lifestyle, regardless of the patient's perception. However, patients perceived *less* support and, correspondingly, *more* undermining when *both* partners attributed the disease to lifestyle. Though these findings seem contradictory at first, patients who attributed the illness to lifestyle factors may need support in order to maintain a healthier lifestyle, and paradoxically may have felt that they are receiving more appropriate support from spouses who did not examine their lifestyle too closely. When both partners were highly attentive to lifestyle issues, this may have led to the highest levels of friction between the partners, at least as perceived by the patient. When both partners did not attribute the disease to lifestyle, the lower support and greater undermining reported by the patients may reflect friction related to other explanations for the disease.

Spouses reported providing less undermining if they perceived low control while the patient perceived high control. These patients may have been more active in coping with their disease, thus surpassing their partners' (low) expectations and leaving little room for criticism. This is in contrast with the greater undermining reported by spouses when both partners held similar views of the disease controllability – similar positive views may lead to conflicts around how to exercise control whereas similar negative views may

lead to helplessness, which leaves more room for criticism of the patient's way of coping.

Spouses also provided most undermining if they perceived severe consequences but the patients did not and least undermining when both of them perceived low consequences. A possible explanation is that when both partners felt that the disease is not much of a problem in their lives, there was little room for criticism whereas when spouses perceived severe consequences, they felt helpless, as suggested above, and hence were more critical.

In sum, the main findings of this study are that patients' and spouses' perceptions are related to the way they perceive support received/provided from the spouse and that it may be important to assess specific combinations of patient and spouse perceptions and not only the general direction of differences between them (i.e., minimizing or maximizing). These findings are important because both patient/spouse incongruence and support/undermining have been found to affect medical, functional, and emotional outcomes; previous studies have shown that dissimilarities in partners' illness perceptions are often related to patient and/or spouse distress or well-being. Low family support has been related to patients' and spouses' distress (Baider, Ever-Hadani, Goldzweig, Wygoda, & Peretz, 2003) and distressed spouses provide less support (Helgeson, 1993a). Our findings suggest that spouses' illness perceptions and incongruence between their perceptions and those of the patients may underlie problems in support provision, which can lead to problems in psychological adjustment. These findings underscore the importance of attending to both partners' perceptions when planning interventions aimed at improving recovery from, and adjustment to, illness. Interventions that are tailored to spouse perceptions can improve spouses' ability to provide optimal support and refrain from undermining.

Limitations and strengths of the study

First, our study was limited by the small sample size. The relatively large number of correlations computed means that some significant correlations could be due to chance (i.e., type I errors). Therefore, we emphasized patterns of correlations that were consistent in their direction and thus provided greater confidence in the validity of the findings.

Second, the study was cross-sectional. As a result, there is no way of knowing, for example, whether a negative perception of the disease led to feeling not being supported enough or whether a supportive spouse led the patient to perceive the situation in less negative terms.

The small sample size and the study design were due in part to the nature of our study population, which also had several advantages. Many studies on illness perceptions of cardiac patients have recruited them shortly after a heart attack or surgery, thus potentially confounding the results with initial reactions to an acute stressor. This concern is especially important when investigating couples. Leventhal et al. (1985) argued that as the family moves from crisis to normality there is more potential for conflict. Helgeson (1993a) reported that dialogue

between partners surrounding the patient's illness still occurred several times a month on average even a year after the MI. Therefore, extending illness perception research, especially in the context of the family, to more than the initial adaptation period is important even though methodologically it is more difficult.

In addition, previous studies have focused on male patients shortly after an MI or cardiac surgery, thus potentially confounding patient-spouse differences with gender differences or differences in rehabilitation (return to work) in different ages and genders. To overcome this problem, our sample included both male and female patients and all were retired. However, the sample size did not allow for subgroup analyses. There are indications that women who have experienced an MI receive less support from their husbands (Kristofferzon, Lofmark, & Carlsson, 2003), including less support in implementing lifestyle changes (Badger, 1992) compared with male patients. Therefore, it is important not to limit studies of heart disease patients to male patients and, when possible, to explore gender differences.

A third study limitation was that all data were self-reported, which could bias reports of support and undermining. In order to reduce such bias, the partners were interviewed separately, which was especially important in the case of undermining. Most previous studies have either not described whether partners were separated when they were interviewed, or have handed out or mailed questionnaires with no control over the conditions in which they were filled in.

Finally, the focus on several types and perspectives on social support is important. Spouse support and undermining were uncorrelated, suggesting that spouses view them as alternative ways of caring whereas for the patients they are opposites (they were negatively correlated). Therefore, interventions should focus on factors that may diminish undermining behaviors since they are negatively perceived by the patient and therefore achieve the opposite effect of that intended by the spouse.

Conclusions

Ogden (1995) criticized health psychology for moving from a view of the person as a passive responder to the environment to a view of an intra-active self-regulating person, a view that removes the external world from the psychological equation. The findings of this study, which was aimed at one aspect of the external world, portrayed a complex picture, similar to that reported by Heijmans et al. (1999): Similarities and dissimilarities between partners in their perception of the disease can have profound implications but the combinations that are most significant may depend on the type of illness and the dimension of the illness perception. The complexity is expected: Illness perceptions refer to very complex psychological and physiological systems; adding family members into this arena complicates matters by an order of magnitude. However, families are part of the patients' real-life coping with disease, and further explorations of these issues will

enable researchers and clinicians to plan interventions that are better suited to families' needs.

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