Perceived partner support and psychosexual adjustment to breast cancer

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Perceived partner support and psychosexual adjustment to breast cancer

Sarah Wimberly Kinsinger*, Jean-Philippe Laurenceau, Charles S. Carver and Michael H. Antoni

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Support from a partner can play a key role in a woman’s emotional adjustment to breast cancer. However, little is known about the influence of partner behaviours on a woman’s sexual adjustment. This study examined the prospective relationship between baseline levels of several types of perceived partner support (instrumental, informational, emotional and negative) and psychosexual adjustment (sexual functioning and relationship satisfaction) over the course of 12 months post-surgery in a sample of 130 women with breast cancer. Results indicated that perceptions of greater emotional and informational support from the partner at baseline were associated with less sexual difficulties among breast cancer patients concurrently and 6 months post-surgery. Baseline perceptions of greater emotional and instrumental support from a partner were associated with greater relationship satisfaction at all time points. Perceptions of informational support at baseline were related to greater concurrent relationship satisfaction. Baseline perceptions of negative partner support were related to less relationship satisfaction, but only concurrently. These findings suggest that the perception of a partner’s provision of emotional, instrumental and informational support may each play a role in facilitating sexual adjustment and relationship satisfaction.

Keywords: breast cancer; social support; relationship satisfaction; sexual functioning

Introduction

The diagnosis and treatment of breast cancer disrupts women’s functioning in a number of ways. Although most psychosocial difficulties subside within 24 months of the initial diagnosis, psychological symptoms are not uncommon during the initial phase of the disease (Stanton, 2006). Adjustment difficulties include emotional distress, pain, declines in social and physical functioning, fears of recurrence (Michael, Kawachi, Berkman, Holmes, & Colditz, 2000; Spencer et al., 1999) and sexual and relationship difficulties (Henson, 2002; Tan, Waldman, & Bostick, 2002).
The extent to which a woman’s functioning is disrupted varies with a number of factors, including the support she receives from her intimate partner.

Social support plays a key role in how people adjust to life crises. During stressful experiences, people turn to family and friends for comfort and advice. The beneficial effects of social support are often discussed in terms of the stress buffering hypothesis. According to this idea, support can ‘buffer’ against the potentially negative effects of stressful situations by lessening the perceived threat of the stressor and facilitating adaptive coping (Cohen & Wills, 1985; House, 1981). Indeed, during a stressful life event, such as breast cancer, the perceived availability of social support is associated with better psychological adjustment (Alferi, Carver, Antoni, Weiss, & Duran, 2001; Brothers & Andersen, 2009; Friedman et al., 2006; Shelby et al., 2008) and can even protect against breast cancer mortality (Weihs, Enright, & Simmens, 2008).

One of the most important aspects of a support network is a person’s marriage or intimate partner relationship (Diener, Suh, Lucas, & Smith, 1999; Holmberg, Scott, Alexy, & Fife, 2001). Women experiencing chronic illness report that their partners provide more support than do other sources (Primomo, Yates, & Woods, 1990), and breast cancer patients report that their most important confidant is their partner (Figueiredo, Fries, & Ingram, 2004).

Social support is generally considered a multidimensional construct comprised of emotional, information and instrumental support (Bloom, 1986; Helgeson, 2003; House, 1981). Emotional support involves expressing empathy, listening, providing comfort and communicating to the person that he or she is loved. Informational support includes providing advice, guidance and feedback about a problem. Finally, instrumental support involves some type of tangible aid, such as assistance with household chores, managing bills/finances or transportation.

Evidence for the association between emotional support from a partner and adjustment to cancer is well-documented (Alferi et al., 2001; Helgeson, 2003; Helgeson & Cohen, 1996). Emotional support is most desired by patients (Helgeson & Cohen, 1996) and this type of support is consistently associated with positive outcomes (Dakof & Taylor, 1990; Dunkel-Schetter, 1984; Helgeson & Cohen, 1996; Pistrang & Barker, 1995; Primomo et al., 1990; Sormanti & Kayser, 2000). Emotional support can improve psychological adjustment by enhancing self-esteem and reducing feelings of helplessness or inadequacy that can arise from facing a chronic illness (Cohen & Wills, 1985; Helgeson & Cohen, 1996).

Less is known, however, about the benefits of other dimensions of support because they are less frequently assessed. Limited research suggests that instrumental support from a partner can be beneficial to breast cancer patients (Alferi et al., 2001; Primomo et al., 1990), but more research is needed to confirm these findings. Even less is known about partner informational support. Informational support is generally considered beneficial when coming from health-care professionals (Helgeson & Cohen, 1996), but is rarely assessed with respect to partners.

Finally, it is known that partners do not always respond in a supportive manner. Some interactions are negative, even if they are well-meaning. Negative responses by a partner might include criticizing how the patient is coping with the illness or withdrawing from conversations about the illness. Research indicates that unsupportive behaviours are distinct from supportive behaviours and independently predict psychological adjustment (Manne & Zautra, 1989). Negative support has been associated with distress in cancer patients (Coyne & Anderson, 1999;
Dakof & Taylor, 1990; Manne, Ostroff, Winkel, Grana, & Fox, 2005; Manne, Taylor, Dougherty, & Kemeny, 1997; Pistrang & Barker, 1995), and there is even some evidence that unsupportive interactions have a greater impact on well-being than supportive ones (Fobair et al., 2006).

Although breast cancer has diverse psychological effects on women, the majority of research examining the role of partner support has focused on women’s emotional adjustment, in the form of affective disturbance. Little research has examined the influence of partner support on other outcomes, such as sexual functioning and relationship satisfaction.

Intimate relationships are clearly affected by this illness (R.E. Carter, C.A. Carter, & Siliunas, 1993). Although the majority of couples facing a cancer diagnosis fare well in the long run (Ganz et al., 1996), the experience can place strain on relationships, potentially leading to marital discord (Holmberg et al., 2001; Northouse, Templin, Mood, & Oberst, 1998; O’Mahoney & Carroll, 1997). Sexual functioning is one aspect of the relationship that is commonly affected by the illness and its treatment (Avis, Crawford, & Manuel, 2004; Fobair et al., 2006; Meyerowitz, Desmond, Rowland, Wyatt, & Ganz, 1999; Yurek, Farrar, & Andersen, 2000). In general, female cancer patients engage in fewer sexual behaviours and experience lower levels of sexual arousal than healthy women (Andersen & Jochimsen, 1985). Many breast cancer patients experience sexual difficulties up to 3 years after diagnosis (Ganz et al., 1996). Factors that contribute to women’s psychosexual functioning include medical variables (surgical disfigurement and side effects of adjuvant treatment), psychological variables (body image, emotional distress) and relationship factors (partner reaction to the illness and its treatment).

A husband’s supportive reaction to his wife’s illness can buffer against some of these relationship difficulties (Ghizzani, Pirtoli, Bellezza, & Velicogna, 1995; Holmberg et al., 2001; Manne et al., 2004; Skerrett, 1998; Wimberly, Carver, Laurenceau, Harris, & Antoni, 2005). For example, women report feeling more open to romance and sexuality when they perceive their partners as emotionally supportive (Ghizzani et al., 1995). Additionally, the perception that a partner is emotionally involved contributes positively to feelings of femininity and attractiveness and predicts greater marital satisfaction (Wimberly et al., 2005). We suspect that partner emotional support would also positively influence women’s sexual functioning following treatment; however, no previous research has examined the link between partner support and sexual functioning explicitly.

Other supportive behaviours, such as offering advice about treatment options (informational support) or taking over household responsibilities (tangible support) might also positively influence psychosexual adjustment. By decreasing perceived stress and enhancing intimacy and closeness, these supportive acts have the potential to enhance overall relationship satisfaction and buffer against deteriorations in sexual functioning caused by the illness. On the other hand, negative responses from a partner will likely hinder psychosexual adjustment by reducing intimacy and closeness.

The aim of this study was to examine the influence of specific partner support behaviours on psychosexual adjustment (relationship satisfaction and sexual disruption) over the course of 12-months post-surgery in a sample of breast cancer patients. We predicted that baseline levels of perceived emotional, informational, tangible and negative support from a partner would be significantly associated with our outcome variables (relationship satisfaction and sexual disruption) concurrently.
as well as predict the linear trajectory of these outcome variables over the course of 12 months. We examined several dimensions of social support (emotional, informational and tangible) to determine which types of support are most beneficial and we measured negative support to determine how detrimental it is.

Method

Participants
There were 130 participants in the sample examined here, all recruited from local hospitals and practices in Miami, FL. Eligibility requirements included being diagnosed with breast cancer at Stage III or below and surgery within the past 8 weeks. Exclusion criteria were positive psychiatric history, prior cancer (except non-invasive skin cancer), lack of fluency in English and other concurrent major disease. Of the women contacted, 403 called for more information; of those who called, 348 met inclusion criteria; and 199 of these women participated in the first assessment.

The sample examined here consists of participants who reported being married or in marriage-like relationships. One woman who reported being single at entry, but became married while participating in the study, was also included. Two women who became divorced or separated by the second assessment were not included; however, three women who became divorced or separated between the second and third assessments were included. This resulted in a final sample of 130 married or partnered women.

The women were diagnosed with either Stage 0 ($n=19$), Stage I ($n=47$), Stage II ($n=56$) or Stage III ($n=8$) breast cancer. Nodal involvement ranged from 0 to 16 ($M=1.46$, standard deviation, $SD=3.08$). The women ranged in age from 25 to 69 ($M=49.46$, $SD=8.37$). Eighty-six women were non-Hispanic White, 9 African-American and 35 Hispanic. The women had an average of 15.78 years of education ($SD=2.38$); 95 were currently employed, 34 were retired or were not currently working outside the home. Seventy-four of the women underwent modified radical mastectomies and 56 had lumpectomies. Seventy-three of the women subsequently underwent radiation therapy, 76 had chemotherapy and 87 received antihormonal treatment. Fifty-six of the women had reconstructive surgery, most within the first 6 months.

Procedure
Participants completed questionnaires (by mail) at three time points during the course of 12 months: at study entry (4–8 weeks post-surgery; time 1), and 6 and 12 months after entry (times 2 and 3). The first assessment was completed by the 130 participants described above; 15 women dropped out of the project by 6 months post-surgery (11.5%), and 10 more women failed to complete the 12-month follow-up (7.7% of starting sample). How these departures from the sample were handled statistically is addressed later. All measures described here were included at each assessment.

Comparison between women who did and did not leave the study yielded no difference in regard to stage, number of positive nodes, surgical procedure, age, marital status or presence versus absence of chemotherapy or radiation.
There was a significant difference between completers and non-completers on ethnicity, with non-Hispanic White women being less likely than Hispanic or African-American women to drop out ($p < 0.05$). Those who dropped out were also compared with those retained on key psychosocial variables (i.e. partner support, sexual disruption and relationship satisfaction) at each time point. Those stopping before time 2 did not differ on any baseline variable from those who stayed. Those who left between time 2 and time 3 reported less partner emotional support at time 2 ($p < 0.01$), but did not differ from those who stayed on any other time 2 variable.

This sample was drawn from a larger project examining effects of an intervention (Antoni et al., 2006). Participants were randomly assigned to either a 10-week stress management intervention or a one-day control condition. Sixty-seven of these women participated in the intervention group and 63 participated in the control condition.²

**Measures**

**Perceived partner support**

Perceived partner support was assessed using 10 items intended to measure diverse aspects of support. The items, termed the Sources of Social Support Scale (SSSS), drew on existing evidence and theory to cast a wide net for potential ways of expressing support or non-support. Items assess aspects of informational, instrumental, emotional and negative support. All items were rated on a scale ranging from *not at all* (0) to *a lot* (4).

As this was the first study to use the SSSS, we conducted confirmatory factor analysis (CFA) to identify the appropriate factor structure for this measure. CFAs were conducted using structural equation modelling, implemented in the program Mplus (L.K. Muthén & B.O. Muthén, 1998–2010). We examined one-, three- and four-factor models and used the $\Delta \chi^2$ test as a comparative measure of model fit to evaluate the three models. We hypothesised that a four-factor model (reflecting informational, instrumental, emotional and negative support) would provide the best fitting model based on the content of the SSSS items. This model included an emotional support factor with four items reflecting positive support and two items reflecting the absence of emotional support (with reverse loadings), a negative support factor with two items reflecting negative support from a partner (arguing and criticising), an informational support factor comprised of one item and an instrumental support factor comprised of one item. We also conducted a CFA that combined the two larger factors (emotional support and negative support) into a single factor to see if a more parsimonious model would have an improved fit. Finally, we compared the fit of these two models to each other as well as to a single factor model. The four-factor model ($\chi^2(31, N = 130) = 77.93, p < 0.001$) and the three-factor model ($\chi^2(34, N = 130) = 163.20, p < 0.001$) demonstrated significantly better fit than a single factor model ($\chi^2(35, N = 130) = 163.70, p < 0.001$). Furthermore, the four-factor model fit the data significantly better than the three-factor model, $\Delta \chi^2(3) = 85.27, p < 0.0001$, and was the best fitting among the three models. Other fit indices for the four-factor model suggested that it is a reasonable fit to the data ($\text{CFI} = 0.93; \text{SRMR} = 0.06; \text{RMSEA} = 0.11$). Because the
factor loadings of the multi-item factors were relatively similar in magnitude, we created subscale composites that corresponded to the four factors. Table 1 shows the labelled factors and the items in each. Subscales were created by averaging the items contributing to each factor after appropriate reversals. Bivariate correlations among the four scales and alphas for the two multi-item scales are provided in Table 2.

**Sexual adjustment**

The sexual relationship subscale of the Psychosocial Adjustment to Illness Scale-Self Report (PAIS-SR; Derogatis, 1986) was used to assess the effect of breast cancer on...
the sexual relationship of the patient and her partner. The scale has six items assessing changes in sexual interests, activities and abilities; each item has four response options. Response choices range from 0 (‘Absolutely no sexual interest since illness’) to 3 (‘No loss of sexual interest’). For example, ‘Have you experienced less sexual interest since your illness?’ Items were reverse scored so that higher scores represented poorer adjustment. The sexual adjustment scale was computed by summing the six items, with possible scores ranging from 0 to 18. Descriptive statistics for this variable are listed in Table 3. Average across assessments was 0.79. The women’s reports of sexual adjustment were fairly stable across time. The correlations between adjacent measures averaged as 0.52.

Relationship satisfaction

Overall relationship satisfaction was assessed using a single item: the global item from the Dyadic Adjustment Scale (DAS; Spanier, 1979). The item asks the respondents to ‘Choose a number from 1 to 7 that best describes your current degree of happiness in your relationship, using 4 to indicate “happy”—the amount of happiness that the average woman has in her relationship; 7 to indicate extreme joy; and 1 to indicate extreme unhappiness.’ A full scale ranging from 1 to 7 is also provided. We used a single item to measure relationship satisfaction because of evidence that single-item rating scales have equivalent validity to multiple-item scales when assessing constructs that are clear and easy to understand (Burisch, 1984a, 1984b). The women’s reports of relationship satisfaction were quite stable across time. The correlations between adjacent measures averaged as 0.73.

Correlations between sexual disruption and relationship satisfaction were moderate in size. They averaged 0.49 across the three assessments (all p’s < 0.01).

Physical well-being

The physical well-being subscale of the Functional Assessment of Cancer Therapy (FACT) Version 4 was included as an assessment of physical quality of life (Cella et al., 1993). This measure was included to account for the influence of physical side effects of breast cancer treatment on sexual functioning (Anllo, 2000). The physical well-being subscale taps physical symptoms, such as fatigue, nausea and pain that cancer patients often experience. Instructions asked to what degree each statement

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline M</th>
<th>Baseline SD</th>
<th>6-Months M</th>
<th>6-Months SD</th>
<th>12-Months M</th>
<th>12-Months SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived partner support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional support</td>
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<td>1.52</td>
<td>5.41</td>
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<tr>
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<td>Informational support</td>
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<td>1.11</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Relationship satisfaction</td>
<td>5.24</td>
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<td>5.06</td>
<td>1.52</td>
<td>5.41</td>
<td>1.34</td>
</tr>
<tr>
<td>Sexual adjustment</td>
<td>5.51</td>
<td>3.82</td>
<td>5.46</td>
<td>3.79</td>
<td>4.89</td>
<td>3.62</td>
</tr>
</tbody>
</table>
has been ‘true’ during the past 7 days. The 5-point scale ranges from ‘Not at All’ to ‘Very Much’. Average $\alpha$ across assessments $= 0.86$. The women’s reports of changes in physical well-being were quite stable across time. The correlations between adjacent measures averaged as 0.55.

Table 3 displays means and SDs of all variables of primary interest.

**Analyses**

Analyses were conducted using multi-level modelling procedures for longitudinal data (Singer & Willett, 2003), also referred to as individual change hierarchical linear modelling (HLM; Raudenbush & Bryk, 2002; Raudenbush, Bryk, & Congdon, 2004). HLM allows modelling of growth trajectories over time for each individual. This data-analytic technique provides information about the initial status and patterns of change over time for a given outcome variable. Covariates are then included to explain variance in the initial status and rate of change parameters across the sample. An advantage of HLM is that it permits the testing of time-varying predictors of time-varying outcomes (both of which are termed level-1 variables), as well as predictors that are measured at a single time point (termed level-2 variables). An additional advantage of HLM is that it can accommodate missing data using maximum likelihood estimations, thereby allowing one to make use of all available data (i.e. participants with one or more time point can be included in the analysis; Raudenbush & Bryk, 2002). More specifically, HLM allows for missing data on outcome variables, assuming that the data are missing at random (Schafer & Graham, 2002).

The parameters of interest for these analyses are the intercept (e.g. the trajectory’s starting value) and the slope. A significant effect of the predictor on the intercept reflects an association between the predictor variable and the initial value (baseline) of the outcome variable. A significant effect of the predictor on the slope reflects the extent to which change in the dependent variable over time relates to the predictor variable. Time was initially coded as 0, 6 and 12 months (corresponding with each assessment point) so that intercept scores (scores when time $= 0$) represent model-implied baseline levels of the outcome variable (4–8 weeks post-surgery). Models were also tested in which time was recoded as $0, 6, 0, 6, 0$ so that intercept scores represented model-implied levels of the outcome at the middle and final time points, respectively. Thus, we are able to examine the association between the predictor variable at baseline and the levels of outcome variable at 0, 6-month and 12-month follow-ups. All betas reported are unstandardised; effect sizes are computed as correlations derived from $t$ ratios (Rosenthal & Rosnow, 1984).

**Results**

**Control variables**

HLM was used to determine whether any controls should be employed for demographic and treatment variables. Examined for this purpose were relationships between all outcome variables and the following demographic and treatment variables: age, education, employment status, income, ethnicity, type of surgery, stage of disease, number of positive nodes, tamoxifen therapy, reconstructive surgery, menopausal status, experimental condition (intervention versus control),
concurrent chemotherapy treatment, radiation therapy, stressful life events and physical well-being. Variables were retained as controls if they related significantly \((p<0.05)\) to the outcome’s intercept or trajectory. These analyses revealed significant associations for the following demographic and treatment variables. The trajectory of sexual adjustment was predicted by chemotherapy treatment \((p<0.01)\), such that participants who received chemotherapy treatment reported more sexual disruption than women who did not; FACT scores \((p<0.001)\), such that greater physical well-being was associated with poorer sexual adjustment; experimental condition \((p<0.05)\), such that participants given the intervention reported increased sexual functioning over time whereas those in the control condition reported decreased sexual functioning over time. The intercept of sexual adjustment was predicted by surgical procedure \((p<0.01)\), such that women who received a mastectomy reported poorer sexual adjustment than women who received a lumpectomy; and age \((p<0.05)\), such that younger women reported poorer sexual functioning than older women.

The trajectory of relationship satisfaction was predicted by experimental condition \((p=0.06)\), such that participants given the intervention reported increases in relationship satisfaction over time whereas those in the control condition reported decreases in relationship satisfaction over time. The intercept of relationship satisfaction was predicted by ethnicity \((p=0.05)\), such that non-Hispanic White and Hispanic women reported higher levels of relationship satisfaction than African-American women. These variables were included as controls in the analyses to which they pertained.

**Sexual adjustment**

HLM then was used to model the trajectory of the two outcome variables over 1 year, starting with sexual adjustment (PAIS scores). Based on the fixed effect of the intercept, the average level of sexual adjustment at the initial time point was 11.78. The overall linear trend was not significant for sexual adjustment, indicating that on average, women’s sexual functioning did not change over time, \(\beta = -0.05, \text{SE} = 0.03, t(114) = -1.39, p = 0.16\). Moreover, the variance components indicated that there was substantial variability reflecting individual differences in intercepts \((\text{var} = 9.00, \chi^2(103) = 279.47, p < 0.001)\) and slopes \((\text{var} = 0.022, \chi^2(103) = 135.71, p = 0.017)\). Next, we tested whether perceived partner support at baseline predicted either initial levels of sexual functioning (intercept) or its trajectory over 12 months (slope). Each partner support variable at baseline was treated as a level-2 covariate in predicting sexual functioning, while controlling for time (i.e., a linear trend in the outcome). Relevant control variables were also included as level-1 or level-2 covariates as appropriate. Each type of partner support (instrumental, informational, emotional and negative) was initially examined separately. The level-2 variances for chemotherapy and FACT were fixed to zero because these were control variables. Results for association between predictor variables and the intercept of sexual adjustment are reported in Table 4 (including effect size, computed as a correlation from \(t\) ratios; Rosenthal & Rosnow, 1984).

Greater partner emotional support at baseline related to less concurrent sexual difficulties, as reflected in a significant relationship to the intercept of sexual functioning \((p<0.001, \text{see Table 4})\). However, emotional support did not predict the
slope of subsequent sexual functioning. When the data were re-centred at 6 months, the effect of baseline emotional support on the intercept was again significant ($p < 0.01$). At 12 months, however, the effect on the intercept was no longer significant.

Greater informational support at baseline was related to less concurrent sexual difficulties ($p < 0.001$), and also predicted the trajectory of sexual functioning over time, $\beta = 0.08$, $SE = 0.03$, $t(127) = 2.90$, $p < 0.01$, $r = 0.25$. The form of this trajectory effect was that greater informational support at baseline was related to a slight decrease in sexual functioning over the year. This longitudinal effect appears to represent a regression to the mean, with initial significant differences between high and low informational support diminishing over time and disappearing by time 3. The difference remained significant at 6 months ($p < 0.05$), but was minimal at 12 months.

Neither negative support nor instrumental support predicted either the intercept or the slope of sexual adjustment.

Next, we conducted analyses in which all of the social support predictors were entered simultaneously as predictors of the intercept for sexual adjustment. This was done to establish the extent to which the different aspects of support made distinct contributions. Emotional support, $\beta = -1.09$, $SE = 0.49$, $t(123) = -2.22$, $p < 0.05$, and informational support, $\beta = -0.90$, $SE = 0.30$, $t(123) = -3.01$, $p < 0.01$, both made unique contributions to the intercept of sexual adjustment in this analysis. Informational support remained the only significant predictor of the slope of sexual adjustment, $\beta = 0.09$, $SE = 0.03$, $t(124) = 3.17$, $p < 0.01$, $r = 0.27$.

**Relationship satisfaction**

The other outcome variable of interest was relationship satisfaction. Based on the fixed effect of the intercept, the average level of relationship satisfaction at the initial

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>$\beta$</th>
<th>$SE$</th>
<th>$t$</th>
<th>df</th>
<th>$p$</th>
<th>$r$</th>
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<td><strong>Time (0, 6, 12)</strong></td>
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<tr>
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<tr>
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<td>0.16</td>
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<td><strong>Time (−12, −6, 0)</strong></td>
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<tr>
<td>Emotional support</td>
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<td>0.34</td>
<td>-0.53</td>
<td>126</td>
<td>0.60</td>
<td>0.05</td>
</tr>
<tr>
<td>Negative support</td>
<td>0.52</td>
<td>0.42</td>
<td>1.25</td>
<td>126</td>
<td>0.22</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Note: Betas are non-standardised regression coefficients, predicting this outcome from this predictor plus controls.
time point was 5.14. The linear trend was not significant for relationship satisfaction, indicating that on average, women’s relationship satisfaction did not change linearly over the course of the year, $\beta = 0.002$, $SE = 0.009$, $t(125) = 0.24$, $p = 0.81$. Moreover, the variance components indicated that there was substantial variability reflecting individual differences in intercepts ($var = 1.45$, $\chi^2(103) = 390.15$, $p < 0.001$) and slopes ($var = 0.001$, $\chi^2(103) = 119.63$, $p = 0.126$). It should be noted that the tests of significance for random effects in multilevel models are notoriously conservative and should not be used as a basis for whether level-2 predictors should be examined (Snijders & Bosker, 1999). Next, we tested whether partner support at baseline predicted either initial relationship satisfaction (intercept) or its trajectory (slope).

Again, each partner support variable at baseline was treated as a level-2 covariate in predicting relationship satisfaction, while controlling for time (i.e. a linear trend) and medical and demographic controls. Each type of partner support (instrumental, informational, emotional and negative) again was first examined separately. Results for association between predictor variables and the intercept of relationship satisfaction are reported in Table 5.

Perceptions of emotional, informational and instrumental support at baseline all predicted the intercept of relationship satisfaction significantly and positively ($p’s < 0.01$; see Table 5). Perceived support in each of these domains was associated with greater concurrent relationship satisfaction. Baseline negative support also predicted the intercept of relationship satisfaction, but inversely ($p < 0.05$); negative partner support was related to less concurrent relationship satisfaction.

Informational support was the only support variable that significantly predicted the slope of subsequent relationship satisfaction, $\beta = -0.02$, $SE = 0.01$, $t(126) = -2.61$, $p < 0.05$, $r = 0.23$. The pattern was that greater informational support at baseline related to a decrease in relationship satisfaction over the year. This longitudinal effect appears to represent a regression to the mean, with initial differences between high and low informational support diminishing over time.

**Table 5. Effect of predictor variables on the intercept of relationship satisfaction.**

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>$\beta$</th>
<th>$SE$</th>
<th>$t$</th>
<th>df</th>
<th>$p$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (0, 6, 12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional support</td>
<td>0.82</td>
<td>0.12</td>
<td>6.38</td>
<td>126</td>
<td>0.000</td>
<td>0.49</td>
</tr>
<tr>
<td>Informational support</td>
<td>0.30</td>
<td>0.10</td>
<td>2.93</td>
<td>126</td>
<td>0.004</td>
<td>0.25</td>
</tr>
<tr>
<td>Instrumental support</td>
<td>0.48</td>
<td>0.10</td>
<td>4.77</td>
<td>126</td>
<td>0.000</td>
<td>0.39</td>
</tr>
<tr>
<td>Negative support</td>
<td>-0.35</td>
<td>0.17</td>
<td>-2.03</td>
<td>126</td>
<td>0.04</td>
<td>0.18</td>
</tr>
<tr>
<td>Time (−6, 0, 6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional support</td>
<td>0.74</td>
<td>0.13</td>
<td>5.78</td>
<td>126</td>
<td>0.000</td>
<td>0.46</td>
</tr>
<tr>
<td>Informational support</td>
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<td>0.10</td>
<td>1.84</td>
<td>126</td>
<td>0.067</td>
<td>0.16</td>
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<td>0.10</td>
<td>4.17</td>
<td>126</td>
<td>0.000</td>
<td>0.35</td>
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<td>Negative support</td>
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<td>0.17</td>
<td>-1.52</td>
<td>126</td>
<td>0.130</td>
<td>0.13</td>
</tr>
<tr>
<td>Time (−12, −6, 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional support</td>
<td>0.66</td>
<td>0.17</td>
<td>3.96</td>
<td>126</td>
<td>0.000</td>
<td>0.33</td>
</tr>
<tr>
<td>Informational support</td>
<td>0.07</td>
<td>0.12</td>
<td>0.59</td>
<td>126</td>
<td>0.556</td>
<td>0.05</td>
</tr>
<tr>
<td>Instrumental support</td>
<td>0.35</td>
<td>0.12</td>
<td>2.85</td>
<td>126</td>
<td>0.006</td>
<td>0.25</td>
</tr>
<tr>
<td>Negative support</td>
<td>-0.17</td>
<td>0.22</td>
<td>-0.77</td>
<td>126</td>
<td>0.44</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Note: Betas are non-standardised regression coefficients, predicting this outcome from this predictor plus controls.
By centring the intercept at time 2 and re-computing the models, we determined that emotional and instrumental support predicted the intercept of relationship satisfaction at time 2 ($p's < 0.001$), and informational support did so at a marginal level ($p = 0.07$; see Table 4). Similar tests of the intercept at time 3 indicated that emotional and instrumental support also predicted greater relationship satisfaction at 12 months ($p < 0.01$). Thus, perception of emotional and instrumental support at baseline predicted greater relationship satisfaction at all time points.

Finally, we conducted analyses in which all social support predictors were entered simultaneously as predictors of the intercept for relationship satisfaction to establish the extent to which the predictors made distinct contributions. Emotional support uniquely contributed to relationship satisfaction, $\beta = 0.62$, SE = 0.16, $t(125) = 3.94$, $p < 0.001$, and the effect of instrumental support approached significance, $\beta = 0.21$, SE = 0.11, $t(125) = 1.89$, $p = 0.06$. Informational support remained the only significant predictor of the slope of relationship satisfaction, $\beta = -0.02$, SE = 0.01, $t(126) = -2.27$, $p < 0.05$, $r = 0.20$.

Discussion

This study examined baseline levels of four specific types of perceived partner support (emotional, informational, instrumental and negative) on women’s adjustment to breast cancer during 1 year following surgery. Given the lack of attention in the literature to women’s psychosexual adjustment to breast cancer, this study focused on sexual adjustment and relationship satisfaction as outcomes. Findings reported here suggest that women were fairly well-adjusted in these domains. Additionally, our results indicate that women’s perceptions of supportive partner behaviours influence their sexual adjustment and relationship satisfaction. Furthermore, these findings clarify what types of partner support matter for these outcomes.

Our findings indicate that this sample of breast cancer patients was generally happy in their relationships and well-adjusted sexually. These outcomes were relatively stable and did not significantly change during the 12 months following surgery. The mean score for the sexual relationship subscale of the PAIS fell below the bottom third of possible range of scores for this measure, indicating relatively few reports of sexual difficulties related to the illness. The current sample was better adjusted in this domain than women with end stage renal disease (Tanyi & Werner, 2003), but comparable to Caucasian and Puerto Rican women with HIV/AIDS (Karus, Siegel, & Raveis, 1999). Additionally, women in this study reported above average ‘happiness’ on the relationship satisfaction scale, indicating that on average they were very satisfied with their relationships. These findings are consistent with past research indicating that most relationships fare quite well in response to chronic illness (Andersen, Carpenter, Yang, & Shapiro, 2007; Dorval, Maunsell, Taylor-Brown, & Kilpatrick, 1999). The fact that the women in this study reported few adjustment difficulties is certainly a limitation statistically. However, despite this limitation, our findings revealed useful information about how perceived partner support can influence psychosexual adjustment.

Past research has found that emotional support from a partner is known to be an important predictor of adjustment for cancer patients (Dakof & Taylor, 1990; Helgeson & Cohen, 1996). This study confirms those findings by showing that
perceived partner emotional support is a strong and continuing predictor of women's relationship satisfaction and sexual functioning. Greater perceived emotional support immediately post-surgery predicted greater relationship satisfaction throughout the following year. Greater perceived emotional support post-surgery also predicted better sexual functioning through the 6-month point, above and beyond what can be accounted for by chemotherapy treatment. These findings replicate previous evidence that a partner's emotional involvement relates to greater marital satisfaction for breast cancer patients throughout the year post-surgery (Wimberly et al., 2005). The results also extend the social support literature, by linking perceptions of emotional support to better sexual functioning. Sexual difficulties are common following breast cancer treatment (Ganz et al., 1996). However, emotional support from a partner apparently can help buffer against such adversity in sexual well-being.

Informational support is generally considered beneficial when coming from health-care providers (Helgeson & Cohen, 1996), but it is often overlooked as a beneficial type of support offered by partners. There has even been some suggestion that informational support can be harmful when coming from family members (Dunkel-Schetter, 1984). However, our findings suggest that informational support from a partner can be beneficial to women coping with breast cancer. Greater informational support from a partner immediately post-surgery predicted greater relationship satisfaction concurrently and predicted better sexual functioning both concurrently and 6 months later. Indeed, the association of informational support with fewer sexual difficulties was separate from, and supplemented, the effects of emotional support. These findings suggest that the benefits of informational support are not limited to physicians and health-care providers.

Little research has examined the influence of instrumental support from a partner on women's adjustment to breast cancer. However, there is at least a little evidence of a positive association between instrumental support and adjustment (Alferi et al., 2001; Primomo et al., 1990). Results from this study are consistent with these findings and indeed suggest that instrumental support can be quite beneficial, in terms of women's satisfaction with their relationship. Greater instrumental support by the partner immediately post-surgery related to greater relationship satisfaction throughout the following year. Given the role restraints experienced by breast cancer patients following surgery, it is understandable that a partner's assistance with tangible tasks can alleviate stress and result in greater satisfaction with the relationship. Again, it is noteworthy that analyses in which all aspects of support were tested simultaneously yielded an independent association of instrumental support at the 0.06 level which supplemented the association of emotional support.

Previous research has conceptualised negative social interactions as a dysfunctional form of social support (Coyne & Anderson, 1999; Figueiredo et al., 2004; Manne et al., 1997). Results from the CFA confirm that negative partner behaviours (arguing and criticising) are distinct from other types of partner support efforts. Previous studies have found adverse effects of criticism, arguing and negative partner support on adjustment to breast cancer (Coyne & Anderson, 1999; Manne et al., 1997; Pistrang & Barker, 1995). Indeed, some research has found that unsupportive interactions have a greater impact on well-being than supportive ones (Manne et al., 1997). Although we found a distinct separation between negative and other types of support, we failed to find consistent evidence of a deleterious effect of negative support. Although negative partner support at baseline related to less concurrent
relationship satisfaction, negative behaviours were less predictive of our adjustment outcomes than were supportive behaviours. This may be attributable to characteristics of this sample, as the women reported very low levels of negative partner support (mean of 0.34 on a scale of 0–4).

Although this research contributes important findings, its limitations should be noted. The women who participated in this research were well-off psychologically, relatively educated, affluent and primarily Caucasian. These issues all limit generalisability. Also, we focused on the women’s perceptions of their partners; we had no reports from the partners themselves. We cannot be sure that these perceptions are an accurate account of partners’ behaviour, though recent evidence indicates that patient and partner ratings of supportive behaviour are highly correlated (Manne et al., 2005). Furthermore, women’s perceptions of their partners’ behaviour are the determinant of whether unsupportive behaviour has detrimental effects, rather than the behaviours themselves (Manne et al., 2005). An additional limitation is the use of several single item measures which limits reliability. However, single item measures have been used in other studies of psychological adjustment (e.g. Meyerowitz et al., 1999; Helgeson, 1992), and there is evidence that single-item measures are equally valid as longer questionnaire scales when measuring easy to understand constructs (Burisch, 1984a, 1984b). Finally, this study established direct relationships between perceived support and our outcomes, but did not explore mechanisms underlying these relationships. An important goal for future research will be to explore potential mediation models and better understand mechanisms by which perceived support contributes to improved relationship satisfaction and sexual functioning. Despite these limitations, our findings provide insight into the role that partners play in helping women adjust to breast cancer.

This study also has potentially important clinical implications. The results highlight the importance of addressing sexual and relationship issues with breast cancer patients and possibly incorporating partners into psychological interventions with these patients. Given that partners are such an important source of support for women as they navigate this life-changing experience, it seems important to involve them in counselling, particularly for women who report sexual and relationship problems. Couple-focused interventions are beginning to be developed (Manne et al., 2005; Scott, Halford, & Ward, 2004), but further research is needed to understand the types of interventions that are most beneficial for improving women’s relationship and sexual functioning.

Acknowledgement
This study was supported by the research grants from the National Cancer Institute.

Notes
1. The sample used in this study is entirely distinct from the sample examined in Wimberly et al. (2005). This sample was drawn from the intervention study reported by Antoni et al. (2006) and Antoni, Wimberly, et al. (2006).
2. We examined participants’ assignment to intervention versus control as a predictor of these outcomes and controlled for this variables as needed. Because the intervention is not the focus of the article, however, those findings are not discussed further.
3. Another way to examine the data from this study would be to use repeated measures on the partner support variable as time-varying (level-1) covariates to predict outcomes over time. We conducted such analyses and found associations that greatly resembled those reported here. We found that perceptions of emotional, informational and instrumental support predicted poorer concurrent sexual functioning and greater relationship satisfaction across the study’s span. Negative support was not significantly associated with either outcome variable. However, an important constraint follows from this analytic procedure, given the number of time points that were assessed. In particular, the limited number of parameter estimates that can be obtained from three measurement points does not permit analyses in which multiple partner support variables are entered simultaneously as predictors. Because we regard the information obtained from such simultaneous tests as important, we opted to focus on the analyses in which support at baseline was used to predict outcomes over time.

References


