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Partner Social Constraints and Early-Stage Breast Cancer: Longitudinal Associations with Psychosexual Adjustment

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Abstract

Women with breast cancer (BC) who perceive social constraints on their disclosure of cancer-related concerns are more likely to experience distress and have difficulty adjusting after diagnosis. Much of the existing research on psychosocial adjustment is cross-sectional in nature and an important area of concern that has received little attention is psychosexual adjustment to cancer surgery and treatment. This study examined whether perceived partner social constraints were associated with psychosexual adjustment over time in 108 BC survivors. Early-stage BC patients completed measures of partner social constraints, psychosexual adjustment, and relationship dissatisfaction approximately one month, eight months, and four years after initial surgery. Latent growth curve modeling revealed partner social constraints to be a significant time-varying, within-person predictor of psychosexual adjustment at each time point after controlling for relationship dissatisfaction. BC surgery type, reconstructive surgery, cancer stage, chemotherapy, or anti-hormonal adjuvant treatment did not moderate this effect. Findings point to a long-term link between social constraints and psychosexual outcomes in BC patients and clinical implications for women coping with BC.

Keywords

breast cancer; marriage; social constraints; psychosexual adjustment; relationship dissatisfaction; sexual functioning

For women with breast cancer (BC), the initial diagnosis, surgery, treatment, and transition to life as a survivor are stressful experiences that can disrupt various domains of functioning,

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including psychosexuality. Psychosexual adjustment encompasses aspects of body image, including satisfaction with appearance, as well as sexuality, including sexual interest and function. Surgically altering or removing a secondary sexual organ can influence a woman's self-concept and perception of her femininity, attractiveness, and desirability (Holmberg, Scott, Alexy, & Fife, 2001). Furthermore, adjuvant treatments, including chemotherapy, radiation, and hormonal therapy, can lead to declines in sexual functioning and other distressing physical changes, such as changes in ovarian functioning, including premature menopause, fatigue, nausea, and irritation or burns on the breasts (Avis, Crawford, & Manuel, 2004; Burwell, Case, Kaelin, & Avis, 2006; Figueiredo, Cullen, Hwang, Rowland, & Mandelblatt, 2004; Huber, Ramnarace, & McCaffrey, 2006; Wai Ming, 2002). These psychosexual concerns are among the most commonly cited among BC patients (Avis et al., 2004; Holmberg et al., 2001; Spencer et al., 1999). In fact, early after diagnosis, BC patients reported their sexual quality of life to be more disrupted than physical, medical, psychosocial, and marital domains (Beckjord & Compas, 2007). Psychosexual adjustment may continue to be problematic even in long-term survivors of BC. Several studies have found that many women report persistent sexual problems up to five years post-diagnosis (Bloom, Stewart, Chang, & Banks, 2004; Meyerowitz et al., 1999).

Interpersonal relationships with family, friends, co-workers, and close others are sources of support that help BC patients cope with the physical and psychological sequelae of this disease. Within her social network, a patient's intimate relationship is a particularly important one for promoting psychosocial adaptation to BC more generally and psychosexual adjustment specifically (Manne & Badr, 2008). A spouse/partner's willingness and ability to be responsive to expressions of a patient's cancer-related feelings, needs, and/or concerns influences not only how much emotional connection the patient feels toward the partner (Reis & Shaver, 1988), but likely also her interest and re-engagement in sexuality.

The current study focuses on perceived *partner social constraints* as a putative predictor of psychosexual adjustment in survivors of BC, which has not been previously examined. Partner social constraints reflect a BC patient's perceptions of disinterest or unresponsiveness from her spouse/partner (hereafter, termed "partner"), thereby dampening her ability or desire to disclose cancer-related concerns. Our overarching goal was to determine whether partner social constraints predicted psychosexual adjustment up to four years after BC diagnosis and surgery.

Psychosexual Adjustment in the Relationship Context

What predicts psychosexual adjustment in BC patients? A large literature has focused on predicting psychosexual adjustment and similar outcomes from surgery and types of adjuvant treatment (e.g., Fobair et al., 2006; Moyer, 1997; Rowland et al., 2000). Largely ignored in the majority of published work on psychosexual adjustment is the important role of partners and relationship functioning. How attractive, desirable, or feminine a woman feels often hinges on her relationship with her intimate partner. This has been demonstrated in non-patient samples (e.g. Weller & Dziegielewski, 2005; Yoo, Bartle-Haring, Day, & Gangamma, 2014), but may be especially relevant for women experiencing the significant

stress of BC and thus heavily relying on support from their close relationships. For the majority of patients with cancer, the most vital and influential source of support is their spouse or intimate partner (Figueiredo, Fries, & Ingram, 2004; Pistrang & Barker, 1992; Primomo, Yates, & Woods, 1990). Partner support is so crucial, in fact, that having supportive family and friends does not compensate for the detrimental effects of its absence on patients' well-being (Manne et al., 2003; Pistrang & Barker, 1995; Weihs, Enright, Howe, & Simmens, 1999). Some cross-sectional work has demonstrated an association between relationship functioning and psychosexual adjustment in BC patients. Specifically, relationship satisfaction has been linked cross-sectionally to patients' self-acceptance of appearance (Zimmerman, Scott, & Heinrichs, 2010), feelings of attractiveness (Abend & Williamson, 2002), body image (Moreira et al., 2011), and sexuality (Meyerowitz et al., 1999).

Importantly, measures of general relationship satisfaction or quality are quite broad in nature and reveal little about the specific interactions, emotions, or attributions that actually contribute to how a woman views her attractiveness, desirability, and femininity. Some studies of non-patient samples suggest that communication patterns contribute to women's psychosexuality. For example, women's report of their and their partner's constructive communication patterns predicts fewer body image concerns (Pole, Crowther, & Schell, 2004). Another study found that women's perceptions of their partner's positive communication style is related to increased sexual intimacy (Yoo et al., 2014). In the context of BC, psychosexual adjustment may depend not only on global relationship satisfaction, but on the patient's ability to discuss her concerns and feelings about the physical consequences of surgery and adjuvant treatment as well as how her partner responds to these changes in an ongoing way over time. *Partner social constraints* is reflective of this specific problematic communication pattern and is central to a theoretical model of adjustment to cancer that has substantial empirical support.

Social Constraints and its Consequences

According to the Social-Cognitive Processing Model (SCPM; Lepore, 2001; Lepore & Revenson, 2007; Lepore, Silver, Wortman, & Wayment, 1996), disclosing and communicating about the cancer experience to supportive others is essential to the successful cognitive processing of events, such as BC diagnosis and treatment, which are traumatic experiences for many patients. *Social constraints* occur when patients perceive their social environment as unsupportive or unreceptive to their disclosure, and thus have limited opportunity to gain the potential benefits of disclosure for trauma-related processing (e.g., increased exposure, habituation, narrative building; Lepore, 2001; Lepore & Revenson, 2007). This can result in delayed processing and adjustment, as well as prolonged distress, intrusive thoughts, and avoidance of cancer-related stimuli (Lepore, 2001; Lepore & Revenson, 2007). Intimate partners can create social constraints by responding to patients with criticism, harshness, or disapproval (e.g., Manne, 1999), as well as avoidance, forced optimism, or worry (e.g., Figueiredo et al., 2004). Moreover, partners may inadvertently exert patient-perceived constraints through well-intended behaviors (Lepore & Revenson, 2007), such as avoiding cancer-related discussions in the service of helping life go "back to normal" (Lethborg, Kissane, & Burns, 2003). The SCPM dovetails with the interpersonal

process model of intimacy, which states that intimacy consists of disclosing aspects of the self to a partner perceived as available and responsive (Reis & Shaver, 1988). The SCPM describes a particular disturbance in this process of intimacy (i.e., social constraints) and its implications for adjustment in the specific context of cancer. We draw on these corresponding frameworks in order to describe and interpret the model tested in the current study, but rely most on the SCPM as we examine the process of adjustment to BC.

A wealth of research has documented the negative psychological outcomes associated with social constraints in individuals coping with cancer. A recent meta-analysis of 30 studies (the majority being cross-sectional in design) found moderate-sized positive effects of social constraints on general distress as well as cancer-specific distress (Adams, Winger, & Mosher, 2015). Social constraints have also been associated with greater levels of depression (Lepore et al., 1996), anxiety (Braitman et al., 2008), and loneliness (Mosher et al., 2012). It is important to note that while many of these studies measured social constraints from the intimate partner, others measured social constraints from a broader social network (e.g., family and friends). However, as described earlier, the romantic partner relationship is arguably the most influential in both the adjustment to BC and psychosexuality in general. Thus, although social constraints indeed can exist in many types of relationships, social constraints from the partner (“partner social constraints”) are our current focus.

Given the centrality of close relationships in the conceptualization of social constraints, it is somewhat surprising that little research has examined its association with relationship-relevant outcomes. A few cross-sectional studies have examined the association between partner social constraints and relationship dissatisfaction. In one study, partner social constraints were an important predictor of average daily relationship intimacy and relationship happiness within both BC patients and their partners (Pasipanodya et al., 2012). Donovan-Kicken and Caughlin (2010) found that partner social constraints moderated the effect of partners’ avoidance of cancer-related topics on relationship dissatisfaction, such that topic avoidance was positively associated with relationship dissatisfaction only among BC patients who reported high levels of partner social constraints. The effects partner social constraints may have on other relationship-relevant outcomes, such as psychosexual adjustment, remains unknown.

Partner Social Constraints as a Predictor of Psychosexual Adjustment

Women who feel that they cannot disclose their cancer-related concerns, which often include physical changes and sexual functioning (Avis et al., 2004; Holmberg et al., 2001), lack opportunities to contemplate and explore these concerns with their partner (Lepore & Revenson, 2007). Without the benefits of disclosing to a responsive partner, women can experience prolonged or increased distress about the trauma (Lepore, 2001; Lepore & Revenson, 2007), which could include its effects on self-image and sexual function. Avoiding discussion of these thoughts and feelings may also lead women to worry about their partner’s perception of physical changes, such as loss of breasts or breast tissue, surgery scars, or changes in hormonal status as a result of cancer treatment. In a qualitative study, BC patients and their partners discussed how they, as a couple, accommodated changes in the patient’s self-concept and body image after surgery and treatment (Holmberg

et al., 2001). One partner said that the patient “had trouble believing I could still love her despite her mastectomy” and further explained, “The trust that they had in each other needed to be reestablished” (p. 57). Social constraints from the partner may prevent opportunities for him/her to communicate their continued affection and desire for the patient, which may be necessary for the patient to accept and adjust to changes in her body.

While no studies, to our knowledge, have examined the link between partner social constraints and psychosexual adjustment in BC patients, some have examined the effect of partner social support on psychosexual adjustment (Huber et al., 2006). Early after diagnosis, BC patients who reported that their partners had difficulty understanding their feelings were more likely to have poor body image (Fobair et al., 2006). Moreover, when partners were perceived as unsupportive soon after surgery, BC patients were more likely to experience sexual difficulties 6 months later (Kinsinger, Laurenceau, Carver, & Antoni, 2011). Partner support was also linked cross-sectionally to perceived attractiveness in BC patients up to 5 years post-diagnosis (Abend & Williamson, 2002). Controlling for pre-surgical levels of psychosexual adjustment, Wimberly and colleagues (2005) found that greater partner emotional involvement predicted psychosexual adjustment concurrently as well as at future assessment points. Dyadic coping also has been shown to be a significant predictor of BC patients’ perceptions of their partner’s acceptance of their appearance (Zimmerman et al., 2010). These studies are consistent with the hypothesis that partner social constraints hinder psychosexual adjustment, but partner support and involvement, much like relationship dissatisfaction, are broad constructs encompassing many different types of interactions and behaviors. Conversely, partner social constraints describe the patient’s perceived inability to discuss concerns that are specifically cancer-related with her partner.

Goals of Present Study

The goal of the current study was to examine the relationship between perceived partner social constraints and psychosexual adjustment among BC patients spanning several years following diagnosis. We use the term partner social constraints to describe the patient-reported perception of social constraints from the intimate partner. Specifically, we assessed concurrent associations one month, eight months, and approximately four years after initial BC diagnosis and surgery. We hypothesized that partner social constraints would consistently predict worse psychosexual adjustment over time. To our knowledge, this is the first study to examine psychosexual adjustment as an outcome of partner social constraints in BC patients.

Previous research suggests psychosexual adjustment is related to relationship dissatisfaction in BC patients (Broeckel, Thors, Jacobsen, Small, & Cox, 2002; Meyerowitz et al., 1999; Moreira et al., 2011) and thus a plausible alternative explanation for any negative effects of partner social constraints on psychosexual adjustment is that patients who report more partner social constraints also are more dissatisfied with their relationship/partner as a whole. Therefore, we also sought to control for relationship dissatisfaction to determine whether partner social constraints have an independent effect on psychosexual adjustment. Although it could be argued that social support is also important to consider as a covariate,

we did not because prior research and theory have suggested that perceived partner support is closely related to broad relationship evaluations such as relationship dissatisfaction (e.g., Lakey & Orehek, 2011).

Method

Participants

Early-stage BC patients were recruited from a community cancer center if they met the following inclusion criteria: (1) had BC surgery within the previous two months, (2) were diagnosed with Stage 0 (ductal/lobular carcinoma in situ), Stage I, Stage II, or Stage IIIA breast cancer, and (3) were in a committed romantic relationship with a partner who also agreed to participate. For the purposes of the present study, data were drawn from two independent samples of patients who participated in studies of couples coping with BC (Sample 1: Belcher et al., 2011; Dasch et al., 2010; Pasipanodya et al., 2012; Sample 2: Otto, Laurenceau, Siegel, & Belcher, 2015). Fifty-four participants constituted Sample 1 and 54 participants constituted Sample 2, resulting in a final sample of 108 BC patients. Both samples consisted of patients who were recruited from the same cancer center using the same inclusion criteria and provided measures of the variables of current interest at each time point (partner social constraints, relationship dissatisfaction, and psychosexual adjustment). Patients were administered the first survey early after surgery (T1), the second about seven months later (T2), and were contacted again about four years later and invited to participate in a longitudinal follow-up (T3). The Institutional Review Board of Christiana Care Health System (FWA00006557) approved study protocols *Couples Coping with Cancer* (CCC# 26193) and *Patients Coping with Cancer* (CCC# 33032) from which participants for this research paper were drawn.

In the present study, we made use of available data from all patients, including those who only provided measures at T1. Analyzing only cases that have complete data at all three time points leads to reduced power and increased parameter bias (Enders, 2010). One participant did not complete the T1 assessment ($n = 107$), 25 did not complete the T2 assessment ($n = 83$), and 41 did not complete the T3 assessment ($n = 67$). Five of those who did not complete the T2 assessment actively withdrew from the study and were therefore not contacted to participate in the T3 follow-up. Of the 103 patients who were asked to provide T3 measures, 70 agreed, 19 were unable to be reached, nine declined, and five were deceased. Of those who were deceased, two also did not complete the T2 assessment, resulting in seven total missing assessment points from those five women. Three women who agreed did not return consent forms, resulting in 67 participants who provided T3 measures.

Breast cancer stage, type of initial breast cancer surgery, and whether participants received breast reconstructive surgery were extracted from electronic medical records. In terms of breast cancer stage, 23.1% had Stage 0, 43.5% had Stage I, 24.1% had Stage II, 8.3% had Stage IIIA, and 1 patient (0.9%) had missing information in their records. The majority of patients (69.4%) received breast-conserving surgery, 18.5% received a unilateral mastectomy, 9.3% received a bilateral mastectomy, and 3 patients (2.8%) had missing or inconsistent information in their medical records. Before the first survey (T1), 18.5% of patients received breast reconstructive surgery, and by the final survey (T3), this number

grew to 30.6%. Approximately 42% of patients reported receiving chemotherapy treatment and about 60% reported receiving anti-hormonal treatment. Participants reported their menopausal status at the first or second assessment point (23.9% pre-menopausal).

The mean age of the 108 participants was 52.46 years ($SD = 10.29$, range = 31 – 80). Approximately 89% of participants were Caucasian, 7% black or African-American, 3% Asian, and 1% other. Approximately 75% reported an annual family income over \$60,000. At the time of recruitment, about 37% were not employed, 25% were working part-time, and 37% were working full-time. In terms of relationship status, all participants were in committed relationships and about 97% were married. On average, relationship length at the time of initial recruitment was 25.29 years ($SD = 13.37$, range = 3 – 62). Over the course of this longitudinal study, eight patients (7.4%) reported a recurrence of their breast cancer, and nine patients (8.3%) reported a diagnosis of another type of cancer. One patient (0.9%) reported that she was not in a relationship with the same partner by the time of the third assessment point and had remarried.

Procedure

As mentioned previously, to address the current research question, we combined participants from two independent research studies that were completed sequentially in time, both of which possessed similar temporal designs involving T1 and T2 assessments relative to diagnosis and initial surgery. Both samples were recruited and completed the first cross-sectional survey (T1) soon after initial breast cancer surgery ($M = 5.46$ weeks, $SD = 7.61$, range = –24.43 – 36.57) and a second time (T2) approximately seven months later ($M = 7.07$ months, $SD = 2.07$, range = 4.70 – 14.75) in order to capture the period of time after the initial crisis of diagnosis, surgery, and treatment. However, we contacted participants from both studies simultaneously to complete the third (T3) assessment. Therefore, the time elapsed between the T2 and T3 assessments varied between the two samples. Participants completed the T3 measures an average of 3.95 years ($SD = 1.71$, range = 1.99 – 6.97) after T1. Although some data were collected from both patients and their romantic partners, only the patient data were used in the present study.

Measures

Partner social constraints—The Social Constraints Scale (SCS; Lepore & Ituarte, 1999) is a 15-item questionnaire that captures a patient's perceived constraints on the ability to disclose or discuss cancer-related thoughts, feelings, or actions to their partner. Responses range from one (*never*) to four (*often*). Eight of the 15 items assess social constraints broadly without explicit reference to cancer (e.g., “*How often did your spouse/partner minimize your problems?*”). The content of some individual items also overlapped substantially with relationship dissatisfaction (e.g., “*How often did your spouse/partner let you down by not showing you as much love and concern as you would have liked?*”). Since the aim of the present study was to examine the effect of partner social constraints on psychosexual adjustment above and beyond any effect on relationship dissatisfaction, we chose to exclude these eight items, as they likely share considerable overlap with the construct of relationship dissatisfaction. The remaining seven items explicitly targeted cancer-specific constraints (e.g., “*How often did your spouse/partner change the subject when you tried to disclose your*”).

illness?). The cancer-specific SCS items demonstrated strong inter-item reliability across assessments (range = 0.84 – 0.93). Hereafter we use the term “partner social constraints” to refer to patient-perceived social constraints from the partner measured via the selected cancer-specific items from the SCS.

Psychosexual adjustment—Taken from Wimberly et al. (2005), psychosexual adjustment (PSA) was measured using three items: “*How physically attractive you do feel you are?*”, “*How sexually desirable do you feel you are?*”, and “*How feminine, or how much like a woman, do you feel you are?*” This measure demonstrated strong inter-item reliability across repeated assessments in the present study (range = 0.80 – 0.91), consistent with previous research (Wimberly et al., 2005). Although the same items were used to measure PSA at each time point, the scaling of the response options differed at the third time point (T3). Specifically, at the first two assessment points, responses ranged from one (*not at all*) to five (*extremely*). At the third assessment point, participants used a sliding scale ranging from zero (*not at all*) to ten (*extremely*) when responding to the items on the online survey. This allowed for non-integer responses (i.e., participants could click between digits when responding). In order to allow for comparison across all time points, the sum of the PSA items were converted to percent of maximum possible scores (POMP; Cohen, Cohen, Aiken, & West, 1999). Using the formula found in Cohen et al. (1999), the resulting PSA POMP scores were comparable across time points and ranged from zero to 10, with zero representing the minimum possible score and 10 representing the maximum possible score. For example, a PSA score of five represents 50% of the maximum possible score, which corresponds to an item sum of nine on the one to five scale version and an item sum of 15 on the zero to 10 scale version.

Relationship dissatisfaction—The Quality of Marriage Index (QMI; Norton, 1983) is a 6-item questionnaire assessing global relationship dissatisfaction. Five items are rated from zero (*very strongly disagree*) to six (*very strongly agree*). The sixth item (“*All things considered, what degree of happiness best describes your relationship?*”) is rated from zero (*very unhappy*) to nine (*perfectly happy*). As discussed below, relationship dissatisfaction was modeled as a count variable, and therefore each item of the six QMI was reverse scored before being summed to create the QMI index. Thus, higher QMI scores indicate greater relationship dissatisfaction and lower QMI index scores indicate greater relationship satisfaction. Inter-item reliability across assessments was very strong (range = 0.98 – 0.99).

Results

Data Analytic Approach

To investigate associations among predictor and outcome variables over time, latent growth curve models with time-varying covariates were estimated using Mplus 7 (Muthén & Muthén, 1998–2015). Latent growth curve models allow for the estimation of average within-person change over the three assessment points as well as between-person variability reflecting individual differences in change over time. Modeling partner social constraints as a time-varying predictor is an approach consistent with our hypothesis that this variable has a causal influence on psychosexual adjustment. Although the current design does not allow

for a direct test of this proposed causal process, a longitudinal within-person analysis we conducted (Gelman & Hill, 2007) more closely approximates such a test than alternative approaches, such as correlating individual differences in change over time between social constraints and psychosexual adjustment. Time was entered as a variable where $T1 = 0$; therefore, the intercept factor represented the model-implied level of the outcome at $T1$, which was soon after initial diagnosis and surgery. As described in the Method, the time elapsed between the $T2$ and $T3$ assessments varied between the two samples that were combined for the current analyses. Nevertheless, the models reported below allowed for the timing of assessments to differ between individuals by allowing patients to have individually-varying time scores. The focal predictor, partner social constraints, was person-mean centered and specified as a time-varying covariate with both a fixed effect (reflecting an average within-person slope) and a random effect (capturing potential individual differences in the effect of partner social constraints on the outcome). Figure 1 provides a depiction of the central model. Because there was no theoretical rationale for why the link should differ by time point, the effect of partner social constraints as a time-varying predictor was captured as a single constrained estimate as is convention in multilevel modeling (Singer & Willett, 2003). Note that the inclusion of time-varying predictors and random slope effects in our models preclude the calculation of fit statistics.

Relationship dissatisfaction was positively skewed, with a large proportion (19.8%) of participants reporting perfect scores (i.e., zeros). Therefore, relationship dissatisfaction was treated as a count variable when analyzed as an outcome. A negative binomial regression model was used to account for data overdispersion within the same multilevel framework (Atkins, Baldwin, Zheng, Gallop, & Neighbors, 2013). In terms of handling missing data, we assumed the data were missing at random (MAR), meaning that the outcome variables (psychosexual adjustment and relationship dissatisfaction) were not systematically related to missingness after accounting for observed covariates in our models. Although this assumption cannot be directly tested, it is considered to be more plausible in longitudinal designs as those who have missing data at a particular time point provided data at other time points, and repeated measures from the same individuals tend to be correlated (Enders, 2010). Several variables related to breast cancer (e.g., stage and reconstructive surgery) were related to missingness at Time 3, and as such, these variables were later entered in the model to strengthen the plausibility of the MAR assumption.

Describing Initial Levels and Change over Time

Descriptive statistics and bivariate correlations of partner social constraints, psychosexual adjustment, and relationship dissatisfaction at each time point are displayed in Table 1. Prior to testing our specific hypotheses, we examined linear change in partner social constraints, psychosexual adjustment, and relationship dissatisfaction over time. The average partner social constraints score at $T1$ was 1.44 ($z = 19.64$, $p < .001$, 95% CI [1.29, 1.58]). Initial levels varied between women (variance = 0.34). Partner social constraints for the typical woman decreased gradually over time, $\gamma = -0.09$, $z = -2.28$, $p = .023$, 95% CI [-0.17, -0.01], and its slope did not vary substantially between women (variance = 0.02). The average initial level of psychosexual adjustment was 5.26 ($z = 26.29$, $p < .001$, 95% CI [4.87, 5.65]), corresponding to about 50% of the maximum possible score. There was

substantial between-person variability (variance = 3.24) with about 95% of T1 scores between 1.66 and 8.86. Psychosexual adjustment for the typical woman also was stable over time ($\gamma = -0.04$, $z = -0.78$, $p = .43$, 95% CI [-0.12, 0.05]) and its slope did not appear to vary between women (variance = 0.01). Regarding relationship dissatisfaction, the estimated intercept was 0.91 ($z = 5.82$, $p < .001$, 95% CI [0.60, 1.21]). The exponentiation of the intercept is 2.48, which represents the estimated average count of relationship dissatisfaction at T1. Initial levels of relationship dissatisfaction varied between women (variance = 1.75). The slope for relationship dissatisfaction was marginally significant, $\gamma = 0.05$, $z = 1.73$, $p = .08$, 95% CI [-0.01, 0.11], Rate Ratio = 1.05, indicating that relationship dissatisfaction scores for the typical woman were estimated to increase 5% per year. The slope did not appear to vary between women (variance = 0.01).

Partner Social Constraints Predicting Relationship Dissatisfaction

Prior to testing our primary hypothesis, we examined partner social constraints as a predictor of relationship dissatisfaction over time. Partner social constraints did not emerge as a significant within-person predictor of relationship dissatisfaction at each time point, $\gamma = 0.32$, $z = 1.61$, $p = .11$, 95% CI [-0.07, 0.71]. The exponentiation of the coefficient is 1.38, indicating that on average a woman who reported a partner social constraints score that is one unit above what is typical for her is predicted to have a 1.38 times greater relationship dissatisfaction score. The variance of this effect was 0.38, suggesting that for about 95% of participants, the within-person effect of partner social constraints on relationship dissatisfaction was between -0.91 and 1.55. The between-person effect of partner social constraints was significant, $\gamma = 1.16$, $z = 6.37$, $p < .001$, 95% CI [0.81, 1.52], such that participants who reported higher levels of partner social constraints were more likely to have greater relationship dissatisfaction. The exponentiation of the coefficient is 3.20, indicating that a one-unit increase in partner social constraints is associated with a 3.20 times greater relationship dissatisfaction score between women.

Partner Social Constraints Predicting Psychosexual Adjustment

To test our primary hypothesis, we examined both partner social constraints and relationship dissatisfaction in the same model as predictors of psychosexual adjustment over time. Partner social constraints emerged as a significant within-person predictor of psychosexual adjustment at each time point, $\gamma = -0.88$, $z = -2.86$, $p = .004$, 95% CI [-1.48, -0.28]. Specifically, a one-unit increase in partner social constraints predicted nearly a 9% decrease in the maximum possible score of psychosexual adjustment while controlling for relationship dissatisfaction. This value is greater than half a within-person standard deviation ($SD = 1.24$) of psychosexual adjustment. The variability in the effect of partner social constraints among women was substantial (variance = 0.68), with the within-person effect ranging from -2.50 to 0.74 for 95% of women. The between-person effect of partner social constraints on psychosexual adjustment was also statistically significant, $\gamma = -0.79$, $z = -2.60$, $p = .009$, 95% CI [-1.38, -0.19]. The within-person effect of relationship dissatisfaction on psychosexual adjustment was in the expected direction but was not statistically significant, $\gamma = -0.04$, $z = -1.92$, $p = .055$, 95% CI [-0.07, 0.01].

We also examined whether cancer stage, surgery type, and treatment type moderated the effect of partner social constraints on psychosexual adjustment, since these variables are known to have effects on psychosexual adjustment in BC patients (Fobair et al., 2006; Moyer, 1997; Rowland et al., 2000). Specifically, we examined cancer stage, reconstructive surgery, initial BC surgery type (breast conservation versus unilateral or bilateral mastectomy), chemotherapy, and anti-hormonal adjuvant treatment separately in the original model. None of these variables moderated the association between partner social constraints and psychosexual adjustment.

Discussion

The goal of the current study was to examine the longitudinal association between partner social constraints and psychosexual adjustment in early-stage BC patients. Specifically, we used latent growth curve models with time-varying predictors to examine the concurrent associations between partner social constraints and psychosexual adjustment approximately one month, eight months, and four years after initial BC surgery. We hypothesized that the presence of partner social constraints would negatively influence psychosexual adjustment across time. Although the negative effects of social constraints on distress in cancer patients are well-documented (Adams et al., 2015), this is the first study to assess the effects of partner social constraints on psychosexual adjustment, a highly cited yet understudied concern of BC patients (Avis et al., 2004; Burwell et al., 2006; Figueiredo et al., 2004; Holmberg et al., 2001; Wai Ming, 2002).

Prior to testing our primary hypothesis, we examined initial levels and subsequent changes in partner social constraints, psychosexual adjustment, and relationship dissatisfaction over time. On average, initial levels of partner social constraints were low, and initial levels of psychosexual adjustment neared the middle of the range of possible scores; initial levels of both variables demonstrated substantial and significant individual differences. Patients on average reported low levels of relationship dissatisfaction soon after BC surgery, which is consistent with many previous studies of early-stage BC patients (e.g., Manne, Sherman, et al., 2004; Wimberly et al., 2005). Partner social constraints decreased gradually over the years after diagnosis, while psychosexual adjustment was stable over time, neither of which varied substantially between women. While work has documented a stable course of social constraints, (Lepore et al., 1996; Manne, 1999), no studies have spanned more than a few years or examined trajectories of social constraints in breast cancer patients, to our knowledge. A few previous studies examined change in body image, a similar but broader measure of psychosexual adjustment, in women with BC and are somewhat inconsistent. One found no evidence of change in body image a year after surgery (King, Kenny, Shiell, Hall, & Boyages, 2000) and another found it increased 5 years after surgery (Bloom, Stewart, Chang, & Banks, 2004). Relationship dissatisfaction increased slightly over time, which is somewhat consistent with studies reporting stable levels of relationship quality in BC patients 18 (Manne, Ostroff, et al., 2004), 20 (Kraemer, Stanton, Meyerowitz, Rowland, & Ganz, 2011), and 34 months (Weihs et al., 1999) after diagnosis.

Our primary aim was to examine partner social constraints as a within-person predictor of psychosexual adjustment over time. Existing research suggests that partner social constraints

may affect relationship dissatisfaction and that relationship dissatisfaction is linked to psychosexual variables in BC patients. Therefore, we expected that partner social constraints may influence psychosexual adjustment primarily through its effect on relationship quality. We hypothesized, however, that partner social constraints have a unique influence on psychosexual adjustment above and beyond the effect of relationship dissatisfaction. To test this, we controlled for relationship dissatisfaction as a time-varying covariate in our analysis. As hypothesized, greater levels of partner social constraints significantly predicted lower levels of psychosexual adjustment approximately at one month, eight months, and approximately four years after surgery, above and beyond relationship dissatisfaction. Specifically, a woman who experienced a one-unit increase in her partner social constraints score is predicted to experience a corresponding 9% decrease in the maximum possible psychosexual adjustment score (over half of a within-person standard deviation). In other words, as partner social constraints increased (or decreased) over time, women experienced corresponding decreases (or increases) in their psychosexual adjustment. This finding suggests that partner social constraints have a unique and persistent within-person effect on BC patients' perception of their attractiveness, desirability, and femininity that is not explained by their effect on relationship dissatisfaction.

Although the within-person effect of partner social constraints on psychosexual adjustment was negative for the vast majority of women, there was substantial variance between women in its magnitude and even direction. For some women, the effect was far more severe than the estimated average effect, and for others, social constraints was associated with enhanced psychosexual adjustment. These individual differences point to the possibility of moderating factors that buffer or exacerbate the negative effects of social constraints. For example, maintenance of physical affection after diagnosis may buffer the impact of social constraints on psychosexual adjustment. The use of certain coping strategies, such as avoidant versus active coping, may also help explain individual differences in the effect of social constraints. Future research should consider and examine potential moderators of this association.

Although not the primary focus of the current study, the within-person effect of relationship dissatisfaction on psychosexual adjustment was in the expected direction but not statistically significant. To our knowledge, this is the first study to examine this association longitudinally in BC patients. However, previous cross-sectional studies have found significant inverse between-person associations (Abend & Williamson, 2002; Meyerowitz et al., 1999; Moreira et al., 2011; Wai Ming, 2002; Zimmerman et al., 2010). Future research should utilize longitudinal data to examine the nature of the within- and between-person links between relationship dissatisfaction and psychosexual adjustment.

Although no previous studies have examined the association between partner social constraints and psychosexual adjustment in BC patients, research on related constructs in non-patient populations may be applicable. For example, some work suggests that the communication quality of couples is related to aspects of psychosexuality. Women's perception of their and their partner's mutual constructive communication predicts fewer body image concerns (Pole et al., 2004). Women's perception of their partner's positive communication style is also related to increased sexual and emotional intimacy (Yoo et al., 2014). Because emotional intimacy and sexual intimacy are related processes (Yoo et al.,

2014) and partner social constraints are characterized, in part, by communication disruption, the effect of partner social constraints on psychosexual adjustment may be partially explained by decreased emotional intimacy. For BC patients who have heightened vulnerability to experiencing concerns about their physical appearance and sexual desirability, the loss of emotional intimacy and strained communication (about cancer-related topics of concern specifically) may exacerbate those concerns and reduce sexual intimacy, which further contributes to feelings of unattractiveness and/or undesirability.

It is also possible that partner social constraints negatively affect psychosexual adjustment by limiting opportunities for women to be reassured by their partner of their attractiveness, desirability, and femininity. Disclosing these concerns to one's partner may partially reflect normative reassurance seeking that can improve women's psychosexual adjustment when their partner is responsive and reassuring. The broader relationship literature does suggest that women's body image is associated with their perception of their partner's satisfaction with and evaluation of their appearance (Pole et al., 2004). If partners fail to acknowledge and avoid discussing the physical changes, which may include surgery scars, loss of breasts, and hormonal changes, women may grow fearful and anxious about their partner's perception of her appearance. This could contribute to women's increased awareness of and concern with their appearance as well as decreased feelings of attractiveness and desirability. Indeed, qualitative work suggests that women with BC worry about their partner's perception of their appearance and seek their reassurance in order to cope with these concerns (Wai Ming, 2002). It may be that even those in long-term, high-quality relationships need to reaffirm their affection and desire for their partners in order to accommodate, as a couple, the sudden and dramatic changes that can occur in the body, self-concept, and body image of patients after BC diagnosis (Holmberg et al., 2001). When patients do not feel as though they can discuss their thoughts, feelings, and concerns about these cancer-related changes to their partner and/or they perceive their partner as unsupportive or unresponsive to these concerns, this reaffirmation and reestablishment of trust and affection may not be able to take place.

Study Limitations and Future Directions

There are several limitations of the current study. First, we only analyzed patient measures and did not examine partner ratings of partner social constraints, psychosexual adjustment, or relationship dissatisfaction. Partners did not participate in the third assessment point, and partner-reported social constraints were measured differently in the two larger studies from which the current sample was drawn. For these reasons, we chose to exclusively focus on BC patients' self-report. Although previous research has found BC patient perceived social constraints to remain a unique predictor of adjustment even after accounting for *partner* perceived social constraints (Pasipanodya et al., 2012), future studies should examine the relations among these variables in the context of both partners. Additionally, we focused only on women with breast cancer and did not include male patients. The constructs studied here are likely also of importance for men suffering from BC. Future research should examine the impact of BC on psychosexuality in men and its association with social constraints. Another limitation is the limited range of relationship dissatisfaction observed in the current sample. Although this is consistent with previous studies of women with BC

(e.g., Kinsinger et al., 2011; Manne, Sherman, et al., 2004; Wimberly et al., 2005), it is unknown whether or how the observed effects hold for women in highly distressed relationships. Additionally, although we examined relationships among variables longitudinally, we did not address directionality of influence. It remains possible, for example, that poor psychosexual adjustment elicits social constraints from partners. Alternatively, it is possible that women who experience poor psychosexual adjustment are more likely to perceive social constraints from their partners. To move toward an understanding of directionality, future work should aim to disentangle the temporal sequence of these associations from before to after BC diagnosis. A final limitation is the presence of missing data. Although the missing at random assumption is bolstered as a result of the data being longitudinal and our attempt to account for variables that are potentially predictive of missingness, this assumption ultimately cannot be directly tested. Therefore, it remains possible that the existence of missing data may have biased our findings to some degree. However, we made use of all available data at each time point from each participant in our sample, an approach known to be less biased than only analyzing cases with complete data (Allison, 2002). In light of these limitations, including relatively small sample size, these findings require replication in the future.

The current finding that partner social constraints is a persistent and negative predictor of psychosexual adjustment adds to a growing body of literature emphasizing the importance of interpersonal factors in adjustment to cancer and other health problems (Pietromonaco, Uchino, & Schetter, 2013). Incorporating partners in interventions for patients with cancer may improve individual and relationship outcomes (Zaider & Kissane, 2010). However, considering the unique effects of partner social constraints on psychosexual adjustment above and beyond its effects on relationship dissatisfaction, interventions may promote further benefits to patients if they specifically focused on identification and reduction of partner social constraints. To guide such intervention development, future research should investigate factors influencing why patients perceive social constraints from their partners after a cancer diagnosis and examine the degree to which constraining behaviors and attributions are malleable. To what extent do patient perceptions of social constraints reflect a partner's past responses to cancer-related discussions versus the anticipation of such reactions that have not yet been realized? And, what are the consequences of disclosure if it is met with disinterest or unresponsiveness? These are all important questions that should be addressed in future research toward a goal of better understanding social constraints and underlying intrapersonal and interpersonal processes.

Concluding Comments

The current study focused on the influence of partner social constraints on an understudied yet important outcome for BC patients – psychosexual adjustment. Using a longitudinal design, we observed partner social constraints to be a significant, time-varying, and unique predictor of psychosexual adjustment as far as four years after BC surgery. Ripe avenues for future research include identifying specific mechanisms by which partner social constraints may influence psychosexual outcomes and moderators of these effects. The present findings extend existing literature emphasizing the negative individual outcomes associated with partner social constraints and their clinical implications for women coping with BC.

Although social constraints have been well-studied as a predictor of general and cancer-related distress, the current findings demonstrate that social constraints also are a robust predictor of psychosexual adjustment – an outcome that reflects both individual patient adjustment as well as the relational context within which it unfolds.

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Figure 1.

Depiction of within-person path model positing partner social constraints as a time-varying predictor of psychosexual adjustment while accounting for relationship dissatisfaction and linear time. Subscript $_w$ indicates within-person variability of variable. Filled circles on the outcome and path represent a random intercept and slope, respectively.

Table 1
Descriptive Statistics and Bivariate Correlations of Primary Variables at Each Time Point

	1	2	3	4	5	6	7	8	9
T1									
1. SCS									
2. PSA	-.15								
3. QMI	.46***	-.38***							
T2									
4. SCS	.59***	-.23*	.49***						
5. PSA	-.20 [†]	.74***	-.30**	-.39***					
6. QMI	.42***	-.28*	.86***	.46***	-.33**				
T3									
7. SCS	.62***	-.29*	.51***	.59***	-.29*	.47***			
8. PSA	-.10	.68***	-.28*	-.19	.66***	-.21	-.32**		
9. QMI	-.47***	-.16	.70***	-.45***	-.22	.69***	.57***	-.27*	
Mean	1.58	5.41	5.32	1.54	5.04	5.93	1.54	5.18	6.97
SD	0.62	1.97	7.79	0.62	2.47	9.07	0.77	2.22	9.33
Range	1–3.9	0–10	0–36	1–3.3	0–10	0–37	1–4	0–10	0–39

Note. SCS = social constraints; PSA = psychosexual adjustment; QMI = relationship dissatisfaction.

[†] $p < .10$,

* $p < .05$,

** $p < .01$,

*** $p < .001$.