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Relationship intimacy processes during treatment for couple-focused interventions for prostate cancer patients and their spouses

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Abstract

Objective: In a previously published trial, we compared the effect of an intimacy-enhancing therapy (IET) and a General Health and Wellness intervention (GHW) on psychological and relationship outcomes among men diagnosed with localized prostate cancer and their partners. Results suggested partial effects of IET on psychological adjustment and relationship satisfaction. To understand these partial effects, the first aim of this study was to evaluate self-disclosure, perceived partner disclosure, perceived partner responsiveness, and levels of intimacy rated after sessions, and the second aim of this study was to examine the role of pre-treatment holding back on these intimacy processes.

Methods: A total of 156 couples who participated in treatment reported on self- and perceived partner disclosure, responsiveness, and intimacy during sessions. Participants rated levels of holding back before treatment. Linear growth models were estimated using multilevel modeling. Each intimacy process variable was predicted to be a function of time, role, condition, and all interactions among these variables. The effects of own and partner pretreatment holding back on average intimacy process and change in intimacy process were tested in moderated growth models.

Results: Self- and perceived partner disclosure were significantly higher during IET sessions than GHW sessions. Self-disclosure, perceived partner disclosure, and perceived partner

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responsiveness increased in both IET and GHW. Intimacy was not higher and did not increase more in IET compared with GHW. Participants who held back reported that their partner disclosed less to them during sessions, perceived that their partner was less responsive to them during sessions, and reported less intimacy during sessions. Partners of participants who held back were seen as less responsive and their interactions were seen as less intimate.

Conclusions: Although IET focused on enhancing couples' responsiveness and intimacy, it did not have a stronger effect on these processes during sessions than GHW. The lack of an effect may, in part, be because of the fact that IET did not help those couples who may have been in the greatest need for it because they held back more.

Keywords

Couples therapy; Intimacy processes; Prostate cancer; Treatment mechanisms

Along with the emotional and practical stressors that accompany cancer, the unique long-term treatment effects of prostate cancer such as impaired sexual, urinary, and bowel functioning,^[1,2] can adversely affect relationship outcomes for both patient and partner.^[3–5] Sharing concerns and reactions about the experience with one's partner, if responded with care and understanding, is thought to be key to reducing adverse effects on the marital relationship. Indeed, both qualitative^[6] and quantitative studies^[7] have described the importance of open and responsive communication. Despite this, some couples struggle to communicate, many holding back sharing cancer-related concerns.^[8–10]

Although the quality and frequency of communication contribute to adaptation (eg, relationship satisfaction), there have been relatively few empirically based couple-focused interventions targeted at prostate cancer. Two studies have targeted patients' communication about sexual concerns.^[11,12] These interventions did not improve relationship satisfaction or quality of life. Northouse et al^[13] evaluated an educational intervention which encouraged teamwork and living with uncertainty. Patients in the intervention group reported more relationship communication than controls; however, there were no benefits on patients' quality of life. Based on the Relationship Intimacy Model of Cancer Adaptation^[14] and the Interpersonal Process Model of Intimacy,^[15] we evaluated an intimacy-enhancing therapy (IET) for men diagnosed with localized prostate cancer and their partners.^[16] IET focused on improving couples' ability to share thoughts and feelings regarding cancer, promote mutual understanding and support, develop constructive solutions to cancer concerns, and enhance relationship intimacy.^[16] Couples learned effective communication skills and used these skills to discuss their concerns about cancer. IET's impact on psychological and relationship satisfaction was compared with a General Health and Wellness intervention (GHW) and Usual Care (UC). Spouses enrolled in IET had greater increases in relationship satisfaction immediately post-treatment. Among couples in shorter relationships, patients in IET reported an increase in psychological adjustment compared to GHW. However, there were no IET treatment effects on patients' relationship satisfaction and patients' or partners' general psychological adjustment, depression, cancer-specific distress, or cancer concerns. Taken together, these findings suggest that IET had limited effects on couples' distress and relationship satisfaction, and showed benefit for spouses and for couples in longer marriages.

Kazdin,^[17] in his review of the mechanisms of therapy, argues that partial effects warrant explanation by taking a closer look at what occurred during sessions. For IET, presumed mechanisms were intimacy processes, specifically self-disclosure, perceived partner disclosure, perceived responsiveness, and intimacy felt during treatment sessions. The goal of this study is to examine these processes during treatment sessions for prostate cancer patients and their partners who participated in a randomized clinical trial of a couple-based intervention.^[16] We had 2 aims. Aim 1 evaluated differences between IET and GHW with regard to intimacy processes across the 5 in-person sessions. Because the goal of IET was to enhance sharing, responsiveness, and intimacy, we hypothesized that perceived self-disclosure, perceived partner disclosure, perceived partner responsiveness, as well as relationship intimacy experienced during sessions would be higher and increase more over sessions among couples enrolled in IET compared to GHW. Aim 2 examined the association between pretreatment holding back and intimacy processes across sessions and to determine whether these associations differed between IET and GHW. As holding back is associated with less self-disclosure and lower relationship intimacy for prostate cancer patients and their partners,^[8,9] we proposed that individuals reporting more holding back before treatment began would engage in less self-disclosure and lower relationship intimacy across sessions. Because holding back on the part of one partner impacts their own disclosure and responsiveness, we proposed that individuals whose partners reported more holding back would accurately perceive this by reporting less partner disclosure and perceived partner responsiveness across sessions. Finally, we predicted that there would be group differences in these associations. Specifically, high levels of holding back were expected to predict a greater increase in self- and partner disclosure, responsiveness, and intimacy in IET than GHW. This prediction was made because the focus of IET was partially on fostering greater disclosure and responsiveness and reduce holding back, whereas intimacy behaviors were not the focus of GHW.

Methods

Participants

Men diagnosed with localized prostate cancer and their partners were recruited from 5 cancer centers in the Northeastern United States and three community hospital settings. The eligibility criteria were: treatment for nonmetastatic prostate cancer within the last 18 months; Eastern Cooperative Oncology Group^[18] performance status score of 0 or 1; cohabitating for 1 year with a significant other of either sex; either patient or spouse had elevated cancer-specific distress reflected by a score at recruitment 16 (patient) or 17 (spouse) on the Impact of Events Scale^[19] (thus, one or both partners had an elevated score on the cancer distress scale); 18 years of age; no self-reported hearing impairment, and; lived within a 1-hour commuting distance of the center. The study was approved by each site's institutional review board. Full recruitment details and the study CONSORT are provided in the larger study.^[16] Participants consisted of 156 couples (80 in IET, 76 in GHW).

Procedures

Participants completed measures of level of disclosure, responsiveness, and intimacy they experienced during sessions. Participants also completed baseline surveys at home before the start of therapy.

Interventions

More detailed information about IET and GHW can be found in Manne et al.^[16] Treatments consisted of five 90-minute in-person couples' sessions and one 30- to 45-minute booster call. Both interventions were manualized and are available upon request. IET content focused on improving couples' ability to share thoughts and feelings regarding cancer, promoting mutual understanding and support, facilitating constructive discussion of cancer concerns, and enhancing emotional intimacy. GHW's focus was on a healthy lifestyle. The first 3 sessions focused on dietary assessment, setting goals, adopting a plant-based diet using the American Institute of Cancer Research guidelines,^[20] and relaxation skills. The last 2 sessions focused on education about the importance and types of physical activity and increasing regular physical activity. Full details about treatment attendance, fidelity, and evaluation are contained in Manne et al.^[16]

Measures

Intimacy processes in sessions

Self-Disclosure.^[8] Three items assessed the degree to which participants disclosed thoughts, information and facts, and feelings during the session on a 7-point Likert scale (1=not at all, 7=very much). This measure was adapted from Laurenceau et al's work^[21] and has been used in our previous work.^[8] Across sessions, Cronbach alphas ranged from .92 to .96 for patients and .86 to .96 for spouses.

Perceived Partner Disclosure.^[7,22] Three items assessed the degree to which participants perceived their partner disclosed thoughts, information and facts, and feelings during the session on a 7-point Likert scale (1=not at all, 7=very much). Across sessions, Cronbach alphas ranged from .93 to .97 for patients and from .92 to .96 for spouses.

Perceived partner responsiveness.^[7,22] Three items assessed the degree to which participants felt accepted, understood, and cared for during the session on a 7-point Likert scale (1=not at all, 7 = very much). Across sessions, Cronbach alphas ranged from .88 to .93 for patients and .92 to .95 for spouses.

Perceived Intimacy.^[7,22] Participants rated how close they felt to their partner during the session using two items on a 7-point Likert scale (1=not at all, 7=very much). Across sessions, Cronbach alphas ranged from .84 to .91 for patients and .91 to .96 for spouses.

Moderator (Baseline only)

Holding back.^[9] Participants rated the degree to which they held back sharing 13 specific cancer-related concerns with family and friends on a 6-point Likert scale (0=not at all, 5=a

lot). Because not all concerns were endorsed, an average across concerns endorsed was used. Cronbach alpha was .89 for patients and .86 for spouses.

Covariates

Demographic information.: Age, ethnicity, sex, education level, income, occupational status, relationship (married, cohabitating), and length of marriage/relationship were collected.

Medical Information.: Gleason score, disease stage, treatment type, and time since the initiation of treatment were collected from the medical chart. Patients completed the Erectile Function, Bowel function, and Urinary Function subscales of the International Inventory of Erectile Function^[23] on the baseline. Coefficient alphas ranged from .63 to .95.

Approach to analyses—To address Aim 1, we estimated growth models using multilevel modeling with SPSS Version 24 (SPSS Inc, Chicago, IL). In these models, each of the intimacy process variables were predicted to be a function of time (measured in weeks since session 1 and grand-mean centered), role (coded patient=1, spouse=-1), condition (coded IET=1, GHW=-1), and all 2- and 3-way interactions among these variables. Covariates included in all analyses were the person's age, ethnicity (coded white not-Hispanic=1, other=-1), income (coded in units of \$10,000), work status (full or part-time = 1, other=-1), cancer stage, and score on the bowel function measure.¹ Because all continuous variables were centered and effect coding was used, the intercepts refer to the grand mean of the outcome. Random effects included in each model were intercept variances for patients and spouses and covariance between them, as well as residual variances for patients and spouses, and the correlation between them.²

Aim 2 was addressed within an actor-partner interdependence model framework^[24] by including the person's own holding back sharing concerns at baseline (ie, the actor effect) and the partner's holding back sharing concerns (ie, the partner effect) as moderating variables in the basic growth models from Aim 1. Time, role, and condition were included in the analyses, as were all 2-, 3-, and 4-way interactions with the exception that we did not include interactions involving both the actor and partner effects for holding back. The same set of covariates and random effects as in analyses for the Aim 1 were included.

Results

Descriptive Information

Table 1 shows the sample descriptive information. The mean age of patients and spouses respectively was 61 and 57 years. Most participants were White, had completed a college degree or higher education and were married ($M_{\text{Relationship length}} > 27$ years). The vast majority had prostatectomy (85%) and Stage 2 disease (71.3%). All patients had an Eastern

¹In our initial analysis, erectile function and urinary function were included as covariates in models. Results did not suggest that they were associated with outcomes, and these variables were omitted from future analysis.

²Models that also included separate random slopes for time for patients and spouses, as well as the covariance between them were run initially. Analyses of only two of the outcome measures converged to acceptable solutions, and in neither was there evidence of significant slope variance. Analyses of the other two outcomes did not converge.

Cooperative Oncology Group performance status of 0. Table 2 presents the means, standard deviations, and zero-order associations between the primary study variables.³ The intimacy process variables were strongly positively associated with one another, and each variable was moderately negatively associated with baseline levels of holding back.

Aim 1: change in intimacy processes over sessions and differences by treatment condition

Table 3 presents the results for the growth models of the intimacy process variables. The significant effects for time indicate that self-disclosure and perceived partner disclosure increased across the 5-weekly sessions, but perceived partner responsiveness and intimacy did not. The absence of a time by condition interaction implies that these increases did not differ between IET and GHW. However, the condition main effects for self- and perceived partner disclosure suggest that both types of disclosure were higher on average across the 5 sessions in IET relative to GHW (self-disclosure, $M_{\text{IET}}=19.50$, $se=.23$, $M_{\text{GHW}}=18.67$, $se=.27$; perceived partner disclosure, $M_{\text{IET}}=19.13$, $se=.26$, $M_{\text{GHW}}=18.12$, $se=.30$). Of the key predictors, the only other significant effect was a role difference for perceived partner responsiveness such that patients ($M=19.44$, $se=.19$) reported higher perceived partner responsiveness than spouses ($M=18.96$, $se=.25$).

The bottom half of Table 3 shows the effects of the covariates on the intimacy variables and the dyadic correlations. Perceived partner responsiveness and intimacy were lower for couples where the patient's cancer was diagnosed at a later stage, and perceived partner responsiveness was higher in couples where bowel function scores were higher. The dyadic correlations of the intercepts (ie, correlations between the partners' mean scores) were substantial; if one person reported high intimacy process scores (ie, disclosure, responsiveness, and intimacy) across the 5 sessions, the other person tended to do so, as well. The time-specific correlations, measuring whether the persons' unique behaviors at a particular session were similar after accounting for the predictors and average tendencies, were smaller.

Aim 2: moderator effects for holding back in intimacy processes over treatment sessions

To address the second aim, we examined whether holding back at baseline moderated the effects of time, role, and treatment condition on intimacy processes (Table 4). Although not shown in the table, these analyses included the same covariates and random effects as the growth models used to address the first aim. Because effects not involving holding back (eg, the condition effect for partner disclosure) were discussed with respect to the first aim, they are not repeated here.

As can be seen in the table, there were statistically significant negative actor effects for holding back on each of the intimacy variables and 2 significant partner effects for perceived partner responsiveness and intimacy. The actor effect for holding back indicates that individuals who held back more at baseline also reported lower average self-disclosure during sessions. This actor effect was moderated by role, and simple

³To handle the non-independence of observations over time and across partners, the bivariate correlations in Table 2 were computed within an MLM framework by standardizing both variables and then using one variable to predict the other. Random effects in these models were structured in the same manner as in the primary analyses.

slopes analyses indicated that it was the patients who reported holding back more who reported significantly lower self-disclosure, $b = -1.124$, $se = .271$, $t[101] = 4.149$, $P < .001$. The holding back coefficient was not statistically significant for spouses, $b = .264$, $se = .239$, $t[91] = 1.106$, $P = .272$. The actor holding back–effect was also moderated by both time and condition. When pretreatment holding back was low, there was no evidence of changes in self-disclosure over time among participants in IET ($b = .000$, $se = .039$, $t[674] = .01$, $P = .995$), but in GHW there was evidence of an increase in self-disclosure over sessions, ($b = .118$, $se = .054$, $t[757] = 2.177$, $P = .030$). In contrast, when holding back at baseline was high, self-disclosure increased significantly over time in IET ($b = .168$, $se = .046$, $t[620] = 3.65$, $P < .001$), but not in GHW ($b = .072$, $se = .057$, $t[755] = 1.28$, $P = .202$).

Finally, there was evidence of a role by partner holding back interaction. Simple slopes analyses indicated that spouses whose partners (ie, the patients) reported holding back more reported lower self-disclosure ($b = -.556$, $se = .249$, $t[93] = 2.238$, $P = .028$), whereas the effect of partner holding back on the person's self-disclosure was positive, but not significant for patients ($b = .235$, $se = .252$, $t[94] = .93$, $P = .353$). Thus, for patients, having a spouse that held back more at baseline did not significantly predict the patient's self-disclosure, but for spouses, if the patient held back more at baseline, the spouse reported less self-disclosure.

Results for perceived partner disclosure showed a significant actor effect for holding back such that individuals who reported holding back more at baseline reported lower average partner disclosure across the therapy sessions. There was also evidence that changes in perceived partner disclosure over time were moderated by actor holding back. When holding back was low, there was no evidence of change over time in perceived partner disclosure, ($b = -.001$, $se = .039$, $t[625] = .029$, $P = .977$). However, when baseline holding back was high, perceived partner disclosure increased over time ($b = .179$, $se = .042$, $t[645] = 4.220$, $P < .001$).

Perceived partner responsiveness was negatively predicted by both actor and partner holding back such that individuals who themselves reported holding back more perceived lower partner responsiveness, and individuals whose partners reported holding back more perceived lower partner responsiveness. However, the partner effect of holding back was moderated by condition (see the top panel of Fig. 1). Simple slopes indicated that the effect of partner holding back on perceived partner responsiveness was significant in IET ($b = -.780$, $se = .222$, $t[145] = 3.516$, $P = .001$), but not in GHW ($b = .027$, $se = .234$, $t[180] = .116$, $P = .908$). These coefficients suggest that individuals in IET whose partners held back more reported lower partner responsiveness, but having a partner who held back more at baseline was not associated with reports of partner responsiveness in GHW. This finding suggests that there is some degree of accuracy in ratings of partner responsiveness in IET, as individuals who held back more at baseline were viewed as being less responsive by their partners during IET sessions.

Finally, the pattern of results for intimacy mirrored those for perceived partner responsiveness. Both actor and partner holding back predicted average intimacy such that individuals who held back more at baseline reported lower average intimacy, and individuals whose partners held back more also reported lower intimacy. Likewise, the condition by partner holding back interaction emerged for intimacy (see the bottom panel of Fig. 1).

In IET, the slope for partner holding back was statistically significant ($b=-.288$, $se=.078$, $t[133]=3.703$, $P<.001$). In GHW, the slope for partner holding back was not significant ($b=-.035$, $se=.080$, $t[164]=.441$, $P=.660$). These results suggest that having a partner who held back sharing concerns before treatment began was negatively associated with a person's perceived intimacy in IET, but not in GHW.

Discussion

Our results were partially consistent with our predictions, in that average levels of self- and perceived partner disclosure were significantly higher across the 5 sessions of IET relative to GHW. However, other findings were not consistent with our predictions. First, self-disclosure and perceived partner disclosure increased across sessions in both study conditions, suggesting that GHW, a treatment that did not specifically target couples' communication, enhanced some aspects of couples' communication during sessions. Second, relationship intimacy was not higher among couples in IET, and relationship intimacy did not evidence greater increases among IET couples as compared with GHW.

The second set of findings regarded the important role of pretreatment holding back sharing cancer concerns in intimacy processes, both in terms of one's own behavior and perceptions of one's partner's behavior during sessions. As predicted, patients who reported holding back before treatment began reported less self-disclosure during sessions. However, spouses who reported more holding back before treatment began did not report less self-disclosure during sessions. Holding back impacted spouses' disclosure less strongly than patient's disclosure. Pretreatment holding back was associated with perceptions of one's partner's behavior and of the relationship. Participants who held back more before treatment began reported that their partner disclosed less to them during sessions, perceived that their partner was less responsive to them during sessions, and reported less intimacy during treatment sessions. There were also a number of partner effects that suggested that participants who reported holding back were seen by their partners as being less responsive and their interactions were seen as less intimate. As noted in other studies, holding back has effects not only on the person engaging in it, but also on their partner.^[25] Overall, this pattern of results suggests pretreatment holding back had a detrimental impact on communication and closeness during couples' therapy sessions, consistent with the large body of observational research suggesting that holding back is associated with relationship intimacy and relationship satisfaction among couples coping with cancer.^[8,9,26]

Despite our findings that holding back was associated with couple communication and closeness during sessions, and despite the focus of IET on open disclosure, empathic listening, and responsiveness, there were limited data to indicate that IET had stronger effects among couples who held back sharing. Only one result was consistent with our predictions and previous work.^[27,28] Couples participating in IET who held back more had greater increases in self-disclosure over sessions, suggesting that the intervention focusing on increasing disclosure did increase it. However, contrary to our prediction, holding back had a more negative effect on intimacy processes among couples in IET than GHW. IET participants whose partners reported more holding back before treatment reported less

responsiveness to their disclosures and these IET participants felt less close to that partner during sessions, and neither effect was seen in GHW.

How do these findings illuminate IET's partial effects on psychological and relationship outcomes that were seen in the clinical trial? First, although IET had its intended impact on self-disclosure, it did not have its intended impact on responsiveness and closeness. The broader marital therapy literature^[29,30] has shown that increasing expression is not sufficient for improving relationship satisfaction among couples seeking marital therapy, and that how well couples listen to one another without interrupting, convey understanding rather than criticizing, are important. Our findings regarding the role of pretreatment holding back illustrated a similar pattern and were consistent with our hypothesis that IET may not have fostered key components of intimacy processes among those who needed it most. Couples participating in IET who held back more had greater increases in self-disclosure over sessions than couples enrolled in GHW. Unfortunately, participants who had partners that reported more holding back before treatment reported less responsiveness from that partner and they felt less close to that partner during sessions. IET did not increase perceived partner responsiveness over the course of treatment, and our results illustrated that holding back influenced communication and perceptions of the other partner during sessions. Taken together, these findings suggest that IET's impact may have been hindered because it may not have sufficiently fostered empathic listening and feeling understood and cared for. Although disclosure increased, partners may still have perceived their partner was holding back.

It is important to interpret our findings in light of study limitations. First, self-report post-session measures were used, but we did not observe dyadic communication during treatment sessions. Behavioral coding may have provided important information about changes in communication during couples' therapy.^[31,32] Second, couples did not rate other communication behaviors, such as negative (eg, criticism) and positive behaviors (eg, acceptance) that may have contributed to intimacy. As these behaviors have been associated with positive outcomes in couples' therapy,^[33] future research might consider adding additional measures of behaviors during sessions. These communication behaviors were addressed in IET, but not assessed in this study. Third, participants did not rate their own or their partner's holding back sharing during sessions. Because pretreatment holding back played an important role in intimacy processes, future research should assess holding back during sessions. Fourth, our measure of self- and partner disclosure evaluated facts and information and thoughts along with feelings, and we did not evaluate each type of disclosure separately. It is possible that emotional self-disclosures may have had a stronger association with IET than thoughts and facts. Fifth, we did not assess the topics being disclosed, which varied widely. For couples in IET, sharing regarded sensitive topics such as erectile dysfunction (ED) and the couples' sexual relationship. It is possible that patients may have considered spouses' empathy, understanding, and caring undesirable responses. Finally, as noted in the larger trial,^[16] refusal was relatively high, and our screening schema for patients, spouses, and/or couples endorsing high cancer distress may have biased our results.

Regardless of the limitations, this study has clinical implications. Although IET focused on enhancing responsiveness and intimacy, it did not have a stronger effect on these processes during treatment sessions than GHW. The lack of an impact may, in part, be because of the fact that IET did not help those couples who may have had the greatest need because they held back more. Understanding why thoughts and feelings are being withheld may foster greater intimacy, particularly where sensitive topics like sex and ED were being discussed. Asking partners to provide one another feedback when either perceives the other partner is holding back sharing may facilitate open communication. Finally, our findings suggest that couples interventions that do not focus specifically on enhancing intimacy, such as general health and wellness interventions, may actually foster it.

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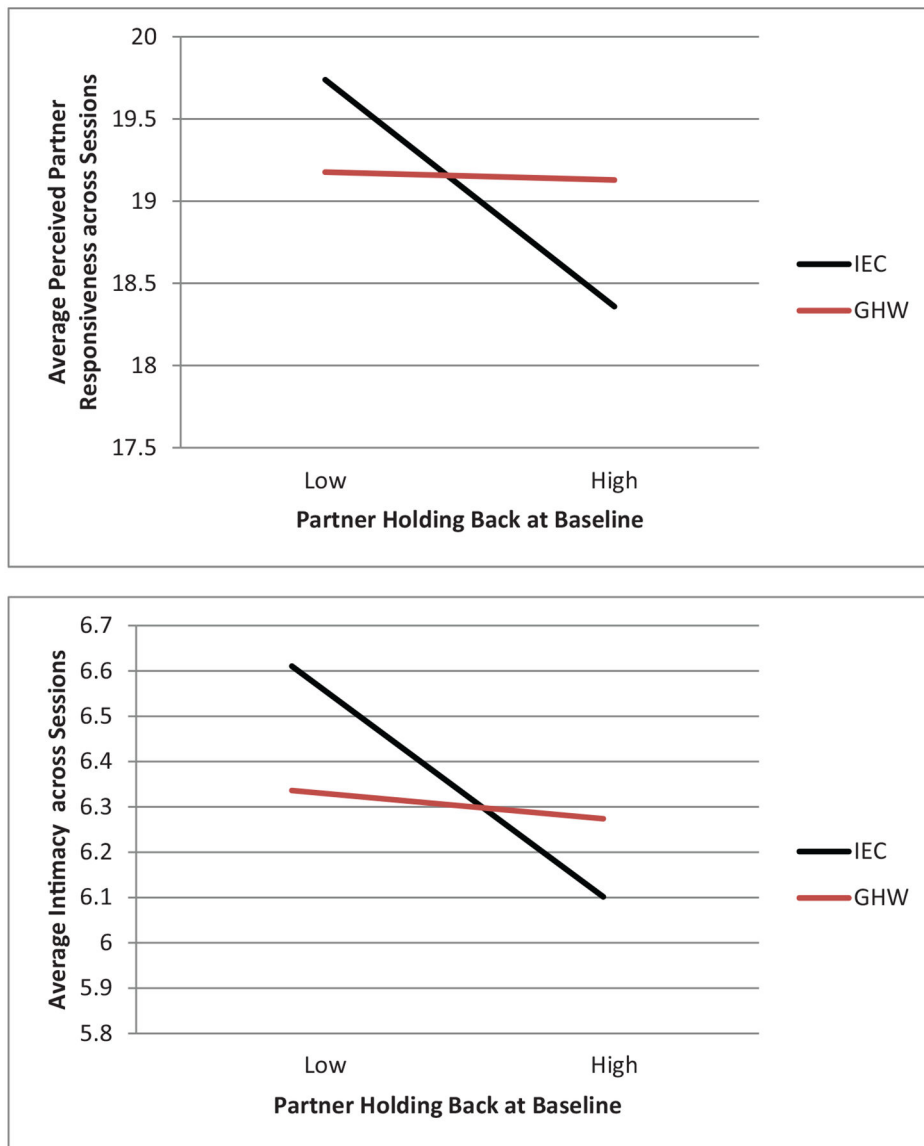


Figure 1. The effects of partner holding back on average perceived partner responsiveness (top panel) and intimacy (bottom panel) as a function of treatment condition.

Table 1

Descriptive information about the sample.

Variable	IET (N = 80)		GHW (N = 76)	
	Patient N (%)	Spouse N (%)	Patient N (%)	Spouse N (%)
Age, y*	60.5 (6.9)	58.1 (7.7)	60.0 (7.4)	55.6 (9.5)
Sex				
Male	80 (100)	1 (1.3)	76 (100)	0 (0)
Female	0 (0)	79 (98.7)	0 (0)	76 (100)
Race				
White	60 (75.0)	60 (75.0)	57 (75)	57 (76.0)
Black	15 (18.8)	14 (17.5)	15 (19.7)	15 (19.7)
Asian	0 (0)	1 (1.3)	0 (0)	2 (2.6)
Hispanic	1 (1.3)	4 (5.0)	2 (2.6)	2 (2.6)
Other	3 (3.8)	1 (1.3)	2 (2.6)	0 (0)
Missing	1 (1.3)	0 (0)	0 (0)	0 (0)
Employment				
On leave/unemployed	4 (5.1)	7 (8.8)	4 (5.2)	5 (6.5)
Part-time	7 (8.8)	10 (12.5)	7 (9.2)	20 (26.3)
Full-time	42 (52.5)	35 (43.8)	48 (63.2)	31 (40.8)
Retired	25 (31.3)	26 (32.5)	14 (18.4)	17 (22.4)
Missing	2 (2.5)	2 (2.5)	3 (3.9)	3 (3.9)
Education				
High school	8 (10.0)	14 (17.5)	9 (11.8)	10 (13.1)
Some college	18 (22.5)	21 (26.3)	10 (13.2)	16 (21.1)
College degree	21 (26.3)	12 (15.0)	26 (34.2)	19 (25.0)
>College	33 (41.3)	33 (41.3)	31 (40.7)	31 (40.8)
Missing	0 (0)	0 (0)	0 (0)	0 (0)
Income (\$)*	130,000	147,000	130,000	120,000
Relationship length [†] Stage	28.4 (12.9)	28.3 (13.0)	26.3 (13.8)	26.0 (13.9)

Variable	IET (N = 80)		GHW (N = 76)	
	Patient N (%)	Spouse N (%)	Patient N (%)	Spouse N (%)
1	5 (6.3)		4 (5.3)	
2	57 (71.3)		50 (65.8)	
3	18 (22.5)		22 (28.9)	
Surgery (Yes)	68 (85)		72 (94.7)	
Gleason Score				
6	19 (23.8)		12 (15.8)	
7	50 (62.5)		54 (71.1)	
8	8 (10.0)		5 (6.6)	
9	3 (3.8)		5 (6.6)	
Missing data	0 (0)		0 (0)	
Time since most recent treatment, mo	4.4 (2.8)		5.1 (3.6)	

* Median income.

[†] Relationship length (years).

Table 2

Bivariate associations, means, and standard deviations between the key study variables.

Variable	Intimacy	Self-disclosure	Partner disclosure	Perceived partner responsiveness	Holding back
Self-Disclosure	.46*				
Partner Disclosure	.45*	.82*			
Perc. Partner Resp.	.81*	.61*	.62*		
Holding Back	-.20*	-.23*	-.27*	-.28*	
M	6.30	18.94	18.54	19.09	2.06
SD	.99	2.73	3.05	2.68	.89

Bivariate associations are computed using Multilevel Modeling with standardized variables to account for non-independence due to time and dyad.

* $P < .01$.

Results from basic growth models over the five week treatment as a function of treatment condition, individual role (patient/spouse), and time in weeks.

Table 3

	Self-disclosure		Perceived partner disclosure		Perceived partner responsiveness		Intimacy	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>se</i>
Intercept	19.121	.221	18.628	.249	19.171	.238	6.345	.087
Time	.077**	.024	.089**	.030	.011	.023	.017	.009
Role	.024	.117	.159	.133	.242*	.111	.032	.032
Condition	.418*	.176	.507*	.198	.098	.195	.061	.073
Time by role	.027	.022	.008	.023	-.007	.018	.001	.006
Time by condition	-.013	.024	-.002	.030	.013	.023	.002	.009
Role by condition	-.101	.111	-.088	.127	-.020	.105	-.015	.029
Time by Role by condition	.008	.022	-.029	.023	-.003	.018	.003	.006
Age	-.001	.024	-.025	.028	.011	.025	.016	.008
Ethnicity	-.003	.209	.117	.234	.077	.212	-.005	.075
Income	-.016	.015	-.017	.016	-.022	.014	-.008	.005
Working full or part time	-.182	.165	-.284	.186	-.199	.155	-.021	.048
Stage	-.331	.218	-.374	.246	-.549*	.233	-.178*	.088
Bowel function	.065	.066	.103	.074	.142*	.070	.029	.027
Dyadic correlations								
Correlation of means	.560**		.502**		.669**		.842**	
Time-specific correlation	.058		.268**		.270**		.325**	

* $P < .05$.

** $P < .01$.

Table 4
Moderation of growth models by actor and partner holding back sharing concerns at baseline

	Self-disclosure		Perceived partner disclosure		Perceived partner responsiveness		Intimacy	
	B	se	B	se	b	Se	b	se
Intercept	19.026	.226	18.641	.251	19.100	.229	6.331	.085
Time	.090**	.024	.089**	.031	.005	.024	.015	.009
Role	-.070	.121	-.011	.130	.176	.112	.018	.032
Condition	.324	.180	.424*	.200	-.052	.186	.025	.071
Time X role	.033	.023	.026	.024	-.002	.018	.001	.007
Time X condition	-.006	.024	-.012	.030	.003	.024	-.001	.009
Role X condition	-.081	.117	-.096	.125	-.001	.108	-.009	.030
Time X Role X condition	.014	.023	-.019	.024	-.001	.018	.002	.007
AHoldBack	-.694**	.168	-.979**	.183	-.905**	.164	-.292**	.056
PHoldBack	-.161	.163	-.177	.178	-.403*	.162	-.161**	.056
Time X AHoldBack	.034	.028	.102**	.031	.013	.023	.005	.009
Time X PHoldBack	.035	.028	-.013	.031	-.030	.024	-.006	.009
Role X AHoldBack	-.430*	.192	-.333	.212	-.141	.195	-.103	.072
Role X PHoldBack	.396*	.190	.392	.210	.308	.195	.097	.072
Condition X AHoldBack	.014	.166	.024	.181	-.186	.162	-.050	.056
Condition X PHoldBack	-.234	.162	-.042	.177	-.376*	.161	-.126*	.055
Time X Role X AHoldBack	.022	.029	-.013	.035	-.032	.027	-.013	.011
Time X Role X PHoldBack	-.040	.029	.011	.035	.013	.027	.008	.010
Time X Condition X AHoldBack	.060*	.028	.010	.031	.022	.023	.006	.009
Time X Condition X PHoldBack	.008	.028	-.009	.031	.004	.024	.011	.009
Role X Condition X AHoldBack	-.024	.196	-.034	.216	-.115	.198	.024	.074
Role X Condition X PHoldBack	-.048	.193	-.314	.213	.135	.197	.002	.073
Time X Role X Condition X AHoldBack	.006	.029	-.037	.035	-.035	.027	-.010	.011
Time X role X condition X PHoldBack	.026	.029	.069	.035	.039	.027	.007	.010

Time is coded in weeks since the intervention began and grand mean centered. Role is coded 1 = patients, -1 = spouses. Condition is coded 1 = IEC, 1 = GHW. AHoldBack is the actor's (ie, person's) score on holding back at baseline, grand mean centered, and PHoldBack is the partner's score on holding back at baseline, grand mean centered. Although not-shown all models included the following covariates:

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age, ethnicity, income, working full or part time, cancer stage, and bowel function. Random effects included separate intercept variances for patients and spouses as well as the correlation between the intercepts and separate residual variances for patients and spouses as well as the correlation between the residuals.

* $P < .05$.

** $P < .01$.