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Dyadic Influence of Hope and Optimism on Patient Marital Satisfaction among Couples with Advanced Breast Cancer

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Abstract

PURPOSE—An estimated 10–40% of breast cancer (BC) patients report negative changes to their partnered relationships. Literature suggests that for these patients, marital satisfaction is related to depression and other quality of life factors which are associated with survivorship and treatment response. However, existing literature does not provide a clear explanation of the factors that strengthen vs. create strain in couples facing cancer. Given the benefits of a satisfying relationship to patient quality of life, it is important to better understand factors that put patients at greater risk for marital difficulties. This study examined the differential and combined roles of hope and optimism among BC patients and their partners on patient marital satisfaction.

METHOD—Fifty-six breast cancer patient-partner dyads completed study questionnaires as part of a larger study. Regression analyses were used to examine the main and interaction effects of patient and partner hope and optimism on patient marital satisfaction.

RESULTS AND CONCLUSION—Higher patient and partner hope predicted greater patient marital satisfaction, whereas optimism did not. These results are divergent from the literature on optimism and well-being, which shows the importance of studying these two traits concurrently. Interaction effects suggest certain combinations of patient and partner hope and optimism are more beneficial than others for patient marital satisfaction and suggest a dyadic approach is important for investigation of well-being in breast cancer.

Keywords

hope; optimism; breast cancer; well-being; dyads; marital satisfaction

Breast cancer (BC) has been shown to both strain and strengthen marital relationships [1–2]. Some BC couples state that coping with cancer together has strengthened their relationship [3–4]. In coping with the struggles of breast cancer, some women report

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Conflict of Interest

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positive changes in their relationships with others and with themselves, including an increase in posttraumatic growth [5]. However, estimates suggest that 10–40% of BC patients report negative changes to their partnered relationships [4, 6]. Marital dissatisfaction in patients with BC has been associated with other psychosocial factors such as emotional distress/increased risk of depression [7] and quality of life [4]. These factors in turn are predictive of physical health outcomes in BC patients. For example, poor quality of life has been predictive of treatment response, survival duration [8–9], and tumor response to treatment [10] in advanced BC. Likewise, depression has been associated with higher risk of death [11]. Thus, it is important to examine patient marital satisfaction in couples facing BC. Existing literature does not provide a clear explanation of the factors that strengthen vs. create strain in couples confronting cancer.

Recent health psychology research has moved away from an exclusive focus on negative predictors and started to explore the role of positive psychological constructs in order to explain differences in quality of life among cancer patients [12]. Two positive psychological constructs, hope and optimism, have been shown to be protective in the face of adversity [13] and may explain differences in quality of life [12–13]. For example, high levels of both hope and optimism are associated with better quality of life in those with burn injuries, arthritis, and cancer, when compared to those with lower levels of these traits [14–17]. Similarly, research indicates BC patients with higher hope or optimism have greater quality of life and greater satisfaction in personal relationships [17–20]. Despite this previous research, few studies have been conducted and further investigation is warranted.

Hope and optimism are two distinct constructs, although they are moderately correlated ($r \approx .50$) [21, 22], and both address one's beliefs about goal-related outcomes. Hope is defined as one's belief in the capability to achieve goals, particularly in situations where one can influence outcomes through the use of personal abilities or strengths [22]. Conversely, optimism is a generalized expectancy for positive future outcomes, regardless of how controllable they are; thus, optimism may predict thoughts, feelings, and behaviors in both controllable and uncontrollable situations. Therefore, the two traits may result in the use of different coping mechanisms: active, problem-solving coping for higher-hope individuals and adaptive emotion-focused coping for higher-optimism individuals [14, 23–24]. For example, higher-hope individuals may be more likely to engage in more activities with their spouse to achieve their goal of a better relationship. Conversely, higher-optimism individuals may not change their behavior but instead change how they think about the situation to influence the relationship [14]. Hope and optimism have been found to be associated with similar constructs regardless of the controllability of the situation; however, this may only be due to the similarities between these two traits, which are rarely studied together. Research suggests that when hope and optimism are studied concurrently, they might correlate differently with outcomes [22]. Because each trait may influence different goal-specific expectancies, hope and optimism may be differentially beneficial depending on the controllability of the situation; hope may be more beneficial in more controllable situations whereas optimism may be more beneficial in less controllable situations [22]. Therefore, it is important to examine the relative associations of hope and optimism on patient marital satisfaction concurrently.

Although hope and optimism have been predictive of better outcomes in BC patients, there is evidence that the levels of hope and optimism of those closest to the patient may also influence patient outcomes [3,25]. To date, no study has investigated the role of partner hope and optimism on patient marital satisfaction. A dyadic approach is important because BC has been shown to impact the couple both on the individual level and as a unit [26,28].

The present study addresses the gaps in the literature presented above. Specifically, this study focuses on marital satisfaction in a population where satisfaction is important to health, helps us better understand relative associations of hope and optimism as protective factors for marital satisfaction, and importantly, achieves these goals with a unique dyadic study design.

In studying marital satisfaction in BC, two important variables to evaluate are age and psychological adjustment. Age may relate to adjustment to breast cancer, and is especially important to consider when the age range examined is wide [29]. Negative mood can reduce spousal support and quality of life post-diagnosis [30] and has been found to negatively affect the quality of the marriage of breast cancer patients [32]. Therefore, these two variables are included as covariates in the present study.

In investigating the differential relationships of patient and partner hope and optimism with marital satisfaction in BC patients, we hypothesized that:

1. Higher hope and optimism would predict greater patient marital satisfaction, but that when studied together, optimism would be more predictive of patient marital satisfaction because of the uncontrollability of BC.
2. Partner hope and optimism would predict patient marital satisfaction, independent of the patients' hope and optimism.
3. Mismatched levels of hope and optimism between partners (i.e., high-hope partner + low-hope patient) would predict less patient marital satisfaction.

Methods

Participants

Participants were 56 patient-partner dyads enrolled in a larger study investigating couples' coping with BC. Patients had primary BC and were: 1) undergoing treatment, 2) married or in live-in romantic relationship, and 3) able to read and write in English. The patient's partner had to be willing to participate and able to read and write in English. As a first step, and in accordance with recruitment practices at the cancer center, oncologist approval was sought before contact any patient.

The mean age for patients was 52.3 years ($SD = 12.14$). The mean age for partners was 52.7 years ($SD = 12.15$; Table 1). Average time since diagnosis was 36.99 months, and 73% of the patients self-reported as Stage IV (Table 1). Seventy percent of the patients were experiencing a recurrence of breast cancer. The majority of patients (95%) were receiving both hormonal therapy and chemotherapy (Table 2). The other 5% were receiving either

hormonal therapy, chemotherapy, or radiation therapy. Of note, one dyad consisted of a same-sex couple.

Procedure

Approval was received from the Institutional Review Board at IUPUI and from the IU Simon Cancer Center Scientific Review Committee. Patients were approached by research assistants present during their appointment, as part of an established recruitment system used for behavioral research at the cancer center. Patients meeting criteria were provided study information and encouraged to consult with their partner about joint participation. In most cases, the partner was present at the time of contact and agreed to participate along with the patient. When this was not the case, the research assistant contacted the patient by phone to confirm the interest of both in participating. When both partners agreed to participate, they were mailed the informed consent and separate survey packets. Participants were asked to read and sign the informed consent statement before completing any of the forms. All measures were administered to both individuals. Assessments took approximately 60 minutes to complete and participants were reimbursed \$30 each.

Of 112 couples approached, 21 refused to participate (18.75%). Health problems, daily responsibilities, and low study interest were among reasons for refusal. Assessment packets were mailed to 91 couples who were eligible and agreed to participate. Of these, 23 couples (25.27%) did not return packets even after receiving a reminder phone call. In twelve dyads, either the patient or the partner did not return the packet though their spouse did return the packet. These dyads were excluded from analyses. Following this, the dyad participation rate was 61.54% ($n = 56$ of the 91 who initially agreed to participate). Participants with complete data did not differ from those with missing data on any clinical or demographic variables. These procedures for recruiting family members of cancer patients are regularly used in psycho-oncology research and typically yield similar or lower percentages of participation [33,34].

Measures

Personal health rating—Patient's personal health rating was measured with the question, "how would you rate your overall health?" The item used a 5-point Likert scale ranging from 1 (poor) to 5 (excellent). Personal health rating was used as a proxy for performance status, an important correlate of well-being in cancer [35].

Psychological adjustment—Psychological adjustment was assessed using the Profile of Mood States-Standard Form (POMS) [36]. The measure consists of 65 adjectives; respondents use a 5-point Likert-type scale to rate how they felt in the past week. This measure yields six factor-analytically derived subscales, which are summed to yield a Total Mood Disturbance Score [36,37]. Higher scores indicate worse psychological adjustment. We followed Andrykowski and colleagues' formula [38, 39] for scoring the POMS. Cronbach's alpha for patient psychological adjustment was .86.

Hope—Patient and partner hope was measured using the 12-item Adult Hope Scale (AHS) [15]. Four items measure pathways thinking and four items measure agency with four filler

items. Agreement with each statement is ranked on an 8-point Likert-type scale ranging from one (*definitely false*) to eight (*definitely true*). Higher scores indicate greater hope. Cronbach's alphas for patient and partner hope were 0.82 and 0.83 respectively.

Optimism—Patient and partner optimism was measured using the Life Orientation Test-Revised (LOT-R) [14]. The LOT-R is 10-items, including four filler items. Agreement with each statement is ranked on a 5-point Likert-type scale ranging from zero (*strongly disagree*) to four (*strongly agree*). Higher scores indicate greater optimism. Cronbach's alphas for patient and partner optimism were .79 and .88, respectively.

Patient marital satisfaction—The Marital Adjustment Test [40] was used to measure patient marital satisfaction. This measure consists of 15 items. Scores range from 2 to 158; higher scores indicate greater marital satisfaction. Cronbach's alpha for patient marital satisfaction was .73 in the present study.

Analytic approach

A multiple regression was used to predict patient marital adjustment using SPSS Version 17. In the first step, patient age, psychological adjustment, and personal health rating were entered as control variables. In the second step, we tested hypotheses one and two by entering the mean-centered hope and optimism scores for both partner and patient [Aiken, West, 1991]. In step three, we tested hypothesis three by entering all possible two-way multiplicative interaction terms of mean-centered scores for patient and partner hope and optimism (e.g., patient hope x partner optimism). Graphical displays were created to understand significant interactions and post-hoc analyses of simple slopes were conducted using values one standard deviation above and below the mean for partner hope and optimism. Because of the small sample size, a liberal p value ($p < .10$) was used to make decisions regarding the inclusion of covariates and the discussion of findings.

Results

The patient and partner means and standard deviations for study variables were similar to those reported in other studies of medically ill populations [17, 22, 39]. Means, standard deviations, and correlations are presented in Table 3. Patients and partners reported similar levels of hope ($p > .05$) and optimism ($p > .05$). Patient age was marginally correlated with patient marital satisfaction ($r = 0.26, p = 0.10$) and was included in the analyses because it has been cited as an important covariate in the literature [17, 29, 42–43]. Psychological adjustment was not related to marital satisfaction but greater psychological adjustment was related to higher patient hope and optimism. Our proxy for performance status, patients' self-reported health, correlated with patient hope and optimism, and partner hope. Partners' hope and optimism were related, as were patients', but they were not correlated with each other's. Higher patient hope, but not optimism, was related to higher patient marital satisfaction; partner hope and optimism were both related to greater patient marital satisfaction.

Main effects of hope and optimism with patient marital satisfaction (Hypotheses 1 and 2)

The regression predicting patient marital satisfaction is presented in Table 4. In Step 1, the main effects of patient age, personal health rating, and psychological adjustment were not significant, $F(3,55) = 2.2, p > 0.05$. In Step 2, including patient and partner hope and optimism significantly accounted for an additional 28.6% of the variance in patient marital satisfaction, $R^2 = 0.28, p = 0.01$. However, only patient hope significantly predicted patient marital satisfaction, $\beta = 0.36, p = .01$.

Exploratory analysis of interaction effects with patient marital satisfaction (Hypothesis 3)

Exploratory analyses were conducted to assess interaction effects between patient and partner hope and optimism on patient marital satisfaction. For the exploratory analyses, a third regression step was added which included all possible two-way interactions between patient/partner hope/optimism (see Table 4). The third regression step did not predict significantly more of the variance in patient marital satisfaction, $R^2 = 0.11, p = 0.07$. However, two interactions were significant predictors of patient marital satisfaction: patient optimism X partner optimism ($\beta = -0.56, t = -2.81, p = 0.01$; Table 4; Figure 1) and patient optimism X partner hope ($\beta = 0.58, t = 2.76, p = 0.01$; Table 4; Figure 2).

Simple slopes analyses were used to further examine these interactions. Among patients with low-hope partners, there was a significant negative relationship between patient optimism and patient marital satisfaction, $t = -2.632, p = 0.01$. In contrast, there was a non-significant trend toward a positive relationship between patient optimism and patient marital satisfaction for patients with high-hope partners, $t = 1.97, p = 0.06$. These results suggest that when the partner is hopeful, patient marital satisfaction is highest when the patient is an optimist. In other words, when there is congruence between the patient's optimism and the partner's hope, patient marital satisfaction is the highest. Diminished patient marital satisfaction occurs when there is a mismatch between patient optimism and partner hope. To illustrate, low patient optimism and low partner hope results in higher patient marital satisfaction than when high partner hope is linked with low patient optimism because of the congruence in levels of either trait.

Among patients with a high-optimism partner, there was a negative relationship between patient optimism and patient marital satisfaction, $t = -2.64, p = 0.01$. This suggests that if her partner is an optimist, the more optimistic the patient is, the less satisfied she is with her relationship. Among patients with a low-optimism partner, there was a positive relationship between patient optimism and patient marital satisfaction which approached significance, $t = 1.99, p = 0.05$. This suggests that if her partner is a pessimist, greater patient optimism is linked with greater patient marital satisfaction. Taken together, it appears that the highest patient marital satisfaction occurs when the patient is low in optimism but the partner is high in optimism.

Discussion

This was the first study to examine the impact of hope and optimism on patient marital satisfaction in cancer patients using a dyadic approach. Understanding the relationship of

these personality factors with patient marital satisfaction, which is known to predict quality of life [39], may help to identify those at risk for decreased quality of life and could benefit from targeted interventions [44]. We hypothesized that hope and optimism would partially account for differences in patient marital satisfaction, such that higher levels of hope and optimism would predict greater patient marital satisfaction.

Results indicated that hope was a strong predictor, but optimism did not significantly predict patient marital satisfaction. The findings with hope are consistent with previous research by Stanton and colleagues [45]. Additionally, these results provide initial evidence supporting the application of hope theory to social relationships by Snyder and Feldman [19], suggesting that individuals high in hope are likely to have more satisfactory personal relationships.

Theory suggests that hope and optimism are differentially beneficial across contexts, and that hope may be more adaptive in situations that are under one's control than optimism [22]. This may explain the dissimilar relationships of hope and optimism with patient marital satisfaction. Given these women were several years post-diagnosis and reported a high level of health (see Table 1), it is likely they felt in control of life circumstances. Thus, hope may be more beneficial in this context of women with advanced BC.

The Influence of Partner Personality on Patient Marital Satisfaction

We hypothesized that in addition to the patient's personality traits, their partner's traits would relate to the patients' marital satisfaction [3]. However, none of the partner personality traits correlated directly with patient marital satisfaction, suggesting that partner traits alone are not protective. The role of partner traits with patient marital satisfaction is complex and warrants further study. Our results suggest a synergistic relationship where combinations of patient and partner personality produce an outcome that is unobtainable by the traits independently.

In considering the combinations of patient and partner optimism (Figure 1), elevated patient marital satisfaction is more likely if one member of the dyad possesses high optimism. Higher patient optimism is linked to greater patient marital satisfaction; yet, it appears patient marital satisfaction is optimal when the optimist is the partner rather than the patient. Because optimism has been conceptualized as positive beliefs about the world, it may be burdensome for cancer patients to maintain this belief given their cancer experience. Hence, they may be most satisfied with their relationships when they can experience their own pessimism but still enjoy the benefits of having a partner who maintains a positive outlook about the world.

These interactions suggest that patient optimism interacts differently with partner hope and optimism with regard to patient marital satisfaction. Optimism in both members of the couple appears to operate in a **complementary** manner. Patients experience the most satisfaction in their relationships when they can rely on their partner to maintain the optimistic outlook about the world.

However, patient marital satisfaction appears to also be affected by the **congruence** between patient optimism and partner hope: patient marital satisfaction is highest when the patient's beliefs about the world are congruent with the partner's beliefs. Previous research has conceptualized optimism as positive beliefs about the world, and hope as positive beliefs about the self [22]. An optimistic patient would have positive beliefs about the world around them, which may include their partner, and a high-hope partner would have positive beliefs about him or herself. Thus, there would be congruence between the beliefs in this type of pair, which is associated with higher patient marital satisfaction (Figure 2). In a parallel way, pessimistic patients would experience congruence with a less hopeful partner, which is associated with higher patient marital satisfaction. As these two constructs become more incongruent, patient marital satisfaction declines.

These complex relationships suggest that higher levels of these protective factors do not necessarily yield more positive results in the case that high levels are incongruent with those of their partner. Although theory suggests that adjustment is a dyadic process [46], few studies have investigated how one partner affects the other. Future research should investigate other traits that mutually contribute to the dyadic relationship. Certain combinations of patient and partner personality may be more ideal than others, and personality may influence other factors that predict relationship satisfaction or quality of life. For example, recent research has demonstrated that among couples confronting BC, different combinations of coping and appraisals are more beneficial to the patient and her partner [47]. This is important as coping strategies may be related to personality, such that those high in hope may make different appraisals and choose different coping strategies, possibly leading to differential patterns of adjustment. Future research should attempt to address the relationships between these factors in order to best predict successful dyadic adjustment in the face of cancer and other illness.

Limitations

This study used a cross-sectional design, thus it is not possible to draw conclusions about patient marital satisfaction, hope and optimism before cancer diagnosis, or changes in any of these variables in response to a cancer diagnosis. It should be recognized that this study was underpowered due to the small sample size. However, given the small sample size, it would be *less* likely to detect relationships and synergistic effects, when in fact significant effects were detected, making the present findings encouraging. It is plausible that given a larger sample size the effects would be expected to be even more prevalent; conversely there is always a possibility of type 1 error.

The voluntary nature of participation was a limitation to the study. Those who chose to participate may have been physically healthier patients despite having advanced cancer. This assumption is supported by the fact that the majority of participants rated their health as at least "good". This may be abnormal for an advanced cancer population and the results may not generalize to all women with advanced cancer. The patients may have participated because they were struggling and needed a way to express their struggles; conversely, they may have been better adjusted than the average patient. Because they had to participate with their partner, these dyads may have either wanted a venue to discuss problems or were

reasonably adjusted in their marital relationship. Because of this self-selection, the relationships between personality traits and marital satisfaction may be unique to this set of BC and their partners. Additionally, this study examined a homogeneous sample of predominately middle-aged, educated, white women, with advanced breast cancer, and therefore cannot be generalized to any other demographic group. A more diverse sample may have yielded different results, although there is currently no consistent evidence of this. Future research should aim to replicate these findings with a larger more representative sample.

Future directions for Research and Practice

These results demonstrate the importance of studying hope and optimism concurrently to evaluate their differential relationships with important outcomes. Findings suggest that patient hope is an important protective factor for patient marital satisfaction in BC. With this, it is possible to identify those individuals who lack this personal resource and, after screening, target interventions to patients and partners with low hope. This might call for new interventions that incorporate personality traits as most focus solely on coping. It seems prudent to also use a dyadic-approach in these interventions. Future research should continue to identify psychological, relational, and health outcomes where hope may be beneficial to provide a better understanding of the protective nature of this trait.

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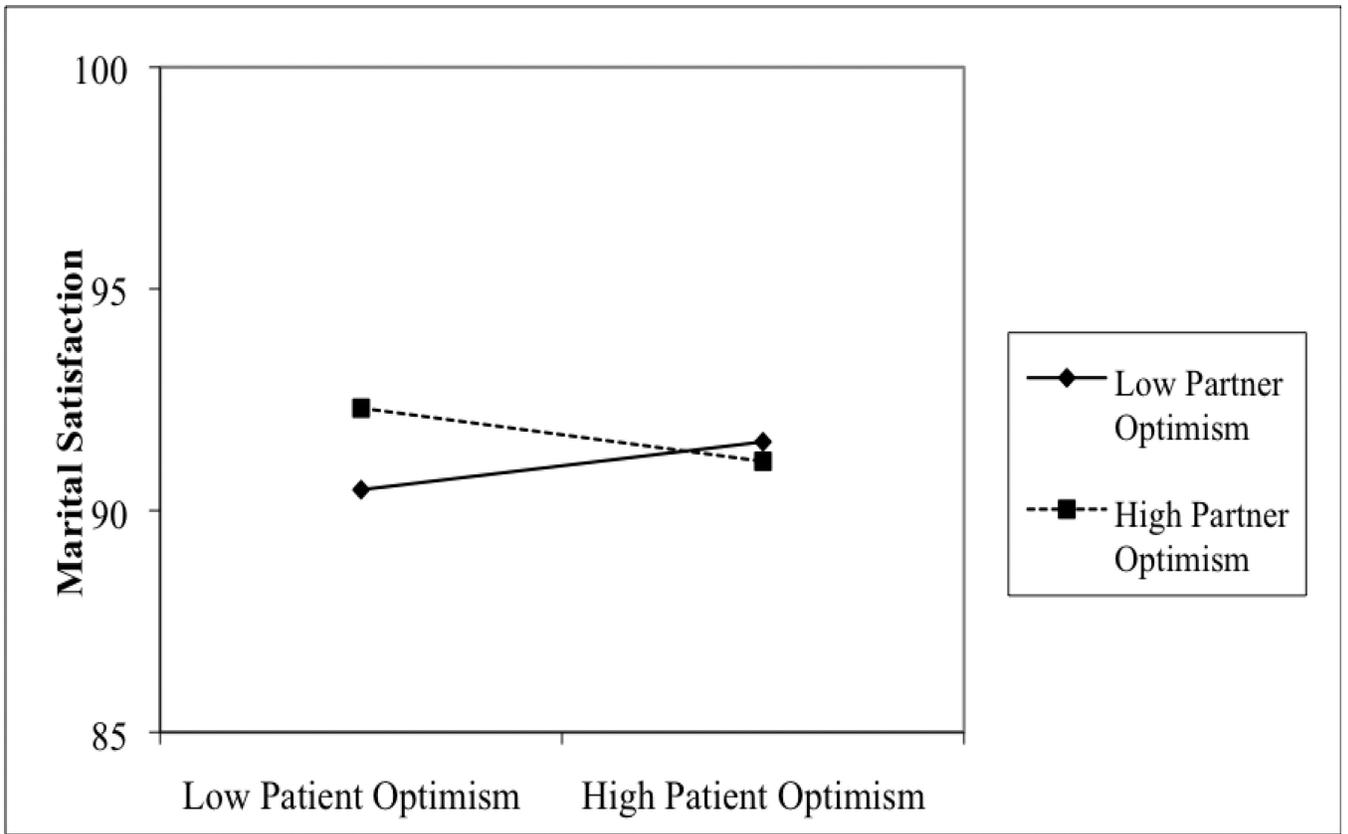


Figure 1.
Patient Optimism X Partner Optimism Interaction with Patient Marital Satisfaction

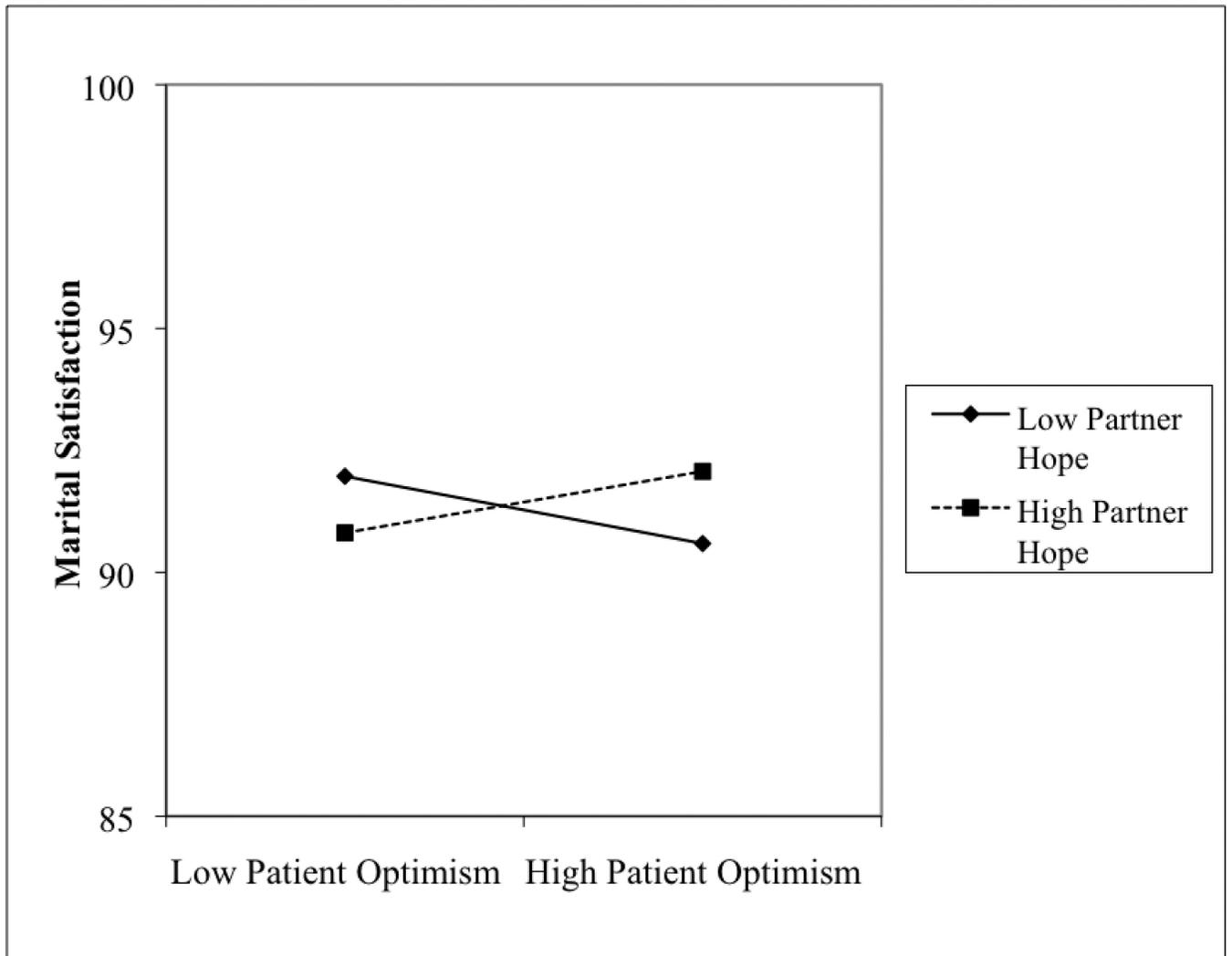


Figure 2.
Patient Optimism X Partner Hope Interaction with Patient Marital Satisfaction

Table 1

Sample Demographics

	Patient		Spouse	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	52.16	12.14	52.74	12.15
	<i>N</i>	%	<i>N</i>	%
Race				
Caucasian	55	98.2%	56	100.0
Other race/ethnic minority*	1	1.8%	0	0
Education				
Some High School	2	3.6%	2	3.6
High School Graduate	16	28.6%	13	23.2
Some College	8	14.3%	8	14.3
College Graduate	16	28.6%	17	30.3
Some Graduate School	2	3.6%	3	5.4
Post Graduate	12	21.4%	13	23.2
Personal Health Rating				
Poor	2	3.6%	1	1.8
Fair	9	16.1%	5	8.9
Good	27	48.2%	24	42.9
Very Good	11	19.6%	17	30.3
Excellent	6	10.7%	9	16.1

* Note: The participant did not specify their racial identity.

Table 2Illness Characteristics of Patients^a

Variable	Frequencies
Severity of cancer	
Stage 0	1.6%
Stage I	1.6%
Stage II	4.7%
Stage III	20.3%
Stage IV	71.9%
Time since diagnosis	
Less than 1 year	43.4
1–2 years	15.1
2–5 years	28.3
6–10 years	9.4
More than 10 years	3.8
Treatments ^b	
Mastectomy	36.9%
Lumpectomy	21.5%
Radiation Therapy	52.3%
Chemotherapy	95.3%
Hormone Therapy	33.8%
Breast cancer	
First	30.3%
Recurrence	68.7%

Notes:

^a as reported by patients;^b patients could report more than one treatment

Table 3
Correlations among measures of patient and partner personality and patient adjustment variables

PT	Age	Health	AHS(PT)	LOT-R (PT)	MAT	POMS	AHS (PR)	LOT-R(PR)
Age	---	-.21	.10	.04	.26*	-.26*	-.01	.12
Health	---	---	.39***	.35**	.14	-.37***	.24**	.17
AHS	---	---	---	.40**	.33**	-.44**	.14	.00
LOT-R	---	---	---	---	.12	-.34*	.13	.18
MAT	---	---	---	---	---	---	.42**	.43**
PR								
AHS							---	.61**
LOT-R								---
Mean	52.19	3.17	50.45	17.38	120.75	50.77	50.57	16.04
SD	12.14	0.96	7.79	3.95	23.00	23.92	7.79	4.43
A			.823	.790	.729	.863	.828	.883

Note. **PT.** = Patient; **Health** = Personal Health Rating; **AHS** = Adult Hope Scale; **LOT-R** = Life Orientation Test; **POMS** = Profile of Mood States; **MAT** = Marital satisfaction Test; **PR.** = Partner;

* $p < .10$;

*** $p < .05$

Table 4

Hierarchical Regression with Marital Satisfaction

	β	R ²	R ²	R ² p	Df	F	p
Step 1		0.114	0.114	.096	3, 55	2.2	.096
Patient Age	0.33						.025
Patient Health Rating	0.24						.112
Psychological Distress	0.07						.626
Step 2		0.377	0.286	.264	7, 55	4.2	.001
Pt. Hope	0.22						.149
Pt. Optimism	0.28						.066
Pt. Hope	0.36						.013
Pt. Optimism	-0.71						.590
Step 3		0.485	0.108	.074	11, 55	3.7	.001
Pt. Opt. X Pr. Opt.	-0.56						.007
Pt. Opt. X Pr. Hope	0.58						.009
Pt. Hope X Pr. Hope	-0.28						.092
Pt. Hope X Pr. Opt.	0.19						.249

Note. Pt. = Patient; Pr. = Partner; Opt. = Optimism. Values in bold are significant.