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Holding Back, Intimacy, and Psychological and Relationship Outcomes Among Couples Coping With Prostate Cancer

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Abstract

The present study evaluated intimacy as a mechanism for the effects of holding back sharing concerns about cancer on couples' psychological distress, well-being, and marital satisfaction using the actor-partner interdependence model (APIM), and evaluated 2 possible moderators of these associations: the number of patient and spouse cancer concerns. We had 139 men treated for localized prostate cancer in the past year and their spouses complete surveys about holding back sharing cancer concerns, intimacy, distress, and relationship satisfaction, as well as patient and spouse cancer concerns. APIM-indicated that the association between holding back sharing concerns, and patient and spouse distress, well-being, and relationship satisfaction could be partially accounted for by their influence on patient and spouse perceptions of relationship intimacy. The number of cancer concerns did not moderate the mediational model. Holding back has strong associations with both partners' well-being and distress. Holding back sharing concerns was particularly detrimental for couples' intimacy and relationship satisfaction.

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Keywords

couple communication; holding back; relationship intimacy; prostate cancer

The diagnosis and treatment of prostate cancer can affect both patients' and spouses' psychological functioning. Along with the emotional and practical challenges that accompany the diagnosis of any type of cancer, the long-term treatment effects of prostate cancer, particularly impaired sexual functioning and urinary incontinence (Burnett et al., 2007; Gacci et al., 2009), can pose a significant psychological challenge for patients (Trinchieri, Nicola, Masini, & Mangiarotti, 2005). For men, the loss of sexual functioning, which can be permanent, is a significant concern (Penson et al., 2005). Prostate cancer also can impose an emotional toll on spouses. Studies have suggested that spouses of men diagnosed with prostate cancer report high levels of psychological distress (Couper et al., 2006). Specific concerns about the patient's side effects (Winters-Stone, Lyons, Bennett, & Beer, 2014), relationship satisfaction (Manne, Badr, Zaider, Nelson, & Kissane, 2010), and sexual satisfaction (Garos, Kluck, & Aronoff, 2007) contribute to spouse distress. Unlike other cancers, which indirectly impact the spouse, prostate cancer can directly impact spouses. For couples who had an active sex life prior to the diagnosis, changes in patients' sexual functioning may adversely affect spousal quality of life. Recent studies have suggested that marital quality may decline after diagnosis, particularly as perceived by female spouses (Couper et al., 2006). Primary relationships are challenged by stressors such as completing medical care, dealing with changes in personal priorities, managing one's own and one's spouse's distress, solving novel medical issues, and attempting to maintain a sense of relationship "normalcy" (Malcarne et al., 2002).

Open marital communication, typically defined as sharing worries and concerns with one's spouse, is critical to managing these stressors effectively. Qualitative studies have described the importance of open communication (Wootten et al., 2014), and quantitative studies have suggested that open communication is associated with higher patient and spouse quality of life and marital satisfaction (Song et al., 2012). Despite the known importance of open communication in maintaining the well-being of both prostate cancer patients and their primary relationships, couples may struggle to communicate effectively about their challenges (Langer, Brown, & Syrjala, 2009). Qualitative research has shown that men may hold back sharing concerns about erectile dysfunction and other physical changes to their wives, and wives may also hold back discussing their worries and concerns (Garos et al., 2007; Hawes et al., 2006; Wootten et al., 2014). The only quantitative study evaluating the role of holding back sharing concerns in distress and well-being among couples coping with prostate cancer found that holding back was associated with greater distress for patients and spouses (Manne et al., 2010).

Relationship Intimacy Model of Cancer Adaptation

The relationship intimacy model of cancer adaptation (RIM; Manne & Badr, 2008) proposes that relationship communication influences couples' individual and relationship functioning by its effects on relationship intimacy. This model integrates several theories including the

relationship intimacy process theory (Reis & Patrick, 1996), relationship resilience theory (Stafford & Canary, 1991), and behavioral exchange marital theory (Gottman et al., 1976). An integrative model better addresses the complex dynamics of how couples manage a traumatic life stressor such as cancer (Manne & Badr, 2010). RIM proposes that both relationship-enhancing and relationship-compromising communications between partners influence couples' psychological adaptation to cancer and relationship satisfaction via their impact on relationship intimacy. Relationship-enhancing behaviors include three categories: (a) perceived self- and partner disclosure about cancer concerns; (b) perceived responses by one's partner's to these disclosures in an understanding manner; and (c) *relationship engagement*, defined as an awareness that one partner's cancer poses a threat to the relationship and the impact should be discussed and managed as a team and the degree to which partners maintain important relationship activities during the illness. Relationship-compromising behaviors include three categories: (a) critical responses, (b) pressure withdrawal, and (c) avoidant behaviors such as conveying discomfort when cancer is broached and/or holding back sharing concerns to avoid conflict or burden one's partner. Aspects of the REM have been evaluated. Intimacy has been shown to mediate the association between self-disclosure and relationship satisfaction and/or distress (Manne, Badr, & Kashy, 2012; Manne et al., 2010). Similar findings have been reported for perceived partner disclosure (Manne et al., 2010). Greater cancer-specific relationship awareness and discussion about cancer's relationship impact are associated with greater intimacy among couples coping with breast cancer (Manne, Siegel, Kashy, & Heckman, 2014). In terms of relationship-compromising communication, intimacy has been shown to mediate the association between perceived criticism and pressure withdrawal and partners' distress (Manne et al., 2010).

In comparison with other communication behaviors included in the RIM, holding back has received less attention. One reason is that holding back is not visible to one's partner because partners cannot see what is not being shared and must detect that it is occurring. Thus, effects on one's partner are less reliably assessed. Research has indicated that romantic partners perceive, either accurately or inaccurately, when the other partner is holding back (Impett et al., 2012; Impett, Le, Kogan, Oveis, & Keltner, 2014). Holding back —either on the part of the person engaging in it or the person who perceives or is not aware that the other person is engaging in it—may be costly for both partners and the relationship. Holding back entails suppression of emotions and a reduction in authenticity (English & John, 2013) and/or not acting in a way that is congruent with inner feelings, attitudes, and/or beliefs (Sheldon, Ryan, Rawsthorne, & Ilardi, 1997). For these reasons, holding back is associated with greater distress (English, 2009), relationship dissatisfaction (Butler et al., 2003; Impett et al., 2012), and fewer positive emotions toward one's partner (Butler et al., 2003); and heightened cardiovascular responding (Butler et al., 2003) on the part of the individual engaging in this behavior. Because authenticity fosters trust (Kernis, 2003), holding back feelings on the part of one partner has a detrimental impact on the other partner in terms of greater less perceived rapport with the person holding back (Butler et al., 2003), and relationship dissatisfaction and conflict (Impett et al., 2014). In the cancer context, holding back compromises intimacy because it may impede the opportunity for feeling supported, increases the isolation that can accompany a cancer diagnosis, interferes with

solving problems, and/or reduces the likelihood that couples maintain a “we” approach to coping with cancer (Manne & Badr, 2008). The one study mat evaluated whether intimacy mediated the association between holding back and distress among couples coping with prostate cancer did not support this hypothesis (Manne et al., 2010).

In the present study, previous work is extended. First, we expanded the examination of the associations between holding back, intimacy, and outcomes beyond psychological distress by including global well-being and relationship functioning. We evaluated well-being and distress separately because positive and negative aspects of emotional functioning are known to be separate domains of experience with separate predictors/correlates (Reich, Zautra, & Davis, 2003). Second, we included a larger sample size to evaluate a possible moderator of the associations between holding back sharing concerns, intimacy, and psychological and relationship outcomes. We evaluated the level of patient and partner concerns as an exploratory moderating variable. It was proposed that, among patients and partners endorsing high levels of concerns, holding back would be more detrimental for intimacy and psychological and relationship outcomes because these individuals were experiencing more stressors that they are suppressing and not sharing with their loved one.

This study had three aims. The first aim was to examine levels of holding back among couples and to evaluate the role of a person’s perceptions of holding back on his or her own and his or her spouse’s intimacy. We hypothesized that (a) spouses would report more holding back than patients, (b) holding back sharing concerns about the sexual relationship would be common, and (c) more holding back would be related to lower levels of one’s own and one’s partner’s intimacy. The second aim was to examine relationship intimacy as a mechanism for the associations between holding back on well-being, distress, and relationship satisfaction. We hypothesized that intimacy would mediate the association between holding back and psychological and relationship outcomes, with both significant actor and partner effects (e.g., couple effects). The exploratory aim was to evaluate a moderating effect for the level of patient and partner cancer concerns in the mediation model. We examined whether holding back had a stronger association across outcomes among patients and/or spouses endorsing more concerns.

Our analyses incorporated actor-partner interdependence modeling. Ledermann, Macho, and Kenny (2011) proposed an extension of the actor-partner interdependence model (APIM; Kenny, Kashy, & Cook, 2006) that can be used to estimate and test mediational processes in dyadic data. In this model, the effect of a person’s input (X_1) on his or her outcome (Y_1), which is called the person’s actor effect, can be mediated by his or her own standing on the mediator variable (M_1) as well as his or her partner’s standing on the mediator (M_2). In the present study (shown in Figure 1), the effect of a person’s holding back (X_1) on his or her outcome (Y_1; e.g., well-being), can be mediated by his or her own standing on intimacy (M_1) as well as his or her partner’s standing on intimacy (M_2). In other words, the effect of the patient’s holding back on his own well-being may be mediated by his own intimacy or by his spouses’ intimacy, and likewise the effects of the spouse’s holding back on the spouse’s well-being may be mediated by either her own intimacy or the patient’s intimacy. The partner effect in the APIM also may be mediated via the actor’s or partner’s standings on the mediator. That is, the effect of the person’s holding back (X_1) on his or her partner’s

well-being (Y_2) may be mediated by either the person's intimacy (M_1) or the partner's intimacy (M_2). Therefore, the effect of the spouse's holding back on the patient's well-being may be mediated by the spouse's intimacy or it may be mediated by the patient's intimacy. Likewise, the effect of the patient's holding back on the spouse's well-being may be mediated by the patient's intimacy or the spouse's intimacy. Examining the specific dyadic paths of mediation is a unique approach that has considerable potential to provide insights into dyadic, couple-level processes for patients and their spouses. For example, if one person's holding back is associated with their own as well as their spouse's intimacy, and/or the person's intimacy is associated with both their own and their spouse's distress, we learn that the effects of holding back have influences on both partners, and on the couple, rather than solely on the individual holding back.

Method

Participants

The sample was comprised of men diagnosed with localized prostate cancer who were seen at four medical centers in the Northeastern United States. These data were collected as part of a randomized clinical trial (RCT) of two couple-focused counseling interventions (Manne, unpublished data). Eligibility for the RCT were, surgery and/or radiation treatment for nonmetastatic prostate cancer in the last year, Eastern Cooperative Oncology Group (ECOG) performance status score of 0 or 1 (Oken et al., 1982), married or living with a significant other of either gender (cohabiting for a year or more), and either patient or spouse had elevated cancer-specific distress, a score at recruitment ≥ 15 (patient) or ≥ 16 (partner) on the Impact of Events Scale (IES; Horowitz, Wilner & Alvarez, 1979), 18 years of age or older, did not have a hearing impairment, and lived within a 2-hr commuting distance of the center.

Among the 1,844 patients approached and asked to complete the IES screening measure, 1,610 patients and/or partners completed the IES screener (84.6%). Of these 1,610 couples, 841 couples did not meet the IES eligibility criterion (52.2%). Of the 769 eligible couples, 651 refused (81.8%) and 145 signed a consent form (18.2%). Of these 145 couples, 139 completed a survey. Overall, the acceptance rate among eligible couples (139/796) was 17.4%. The most common reasons for refusal were that they thought the study would take "too much time" (18%) and that they would not benefit from participation (13%). Comparisons were made between patient participants and refusers on available data (i.e., age, Gleason score, time since diagnosis, cancer stage). Results indicated that participants were significantly younger, $t(320) = 3.6$, $p < .001$; $M_{\text{refusers}} = 63.8$, $M_{\text{participants}} = 59.8$, and had been diagnosed for a longer period of time, $t(320) = 3.5$, $M_{\text{refusers}} = 6.44$ months, $M_{\text{participants}} = 8.26$ months.

Procedures

Letters were sent to participants. Next, they were seen during an outpatient visit or contacted by telephone. The patient was first administered the IES. If the patient met screening eligibility, the couple was invited to participate. If the patient did not meet screening eligibility, the spouse was contacted and screened. If the spouse was eligible, the couple was

invited to participate. If interested, they were provided with an informed consent and the questionnaire to return by mail. If the consent and survey were not returned within 2 weeks, participants were contacted. Participants were followed up by telephone weekly until the consent and survey were returned. If the material was not returned after 2 months, a reminder letter was sent. If the material was not returned after 3 months, the participant was considered a study refuser. Participants signed an informed consent form approved by their institution's Institutional Review Board.

Measures

Demographic information—Age, ethnicity, gender, education level, income, occupational status, relationship (married, cohabiting) and length of marriage/relationship were collected.

Medical information—Gleason score, cancer stage, and time since diagnosis were collected from the medical chart. Current erectile function was evaluated using the erectile functioning sub-scale of the International Index of Erectile Function (ITEF-EF; Rosen et al., 1997). Five items were rated on 5- and 6-point Likert scales (0 = *no sexual activity* to 5 = *always*; Cronbach's α = .94). Urinary function was assessed with the urinary function subscale of the Prostate Cancer Index (Litwin et al., 1998). Five items were rated on a 4-point Likert scale (0 = *everyday* to 4 = *not at all*; Cronbach's α = .84).

Holding back sharing concerns—A 10-item measure adapted from Pistrang and Barker (1995) was used. Participants rated how much they held back talking to their partner about 10 cancer-related problems in the past week on a scale of 0 to 5 (0 = *not at all* to 5 = *great deal*) with higher scores indicating greater levels of holding back. Internal consistency reliabilities in the present study, α = .88 for patients and α = .87 for spouses, were similar to prior research (Manne et al., 2010).

Mediator

Relationship intimacy—The Personal Assessment of Intimacy in Relationships (PAIR; Schaefer & Olsen, 1981) is a seven-item scale (1 = *strongly disagree* to 5 = *strongly agree*) assessing emotional closeness. It has been used in studies of intimacy among healthy married couples (Talmadge & Dabbs, 1990). The scale has demonstrated good internal consistency in previous work focusing on prostate cancer patients (Manne et al., 2010). Internal consistencies were: αs = .88 for patients and spouses.

Outcomes

Well-being—The Positive Well-Being subscale of the Mental Health Inventory −38 (Veit & Ware, 1983) was used. This 14-item scale assessed life satisfaction, hope for the future, enjoyment of life, and ability to relax. Participants used a 6-point Likert scale (6 = *none of the time* to 1 = *all of the time*) to rate their feelings over the past month. Higher scores indicated greater well-being. Internal consistencies were: αs = .94 for patients and spouses.

Distress—The Psychological Distress subscale of the Mental Health Inventory −38 (Veit & Ware, 1983) was used. This 24-item scale assessed anxiety, depression, and lack of

behavioral and emotional control. Participants used a 6-point Likert scale (6 = *none of the time* to 1 = *all of the time*) to rate their feelings over the past month. Higher scores indicated more distress. Internal consistencies were: αs = .94 for patients and spouses.

Relationship satisfaction—The well-validated 32-item Dyadic Adjustment Scale (DAS) is the most widely used measure of relationship satisfaction (Spanier & Filsinger, 1983). Scores can range from 0 to 151; scores below 97 indicate relationship distress. Internal consistencies were: αs = .94 for patients and spouses.

Moderators

Number of cancer concerns (both partners)—Participants were asked to rate 10 cancer-related concerns (the same concerns on the holding back measure) on a 5-point Likert scale (1 = *not at all* to 5 = *great deal*). Patients rated their concerns about their own symptoms and spouses rated concerns about the patient's symptoms. The score reflected the number of concerns for each participant rated *somewhat, very*, or *extremely* concerned. Totals could range from 0 concerns rated above *somewhat* to 10 concerns rated above *somewhat*.

Results

Descriptive Information on the Study Sample

The sample consisted of 139 couples, and descriptive statistics for demographic and medical variables are presented in Table 1. The mean age of patients was 61 years and spouse 57 years. The majority was White, non-Hispanic, and had completed a college degree or higher education. Most couples were married (given the specific meaning of "partner" in the APIM, for clarity of presentation, we refer to the partners as spouses regardless of actual marital status). The average time since diagnosis was 8 months. Sixteen percent of the sample had higher risk disease (more likely to show cancer progression; Gleason score ≥ 8).

The average DAS scores for patients (M = 116.6, SD = 16.6, Mdn = 119, range = 70–148) and spouses (M = 113.4, SD = 18.7, Mdn = 118, range = 36–145) were not significantly different than published means for married couples (M = 114.8, SD = 17.8) in the general population (Spanier, 1976). Approximately 19.3% of patients and 21.6% of spouses reported DAS scores below 97, indicating low levels of marital satisfaction. In terms of the level of cancer—specific distress when couples screened into the trial, in 98 cases (70.5%), only the patient was above the distress criterion, in 26 cases (18.7%) only the spouse was above the distress criterion, and in 15 cases (10.7%), both partners were above the distress criterion.

Descriptive Information and Demographic and Medical Correlates of Holding Back

Table 2 presents patient and spouse holding back means for each cancer-related concern. Table 3 presents the descriptive information for variables included in the models. Patients were most likely to hold back sharing concerns about their sexual relationship and the relationship in general. Spouses were most likely to hold back about disease progression/death and their sexual relationship. Patients were least likely to hold back about their jobs and finances. Spouses were least likely to hold back about relationships with other family/

friends and dissatisfaction with the patient's bodily appearance. Overall, spouses reported significantly more holding back than patients, which was associated with a moderate effect size.

Average levels of patient's holding back in the present study ($M = 1.7$) were higher than the previous work with prostate cancer patients ($M = 1.1$, $SD = 1.03$; Manne et al., 2010), and slightly higher than spouse-reported holding back ($M = 1.47$, $SD = 1.06$). Comparisons of patients' and spouses' responses indicated that patients were more likely to hold back sharing concerns about finances and their job, while spouses were more likely to hold back sharing concerns about physical symptoms, cancer treatment, emotional reactions to cancer, and fears of disease progression. Effect sizes for significant differences ranged from small (physical symptoms) to moderate (fears of recurrence).

Among patients, higher levels of holding back were associated with younger age, $r = -.19$, $p < .05$, and a shorter relationship, $r = -.22$, $p < .01$. Among spouses, higher levels of holding back were associated with a shorter relationship, $r = -.26$, $p < .05$. Medical variables were not associated with patient or spouse holding back, distress, or well-being, or relationship satisfaction and not included in the mediation models.

Descriptive Analyses of Associations Between Specific Topics of Holding Back and Intimacy

To examine differences in the associations between holding back sharing different concerns across outcomes, Pearson correlations were examined. Results are shown in Table 4. For patients, across all outcomes, the strongest associations were with concerns about the relationship with one's spouse (average $r = -.46$), and the weakest associations were with financial concerns (average $r = .25$). For spouses, across outcomes, the strongest associations were with concerns about one's relationship with one's spouse (average $r = -.50$), and the weakest associations were with fears about disease progression (average $r = -.29$).

Actor and Partner Effects of Holding Back on Intimacy, Actor and Partner Effects of Intimacy on Psychological and Relationship Outcomes, and the Mediation Model

Mediational analyses were conducted using the framework of the actor-partner interdependence mediation model (APIMeM; Ledermann et al., 2011). We used structural equation modeling (AMOS Version 21; Arbuckle, 2012) with a boot-strapping approach to estimate and evaluate our mediational APIM model. As recommended by Ledermann et al., (2011) the first step in the analysis was to test whether there were significant differences in the covariance patterns for patients and their spouses—in other words, we tested whether the dyad members could be treated as indistinguishable, which considerably simplifies the APIMeM. These tests revealed that, for the most part, an indistinguishable model fit the data well. The one exception was that there were some differences in mean levels of responses on the variables in the model. To address this, we specified an indistinguishable model predicting the three outcomes that allowed for mean differences between patients and spouses, but did not estimate separate actor and partner effects for patients and spouses. The model fit well for all three outcomes, with $\chi^2(9) = 10.94$, $p = .280$, comparative fit index (CFI) = .992, root mean square error of approximation (RMSEA) = .039 for the model

predicting well-being; $\chi^2(9) = 9.86$, $p = .362$, CFI = .996, RMSEA = .026 for the model predicting distress; and $\chi^2(9) = 11.57$, $p = .239$, CFI = .993, RMSEA = .046 for the model predicting relationship satisfaction. Models for well-being and relationship satisfaction with unstandardized path coefficients are depicted in Figures 2 and 3, respectively. The model predicting distress was similar to the model predicting well-being and can be obtained from Sharon L. Manne. Note that the indistinguishable nature of the models can be seen in the equality of path coefficients for patients and spouses.

As shown in Figures 2 and 3, holding back was negatively associated with both the person's and the partner's perception of intimacy. Moreover, Figure 2 illustrates that holding back was negatively associated with the person's own well-being, but not with his or her partner's well-being and the person's intimacy was positively related to the person's own well-being but not his or her partner's well-being. For distress, there was a similar pattern of actor effects but not partner effects. Holding back positively predicted the person's own distress, but not the partner's distress. Intimacy negatively predicted the person's own distress but not the partner's distress.

Figure 3 presents the results predicting relationship satisfaction. In the figure, only actor effects for holding back on relationship satisfaction were significant. Individuals who reported holding back more tended to report lower relationship satisfaction. However, unlike the other two outcomes, there were both actor and partner effects for intimacy. Individuals who reported more relationship intimacy were more satisfied with their relationships and individuals whose partners reported more relationship intimacy also were more satisfied.

Next, Ledermann and colleagues' (2011) approach was used to evaluate the mediational paths for each mediator separately using a boot-strapping methodology. Beginning with the model predicting well-being, the effect of a person's holding back on that person's well-being was significantly mediated by the person's intimacy. This indirect actor-actor mediational effect was $b = -2.24$, $\beta = -.17$, $p < .001$, 95% CI [−3.37, −1.31]. The negative association between a person's holding back and that person's well-being was mediated by the person's own intimacy. There was evidence that the effect of a person's holding back on his or her partner's well-being was mediated by the partner's intimacy, $b = -0.88$, $\beta = -.07$, $p = .001$, [−1.56, −0.41] (i.e., partner-partner mediation). The other two mediational paths (i.e., the effect of the person's holding back on the partner's well-being mediated by the person's intimacy and the effect of the person's holding back on the person's well-being mediated by the partner's intimacy) were not statistically significant. A similar pattern of mediation was found for distress. The effect of a person's holding back on his or her own distress was mediated by his or her reports of intimacy, $b = 1.31$, $\beta = .08$, $p = .016$, [0.28, 2.59]. The effect of the person's holding back on his or her partner's distress was mediated by the partner's intimacy, $b = 0.51$, $\beta = .03$, $p = .008$, [0.14, 1.12]. The other two possible indirect mediational paths were not statistically significant.

Finally, the results predicting relationship satisfaction suggested that all four indirect paths of mediation attained statistical significance. The strongest mediation occurred via the actor-actor route with $b = -4.64$, $\beta = -.23$, $p < .001$, 95% CI [−6.32, −3.22]. Thus, the association between a persons' holding back and his or her own relationship satisfaction was mediated

by his or her intimacy. The next strongest indirect effect was for the effect of the person's holding back on his or her partner's relationship satisfaction via the person's intimacy, $b = -1.97$, $\beta = -.10$, $p < .001$, [−2.95, −1.22]. The association between a person's holding back and the partner's relationship satisfaction also was mediated by the partner's intimacy, $b = -1.82$, $\beta = -.09$, $p = .001$, [−3.06, −0.80], and finally the indirect effect of holding back on a person's own relationship satisfaction was partially mediated by the partner's intimacy, $b = -0.77$, $\beta = -.04$, $p = .001$, [−1.40, −0.31].

Kenny and colleagues (2006) suggested that the ratio of partner effects to actor effects (k = partner/actor) could be an informative index of dyadic patterns in the APIM. When this ratio is 0, an actor-only pattern is indicated. When the ratio is a 1, a couple-oriented pattern is indicated (i.e., outcomes are equally affected by actor and partner). When the ratio is negative, a social comparison or contrast model is implied. In our models, the actor and partner paths between holding back and intimacy yielded $k = .391$, $p < .001$. This figure suggests that although the actor had a greater effect than the partner, both played a role in determining a person's outcome.

In contrast, the ratio for associations between relationship intimacy and both distress ($k = -.366$, $p = .353$) and well-being ($k = -.100$, $p = .542$) did not differ significantly from 0. As seen in the Figure 2, a person's intimacy related only to that person's well-being (and distress). However, in the model predicting relationship satisfaction, the ratio of partner to actor, $k = .424$, $p < .001$, suggested that although a person's relationship intimacy had a stronger association with his or her own relationship satisfaction, the partner's intimacy also played an important role.

Moderation of the Mediated Effects of Holding Back on Outcomes Using the APIM

We examined whether the number of patient and spouse concerns moderated the mediational model. To perform these analyses, we dichotomized these variables using median splits. We then reran the models in Figures 2 and 3 (also for distress, not shown in the figures), allowing the indirect paths to differ for couples who were high versus low on the moderator. We used chi-square difference tests to evaluate whether there was evidence that the mediational or indirect effects differed across the moderation variable for patients and spouses.

Discussion

In this study, we evaluated the levels of holding back in the primary relationships of men with prostate cancer and their spouses as well as the associations between holding back sharing and relationship intimacy and psychological and relationship outcomes. Using the RIM, we examined whether intimacy was a mediator between holding back and psychological distress, well-being, and relationship satisfaction. Our results indicated that patients frequently held back sharing concerns about their sexual relationship with spouses and about their relationships' quality. Spouses most frequently held back sharing their fears about disease progression or death and about their sexual relationship with patients. Thus, both partners held back sexual concerns, which is consistent with prior qualitative work (e.g., Wootten et al., 2014). As previously reported among wives of men with prostate cancer

(Manne et al., 2010), spouses reported significantly more holding back than patients. These findings are not consistent with some studies that have shown that female spouses held back less (Porter, Keefe, Hurwitz, & Faber, 2005) or studies not showing gender differences with regard to holding back (Zakowski et al., 2003). Because almost all of the spouses were wives, it is possible that these findings reflect gender effects rather than role effects. Indeed, there is a large literature suggesting that women were more likely to sacrifice for the benefit of their relationships (e.g., Duarte & Thompson, 1999), particularly when providing care to a spouse with cancer (Ussher & Sandoval, 2008). Average levels of patients' and spouses' holding back were significantly higher than averages reported in our prior work with prostate cancer patients (Manne et al., 2010), which may be due to our sample consisting of couples in which patient, spouse, or both reported elevated cancer distress.

We used the APIM to examine the relation between holding back sharing concerns and psychological and relationship outcomes. We focused on determining whether relationship intimacy served as a possible mechanism for both actor and partner effects. Holding back was negatively associated with both the person's (actor effects) and the partner's perception (partner effects) of relationship intimacy. Holding back also was negatively associated with the person's own well-being and positively associated with the person's psychological distress (actor effects), but not with his or her partner's well-being and distress (partner effects). The person's relationship intimacy was positively related to the person's own well-being and negatively related to the person's psychological distress (actor effects), but not his or her partner's well-being and distress (partner effects). Holding back was associated with one's own well-being and distress by impacting one's own intimacy and with one's partner's well-being and distress via the partner's intimacy. That is, holding back was associated with well-being and distress through its association with the person's own experienced intimacy (not their partner's). In summary, holding back on the part of either partner had a detrimental association with one's own and one's spouse's perceived relationship intimacy, but only had effects on one's own distress and well-being. Our results are consistent with the RIM (Manne & Badr, 2008). We find it interesting that previous work did not support a mediational role for intimacy in the association between holding back and distress (Manne et al., 2010). Potential reasons are the smaller sample size in the prior study and that recruitment of distressed couples strengthened associations between holding back and distress.

Mediational analyses for the effects of holding back on relationship satisfaction indicated strong dyadic effects. Each person's holding back was associated with their own relationship satisfaction by influencing both their own and their partner's intimacy, and each partner's experienced intimacy influenced both their own and their partner's relationship satisfaction. Holding back on the part of either partner was strongly negatively associated with couples' closeness and relationship satisfaction. Using non-APIM, correlational approaches, similar findings between holding back and relationship intimacy and relationship satisfaction have been reported in prior work (Porter et al., 2005). A possible reason for the strong dyadic effects on relationship satisfaction is that the correlations between intimacy and relationship satisfaction for both patients and partners was very large in magnitude (*r*s = .68 and .76).

An examination of partner effects for holding back across psychological and relationship outcomes suggest that partner effects were evident for intimacy and relationship satisfaction but not for one's partner's distress and well-being. Our findings are consistent with prior work suggesting a detrimental effect of one partner's holding back on the other partner's relationship intimacy and satisfaction (Impett et al., 2014). However, the literature on partner effects for holding back on distress and well-being has been inconsistent, with some studies suggesting that holding back impacts the other person's distress (Impett et al., 2014) and other studies not supporting this association (Butler et al., 2003). In the present study, we did not evaluate perceived holding back (perception that the partner was holding back), and thus we do not know whether the recipient of holding back accurately perceived that it occurred. Our study is novel in that we assessed partner effects of holding back as reported by the person holding back, but future studies should include recipient's perception. In summary, when relationship outcomes are considered, holding back on the part of either partner in a close relationship is negatively associated with couples' perceived relationship intimacy and relationship satisfaction, which is consistent with the RIM.

The moderated-mediation analyses suggested that the level of patient or partner cancer concerns did not moderate the mediational model. This is relatively surprising because holding back when there were a greater number of worries would, from a clinical standpoint, be more stressful for the individual holding back and increase both distress and isolation. It is interesting to note that the number of concerns was significantly positively correlated with holding back. Thus, patients and spouses who had more concerns also held back more from discussing their concerns with each other, which is possibly due to a desire to protect one another from upset.

Exploratory analyses examining whether holding back about certain topics had stronger associations than others yielded interesting differences and similarities, with regard to topics and role of the partner (patient or spouse). For patients, holding back concerns about the marital relationship and cancer treatment were most strongly associated with intimacy, marital satisfaction, and well-being, while holding back concerns about physical appearance changes and financial issues were least strongly associated with intimacy, relationship satisfaction, and distress. For spouses, holding back concerns about cancer treatment was most strongly associated with lower marital satisfaction and well-being. It is surprising that holding back about financial issues was most strongly associated with lower intimacy for spouses. Holding back concerns about recurrence was most weakly associated with all four outcomes for spouses. The latter finding is surprising because of the known link between recurrence fears and patient distress. Both partners' holding back concerns about the relationship and cancer treatment were associated with less intimacy and relationship dissatisfaction indicating concerns about these topics may be important for couples to share.

There are study limitations. First, the sample was screened to include only couples in which either patient, spouse, or both partners exhibited elevated cancer-specific distress. Thus, we do not know whether the findings would generalize to a sample of patients and/or spouses who did not report elevated cancer-specific distress. Second, our sample was comprised of men with nonmetastatic disease and the most couples were relatively satisfied with their relationships. Thus, our findings may not generalize to men with later stage prostate cancer

and/or patients and spouses in unsatisfying relationships. Third, the participation rate was relatively low (17%). This participation rate is comparable to prior couples-based intervention studies (Manne et al., 2006). However, participants were younger and had been diagnosed for a longer period of time than nonparticipants, which could have made our results less able to be generalized to older and/or more recently diagnosed patients. Fourth, the sample size was relatively small for a moderated-mediation analysis, and future studies should include larger sample sizes. Fifth, effect sizes for the mediational models were of a relatively small magnitude (.1). Sixth, due to the fact that radiation is widely available in community settings and we collected data at cancer center settings, the majority of our sample had undergone prostatectomy rather than radiation. Although treatment type was not associated with any variables in the analyses, future studies should include a greater proportion of men undergoing radiation therapy. Seventh, patients were all men and spouses were primarily women. Whether these findings hold true for cancers diagnosed in women should be evaluated so that gender effects can be separated from role effects. Eighth, the data are cross-sectional and alternative models are possible. For example, it is possible that lower marital satisfaction influenced higher levels of couples' holding back and/or that lower perceived intimacy resulted in more holding back. The cross-sectional design is also a limitation with respect to the mediational analysis. As Maxwell and Cole (2007) noted, mediation is a longitudinal process and the use of cross-sectional data to assess mediation typically generates biased estimates. When using longitudinal approaches, investigators would need to evaluate the correct intervals needed for the assessment of holding back at Time 1 (i.e., how long after diagnosis do couples realize that they are actively holding back from sharing concerns), changes in intimacy at Time 2 (i.e., how long does it take for holding back to have an impact on a person's intimacy), and outcomes at Time 3. Thus, although our cross-sectional results may be imprecise, they suggest the data are at minimum consistent with our model.

The findings have clinical implications. Because holding back was detrimental to individual adjustment and relationship satisfaction, encouraging couples to discuss concerns rather than hold back with one another may be important. Patients and spouses do not nominate similar concerns that they hold back sharing with one another. Tailoring approaches to encourage communication of each partner's unique concerns will be important. Because holding back was related to both partners' intimacy, well-being, distress, and relationship satisfaction, it will be important to reduce holding back not only on the part of patients, but also on the part of spouses, and to discuss the importance of open communication in maintaining relationship satisfaction. Because results suggest that intimacy may be a mechanism for holding back's effects, it can be viewed as a marker for therapeutic progress and should be assessed by clinicians working with couples. Because relationship satisfaction is a dyadic outcome associated with both partners' holding back and intimacy, it should be considered a key outcome in research study utilizing a couple-focused intervention. Clinicians may benefit from reducing holding back and work to improve intimacy in couples where patient, partner, or both, evidence elevated cancer-specific distress. However, future studies should evaluate if these associations hold among couples where neither evidences cancer-specific distress before firm clinical implications are formed. Overall, our findings suggest that open

communication about prostate cancer is an important goal for couples coping with prostate cancer.

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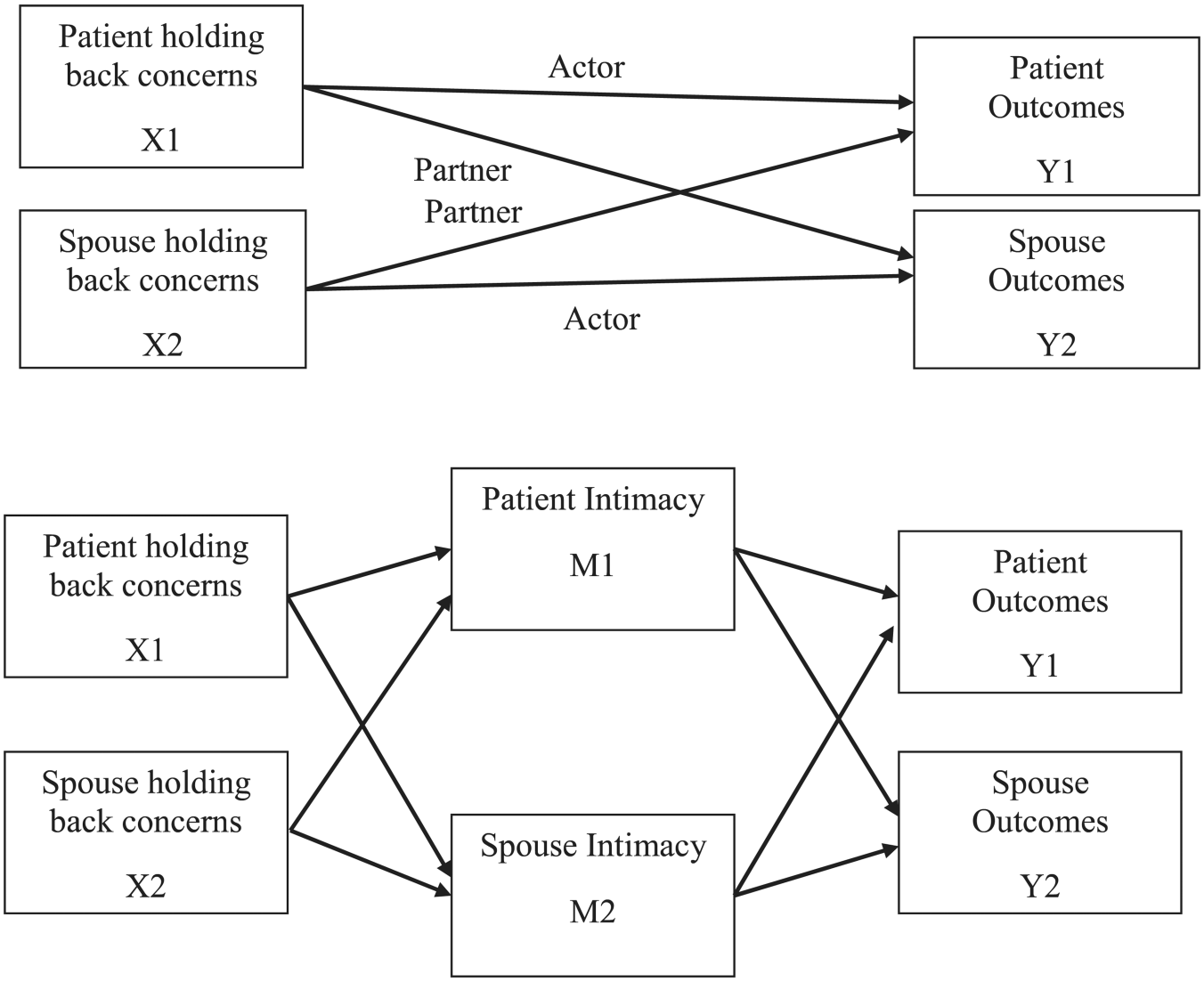

Figure 1.
Proposed direct effect (top panel) and indirect, mediated effect (bottom panel) models of holding back, relationship intimacy, and outcomes.

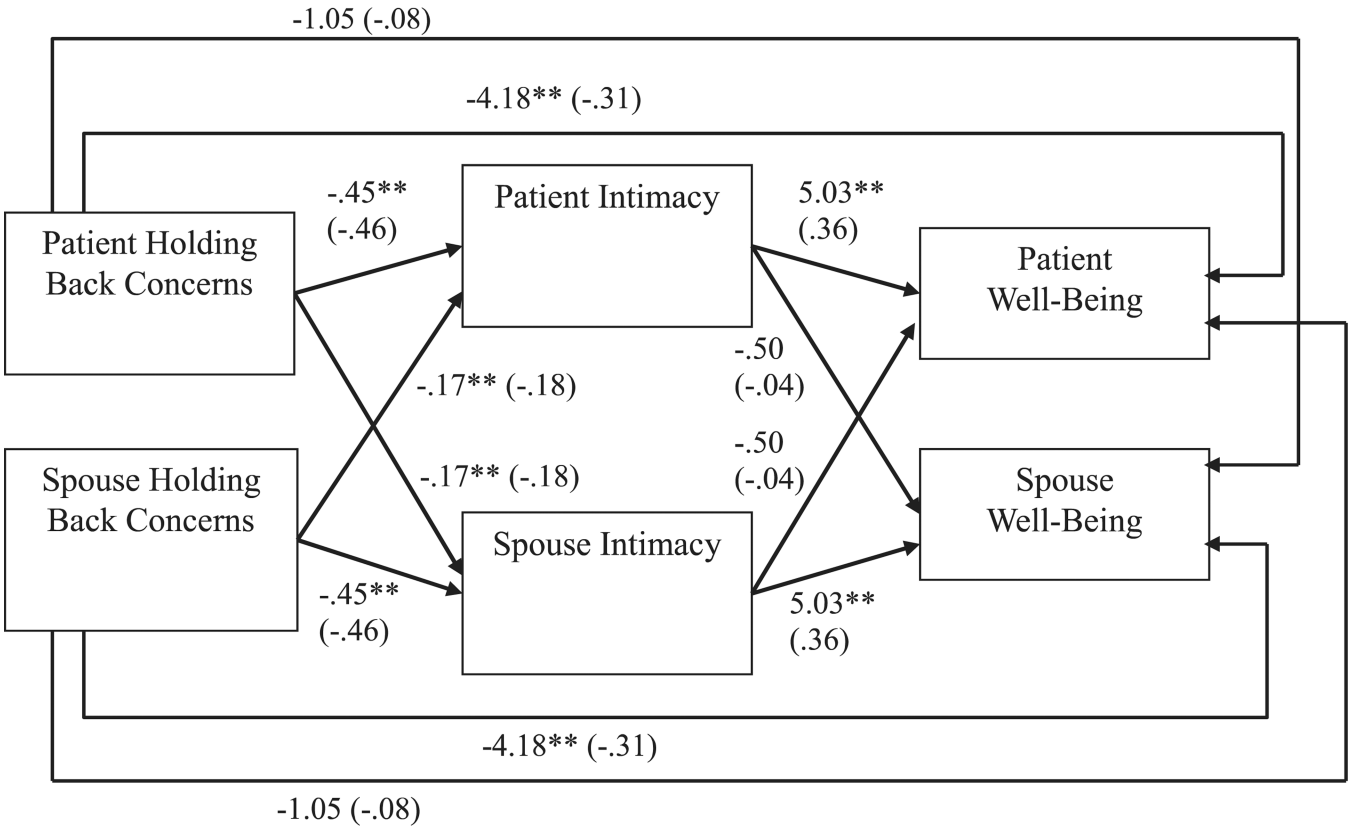

Figure 2.

Mediated model of associations between holding back, intimacy, and well-being. Values in parentheses are standardized path coefficients. $^{**}p < .01$.

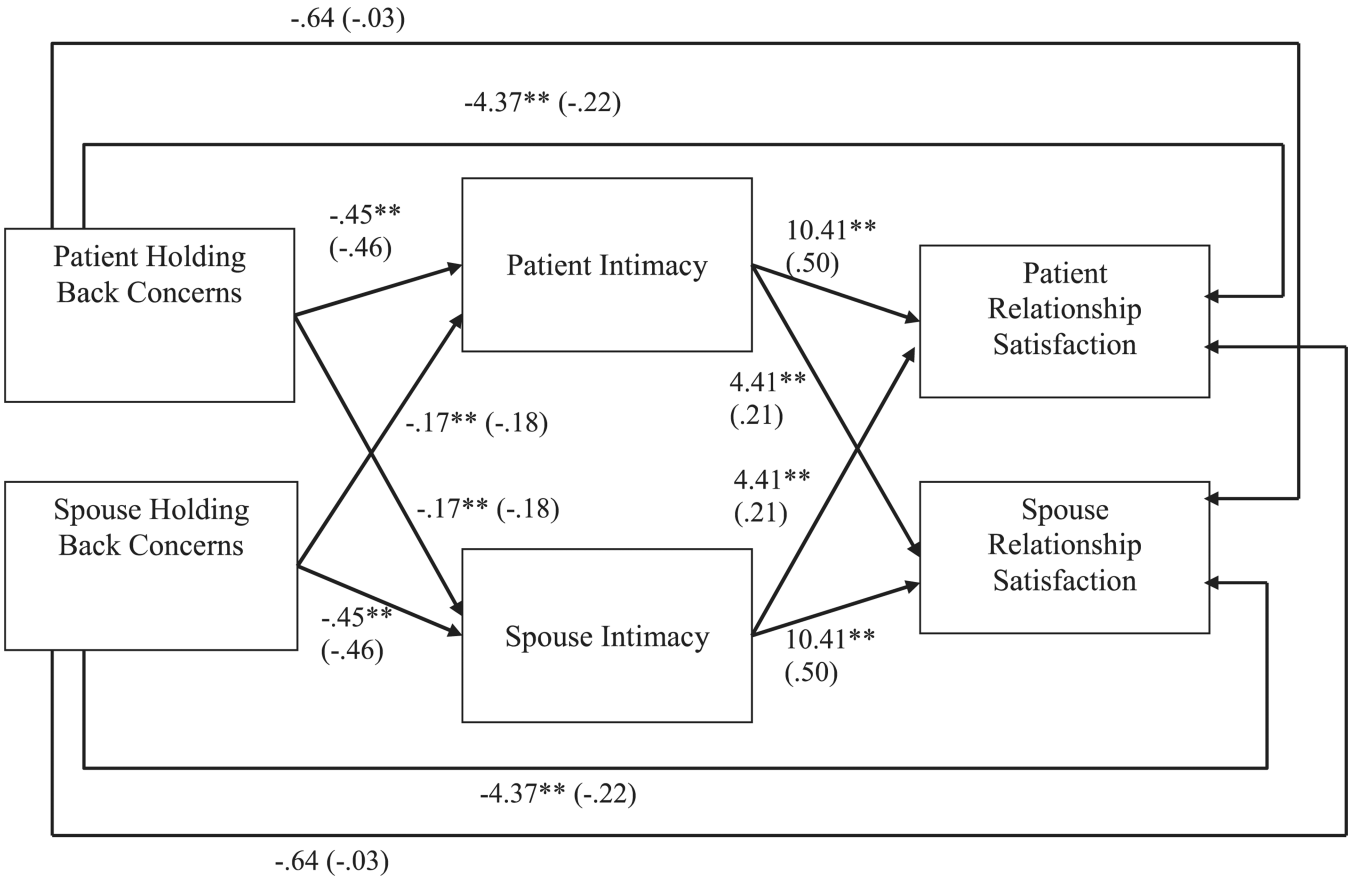

Figure 3.

Mediated model of associations between holding back, intimacy, and relationship satisfaction. Values in parentheses are standardized path coefficients. $^{**}p < .01$.

Table 1

Demographic and Clinical Characteristics of Participants

	Patient				Partner			
Characteristics	***n***	**M or %**	***SD***	**Range**	***n***	**M or %**	***SD***	**Range**
Age, years		60.6	7.5	42–82		56.8	8.9	28–75
Sex								
Male	139	100			1	0.7		
Female	0	0			138	99.3		
Race								
White, non-Hispanic	106	76.3			106	76.3		
Non-White	32	23.0			31	22.3		
Missing information	1	0.7			2	1.4		
Years of education								
<High school degree	3	2.2			3	2.2		
High school graduate	15	10.8			16	11.5		
Some college	18	12.9			31	22.3		
≥College graduate	102	26.6			88	20.8		
Missing information	1							
Marital status								
Married	132	95.0			132	95.0		
Cohabitating	7	5.0			7	5.0		
Relationship length								
Married		27.6	13.6	1–58				
Cohabitating		7.7	8.0	1–23				
Employment								
Employed	92	66.2			86	61.9		
Not employed	36	25.9			41	29.5		
Missing information	11	7.9			12	8.6		
Income, median		$130,000		$6,000–1,000,00				
Months since diagnosis		10.8	9.6	2–26				
Stage								

	Patient				Partner			
Characteristics	***n***	**M or %**	***SD***	**Range**	***n***	**M or %**	***SD***	**Range**
1	8	5.8						
2A	18	12.9						
2B	72	51.8						
3	4	29.5						
Gleason score								
6	33	23.7						
7	82	59.0						
8	10	7.2						
9	12	8.6						
Missing information	2	1.4						
Treatment type								
Surgery only	114	82.0						
Radiation only	10	7.2						
Surgery/radiation/ ADT	15	10.8						

Note. N = 139. ADT = androgen deprivation therapy.

Table 2

Descriptive Information for Items on the Holding Back Sharing Concerns Scale and Couple Comparisons

	Patient		Spouse				
Concern	***M***	***SD***	***M***	***SD***	***n***	***t***	***d***
Physical symptoms	1.91	1.16	2.25	1.26	138	2.45*	.21
Cancer treatment	1.46	0.90	1.91	1.25	138	3.50**	.30
Sexual relationship with partner	2.53	1.31	2.76	1.43	138	1.47	.13
Dissatisfaction with patient's body/appearance	1.73	1.14	1.71	1.35	137	0.16	.01
Emotional reactions to cancer	1.73	0.95	2.47	1.32	139	5.58**	.47
Fears about patient disease progression	1.93	1.25	3.11	1.65	139	7.35**	.62
Relationship with partner	2.06	1.19	2.12	1.40	138	0.48	.04
Relationship with others	1.54	1.02	1.61	1.09	137	0.57	.05
Financial concerns	1.53	1.05	2.29	1.46	139	5.68**	.48
Job concerns	1.52	1.01	2.06	1.37	133	4.43**	.38

Note. $N = 139$. Range for all items was 1 to 5.

* $p < .05$.

** $p < .01$.

Table 3

Means, Standard Deviations, and Correlations for Study Variables

Variable	1	2	3	4	5	6
1. Holding back	.30**	−.50**	−.54**	.51**	−.56**	.55**
2. Intimacy	−.53**	.49**	.49**	−.33**	.76**	−.33**
3. Well-being	−.46**	.56**	.31**	−.83**	.60**	−.32**
4. Distress	.44**	−.38**	−.76**	.25**	−.47**	.30**
5. Relationship satisfaction	−.52**	.68**	.52**	−.40**	.65**	−.35**
6. No. of concerns	.49**	−.32**	−.38**	.38**	−.34**	.40**
Patient *M*	1.79	4.05	60.85	45.56	116.55	6.73
SD	0.77	0.82	11.48	15.03	16.55	2.42
Spouse *M*	2.23	3.73	58.61	51.36	113.44	6.99
SD	0.94	0.87	12.11	15.48	18.59	2.24
Paired *t* test *t*(138)	5.01**	4.44**	1.91	3.66**	2.47*	1.23
d	.43	.38	.16	.31	.21	.10

Note. *N* = 139 couples. Correlations for patients are above the diagonal and correlations for spouses are below the diagonal. The underlined values are cross-partner correlations on the measure. Means and standard deviations are in the lower part of Table 3.

* $p < .05$.

** $p < .01$.

Table 4

Correlations Between Holding Back About Cancer Topics and Outcomes

	Patient				Spouse			
Concern	**Intimacy**	**Relationship satisfaction**	**Distress**	**Well-being**	**Intimacy**	**Relationship satisfaction**	**Distress**	**Well-being**
Physical symptoms	−.40	−.42	.32	−.32	−.30	−.30	.35	−.35
Cancer treatment	−.38	−.45	.22	−.23	−.27	−.23	.38	−.36
Sexual relationship with partner	−.31	−.28	.31	−.29	−.34	−.35	.29	.25
Dissatisfaction with patient's body/appearance	−.24	−.24	.35	−.27	−.37	−.38	.33	−.36
Emotional reactions	−.38	−.35	.40	−.39	−.37	−.40	.36	−.43
Fear about patient's disease progression	−.37	−.38	.32	−.34	−.22	−.28	.28	−.36
Relationship with partner	−.55	−.44	.36	−.47	−.42	−.48	.53	−.55
Relationship with others	−.38	−.36	.39	−.37	−.31	−.38	.44	−.43
Financial concerns	−.32	−.32	.16[a]	−.21*	.50	−.58	.32	−.40
Job concerns	−.33	−.44	.24	−.34	.42	−.48	.34	−.31

Note. All correlations are significant at the $p < .01$ level with the exception of those with one asterisk (* $p < .05$).

[a]Nonsignificant.