Objective. The aim of this study was to investigate whether a breast cancer diagnosis, personal assertiveness (i.e., frequency of assertive behavior and tension associated with this behavior) and partners’ relationship focused coping (i.e., active engagement and protective buffering) were sources of variation in patients’ relationship satisfaction, cross-sectionally and over time.

Design and Method. This longitudinal study assessed the two dimensions of personal assertiveness and relationship satisfaction in both women with cancer (n = 72) and comparison-controls (n = 62). In addition, patients completed a measure assessing their partners’ active engagement and protective buffering.

Results. Women with breast cancer were not found to report more relationship problems than women without cancer. In particular, women with breast cancer, who tend not to express their concerns and feelings, and who experience much tension when they do, reported relatively low marital satisfaction. Moreover, partners’ protective buffering was associated with less relationship satisfaction in especially more assertive (i.e., high frequency of assertive behavior and low tension) women with cancer, while active engagement was associated with more relationship satisfaction, regardless of the women’s personal assertiveness.

Discussion. The results of the present study indicate that a breast cancer diagnosis by itself may not be a risk factor for relationship problems. However, in the context of an illness such as cancer, personal assertiveness and a partner’s relationship focused coping strategies do seem to play a role in maintaining a satisfactory relationship with one’s partner.

INTRODUCTION

One of the main adaptive tasks couples face when confronted with an illness such as cancer is maintaining a satisfactory relationship (Lichtman, Taylor, & Wood, 1987). Despite the many negative changes imposed by the illness that are likely to take a toll on a couple’s relationship, most couples seem to be able to maintain or even experience an increase in relationship satisfaction (Dorval, Maunsell, Taylor-Brown, & Kilpatrick, 1999; Dorval et al., 2005). However, albeit relatively small, there is a group of people who have been found to experience more problems maintaining a satisfactory relationship with one’s partner after a cancer diagnosis (Lichtman & Taylor, 1986; Lichtman et al., 1987; O’Mahoney & Carroll, 1997).

A limitation of most prior studies investigating differences in relationship satisfaction after a cancer diagnosis is that they do not take normal fluctuations in relationship satisfaction into account, as they do not include comparison-controls. This may have biased the findings regarding the percentage of patients who experience relationship problems owing to a cancer diagnosis. Also, prior studies have paid little attention to intra- and interpersonal factors that may put people at risk for marital maladjustment or, conversely, to factors that stimulate marital adjustment during times of stress. It is important to get more insight into who is at risk of develop-
ing relationship problems, since partners are often the primary source of comfort and safety, and a lack of spousal support cannot be compensated by other sources (Manne et al., 2003; Pistrang & Barker, 1995; Weihs, Enright, Howe, & Simmens, 1999). When risk factors can be identified it may be possible to prevent relationship problems occurring, and it may also provide useful guidelines for how to treat relationship problems in oncology patients.

Therefore, the present longitudinal study includes both women with cancer and comparison-controls to investigate whether a breast cancer diagnosis is a risk factor for relationship problems. Moreover, we investigated whether intra- (i.e., personal assertiveness) and interpersonal factors (i.e., partners’ relationship focused coping behavior) accounted for variation in relationship satisfaction between women and over time.

**Relationship satisfaction and personal assertiveness**

Research in the field of romantic relationships has shown that intrapersonal factors (e.g., internal working models of attachment, personality traits) may explain levels and variations in relationship satisfaction over time. A particularly promising intrapersonal factor that may explain difference in relationship satisfaction during times of stress is personal assertiveness (Wolpe & Lazarus, 1966; Pitcher & Meikle, 1980). Personal assertiveness is the ability to communicate personal thoughts and feelings effectively in a manner that respects the thoughts and feelings of others (Wolpe et al., 1966). Arrindell and colleagues (1990b; 1999; 2005) have conceptualized personal assertiveness as a two-dimensional construct with four interpersonal behavioral styles. The two dimensions distinguished are frequency of assertive behaviors and the amount of tension experienced when engaging in such behaviors. The frequency dimension refers to how often a person: (I) displays negative feelings (II) expresses and deals with personal limitations, (III) initiates assertiveness, and (IV) praises others and is able to deal with compliments by others (Arrindell et al., 1990a; Arrindell et al., 1999). The tension dimension refers to how much discomfort and anxiety these behaviors cause. Based on these two dimensions four different interpersonal behavioral styles can be distinguished: the assertive, anxious performer, indifferent, and unassertive styles (Arrindell, Groot, & Walburg, 1984).

The assertive style is characterized by being comfortable opening up to other people and by making oneself known in a self-assured and respectful way (high frequency and low tension). The anxious performer style is also characterized by disclosing personal thoughts and feelings, but these people experience high levels of tension and discomfort when doing so (high frequency and high tension). The indifferent style is marked by a lack of interest in assertive behaviors and an unwillingness to disclose personal thoughts and feelings (low frequency and low tension). Finally, people with an unassertive interpersonal style are willing to express personal thoughts and feelings, but they shun openness as they experience high levels of tension and discomfort when expressing their thoughts and feelings (low frequency and high tension).

People who are more reluctant to express personal thoughts and feelings due to high levels of social tension, and who thus have an unassertive interpersonal style, can be expected to show relatively low levels of relationship satisfaction. These people may also have more problems maintaining a satisfactory relationship when confronted with a threatening and demanding situation such as a cancer diagnosis. First, because these people are more reluctant to express personal fears and limitations, they may be less able to promote closeness and intimacy and, instead, may experience more loneliness and less control over the quality of their relationships (Gambrill, Florian, & Splaver, 1986). Note that people with an indifferent
interpersonal style may also experience less intimacy within their relationship. However, these people are not interested in sharing feelings and fears with their partner. Secondly, as people with an unassertive interpersonal style may be less able to resolve interpersonal problems quickly (Eisler, Miller, & Hershen, 1973) the quality of their relationships may erode slowly. In accordance, we hypothesized that women with breast cancer who score relatively low on frequency of assertive behavior and high on tension (i.e., an unassertive interpersonal style) will show relatively low relationship satisfaction and a decrease in relationship satisfaction over time (Hypothesis 1).

Although persons who possess an unassertive interpersonal style may always be vulnerable for relationship problems, the inability to confide in others may become particularly deleterious in times of threat (Elliott et al., 1991; Gambrill et al., 1986). Therefore, we hypothesized that women who score low on frequency of assertive behavior and high on tension (i.e., unassertive interpersonal style) will be associated with less relationship satisfaction, especially in people confronted with breast cancer and to a lesser degree, in healthy comparison-controls (Hypothesis 2).

**Relationship satisfaction and relationship focused coping**

In addition to personal assertiveness, interactions between partners are likely to account for variation in relationship satisfaction (DeLongis & O’Brien, 1990; Karney & Bradbury, 1997; Coyne & Racioppo, 2000). A number of authors have distinguished two types of relationship focused coping strategies (also described as ways of providing support), that is, active engagement and protective buffering (Coyne & Smith, 1991). Active engagement is characterized by involving ones partner in discussions, asking how the patient feels and other problem- and emotion focused strategies. Protective buffering is a way of providing support characterized by denying fears and worries and avoiding negative experiences. Active engagement has been consistently found to be positively associated with emotional and interpersonal adjustment, while protective buffering has been found to be negatively associated with relationship satisfaction and well-being (Coyne et al., 1991; Hagedoorn et al., 2000; Kuijer et al., 2000).

However, an important but largely ignored possibility is that a partner’s relationship focused coping strategies may be differentially associated with a patient’s relationship satisfaction, depending on the patient’s personal assertiveness. For example, the relationship with a partner who is perceived as offering little opportunity to express fears and worries (i.e., protective buffering) may be especially dissatisfying for those who are inherently inclined to communicate openly about their feelings without tension (i.e., people with an assertive style: high frequency and low tension) but not, or to a lesser degree, for those who are less assertive (low frequency and/or high tension). In such a model, some spousal support behavior is associated with relationship (dis)satisfaction, depending on the optimal matching framework (Cutrona, 1990) which states that for the best outcome, the type of support should be in line with the specific needs of a person in a specific situation.

In two studies involving students under stress and spinal cord injury patients, Elliot et al. (1990; 1991) found, that personal assertiveness moderated the outcome of different kinds of support. Specifically, more assertive people were found, to report lower levels of distress relative to less assertive people when receiving support that was responsive and open (Elliott & Gramling, 1990). However, when receiving support that was more restrictive and controlling, more assertive people reported more depressive symptoms than did less assertive people (Elliott et al., 1991). Similarly, breast cancer patients can be expected to benefit differ-
ently from different types of relationship focused coping strategies, depending on their personal assertiveness. We hypothesized that in people who express personal thoughts and feelings more frequently without experiencing high levels of tension (assertive style), relationship satisfaction will be positively associated with active engagement (Hypothesis 3) and negatively with protective buffering (Hypothesis 4).

We tested these hypotheses both in cross-sectional and longitudinal analyses to determine whether a (mis)match between relationship focused coping strategies and personal assertiveness has a short-term or long-term effect on relationship satisfaction. These associations were not investigated in comparison-controls, as it makes little sense to ask people in non-threatening situation whether their partners used active engagement or protective buffering strategies. We considered having comparison-controls complete the measure for a stressor of their choosing, but that would introduce unwanted heterogeneity in what was being assessed.

**Method**

The data for the present analysis was collected as part of a longitudinal study on the influence of intimate relationship dynamics on adaptation to breast cancer in the first year after diagnosis in patients and partners. Couples were recruited from five hospitals in the north of the Netherlands by specialized nurses. Inclusion criteria consisted of living with a partner, willingness to participate in the study by patient and partner, patient's age between 30 and 75 years, survival prognosis of at least 15 months, no previous cancer history for both patient and partner and both fluent in Dutch. A total of 364 eligible patient couples were informed about the study, of which 284 couples considered participation and took information about the study home. In the end, 92 Dutch couples (a response rate of 25% of the eligible and 32% of the couples willing to consider participation) were willing to participate, of which almost all (94%) remained in the study. This relatively low response is consistent with the rates found in some well-resourced studies investigating couples (e.g., Manne et al., 2005; Manne et al., 2006). The recruitment rate reflects the burden of the intensive design (nine assessments within one year) of the study and, importantly, the requirement that both partners must consent to participation. Not surprisingly, the main reason (31%) for not participating was that patients indicated that participating was too great a burden. In addition, 28% of the patients were simply not interested; in 15% of the cases a partner was not willing to participate; 10% indicated that they wanted to close the cancer history; and another 16% of the patients gave other reasons for not participating in the study. Comparison-control women who were living with a partner were selected from a random community sample matched for age and geographical region. We made sure that, overall, controls had an age and regional distribution similar to that of cases (i.e., women with breast cancer). Comparison-control women and their partners were invited to participate by sending them a letter informing them about the study and a consent form. Similar to cases, control women enrolled in the study only if their partners were willing to participate. An exclusion criterion for female controls and their partners was a history of cancer. In the end 62 Dutch women and their partners from the general population were included in the study. All respondents were white Dutch persons. Questionnaires were administered and returned by mail.

Firstly, for the present study we selected those women with breast cancer and comparison-controls who had no missing data on the variables under study at both three (T1) and nine months (T2) after diagnosis. This resulted in a group of 72 patients and 62 women without cancer. Secondly, we repeated the same analyses after imputing the
missing data of those patients who did not drop out of the study but missed intermittent assessments. The expectation-maximization (EM) method was conducted to impute the missing data, making use of all available dependent and independent variables. Patients who dropped out of the study (N = 6) were not included in the present analyses.

T-tests revealed that, at baseline, patients who had missing values did not differ from the 72 patients who completed all data, with respect to demographic variables, treatment regimen, frequency of assertive behavior, tension associated with assertive behavior, partners’ active engagement and protective buffering, and relationship satisfaction.

Women with cancer were on average 52 years old (SD = 9.2; range = 35-74) and 48% of the women was employed. Their partners were on average 54 years old and two-third (66.7%) was employed. Before study entry, all women underwent surgery for their illness and almost 90% (n = 64) received adjuvant treatment (e.g., chemotherapy, radiotherapy). At baseline (T1: three months after diagnosis) two-third of the women (66.7%, n = 48) received treatment and six months (T2) later one third (31.9%, n = 23). Comparison-control women were on average 53 years old (SD = 10.2; range 33-70) and more than half (51.6%, n = 32) were employed. Their partners were on average 56 years old and two-third was employed (67.7%). No significant differences between women with cancer and comparison-controls were found regarding age and employment status.

**Measures**

**Personal assertiveness.** The Scale for Interpersonal Behavior (SIB) was used to assess four assertive behavioral domains, expressing negative feelings, expressing uncertainty, make oneself known, and expressing positive feelings (Arrindell et al., 1999; Arrindell et al., 2005). Previous studies have showed support for the validity and reliability of this measure (Arrindell et al., 1990a; Arrindell, Sanderman, & Ranchor, 1990b). In the present study we used a short, 25-item, version of the SIB. Participants completed each item twice; how often they express a certain behavior (i.e., frequency) and how much tension (i.e., anxiety) they experience when expressing this behavior. Response alternatives range from ‘never/no tension’ (1) to ‘always/high tension’ (5). The overall assertiveness score for frequency and discomfort is obtained by summing across all items. The reliability of both assertiveness dimensions was high in this study. For patients, Cronbach’s alpha for the frequency dimension was .92 and .95 at T1 and T2, respectively, and Cronbach’s alpha for the tension dimension was .93 and .95 at T1 and T2, respectively. For comparison-controls, Cronbach’s alpha for the frequency dimension was .92 and .94 at T1 and T2, respectively, and Cronbach’s alpha for the tension dimension was .85 and .93 at T1 and T2, respectively.

**Relationship focused coping.** Patients completed a questionnaire assessing active engagement and protective buffering (Hagedoorn et al., 2000; Kuijer et al., 2000). Although in some studies partners are asked to specify their own behavior (e.g., Coyne et al., 1991), in the present study we chose to ask patients to indicate to what extent their partner adopted specific strategies as perceived support can be expected to be more strongly related to distress (Pierce, Sarason, & Sarason, 1991). In the present study the active engagement scale consists of five items (e.g., “My partner asks me how I feel”) and eight items measure protective buffering (e.g., “My partner tries to keep his or her worries about me to him or herself”). All items were answered on a five-point scale ranging from ‘never’ (1) to ‘very often’ (5). Cronbach’s alpha for the active engagement scale was .79 at T1 and .83 at T2, and .60 (T1) and .72 (T2) for the protective buffering scale which are comparable with other studies (Hagedoorn et al., 2000; Kuijer et al., 2000).
Relationship satisfaction. Relationship satisfaction was assessed making use of the Dutch version of the marital quality subscale of the Maudsley Marital Questionnaire (MMQ) (Arrindell, Emmelkamp, & Bast, 1983; Arrindell & Schaap, 1985). Previous studies have found support for the validity and test-retest reliability of this measure (Arrindell, Boelens, & Lambert, 1983). The marital quality subscale consists of 10 items with a score range from 0-80. Items are, for example, “Are you satisfied about the leisure time you spend with your partner” and “How often do you think about getting a divorce?” For patients Cronbach’s alpha was .92 and .95 at T1 and T2, respectively and for comparison-controls Cronbach’s alpha was .87 and .89 at T1 and T2, respectively.

Statistical analysis

Pearson correlation coefficients were calculated to investigate the associations between the two personal assertiveness dimensions, relationship focused coping, and relationship satisfaction at T1 and T2. Independent T-test was used to investigate differences in marital satisfaction between women with and without cancer.

To test the hypotheses, multiple hierarchical regression analyses were performed on the data set with only complete cases (n=72) and on the data set after imputing missing data (n= 86). The results of these analyses were very similar. Therefore, we reported the results of the latter set of analyses only when they differed from the results of the analyses on the dataset with complete cases. Preliminary analyses showed that the independent variables (i.e., frequency of assertive behavior, tension associated with assertive behavior, active engagement and protective buffering) were not colinear and thus we were able to include them in a single equation. Residual scatter plots for the regression analyses were subsequently examined for homoscedasticity, normality and linearity. None of the assumptions were violated. Moreover, no outliers were found (Cook’s D). Furthermore, as suggested by Aiken and West (1991), interaction terms were computed as the product of the centered scores (i.e. centered around zero) on the component variables of the interaction to minimize multicollinearity. An advantage of this method is that component variables of the interaction term remain dimensionally which limits the loss of power and prevents an overestimation of the results (Coyne & Whiffen, 1995).

In preliminary analyses, age and employment status were investigated as possible covariates. Since these variables were not significantly correlated with relationship satisfaction and one of the independent variables under study, they were excluded from further analysis. Unstandardized regression coefficients are reported because the regression equations contain interactions. Only as a visual aid to determine whether the direction of the significant interactions were consistent with our hypotheses, regression lines were drawn making use of categories (mean ± 1 SD) on the variables of the interaction term. Additional regression analyses were completed to test the significance of the simple slopes (Aiken & West, 1991).

RESULTS

Descriptive Statistics

In Table 1, the means (SDs) and correlations among the main variables are presented for patients and comparison-controls. Patients and comparison-controls did not differ regarding the two assertiveness dimensions and relationship satisfaction at T1 and T2. The variables are all relatively stable over time with correlations ranging from .61 to .86 (p < .01). The two dimensions of the assertiveness scale (i.e., frequency and tension) were not significantly correlated, except in comparison-controls at T1. The finding that in one group the two dimensions are correlated but not in the other group does not mean that the difference between both groups is significant. Moreover, in patients, active engagement was negatively related with protective buffering, indicating that
partners who were believed to use more protective buffering strategies were also perceived as less actively engaged. The level of tension when engaging in assertive behaviors was negatively related with active engagement, indicating that patients who tend to experience more tension perceived their partner as less actively engaged. T-test revealed that women with cancer and controls did not differ (mean difference = .033, SE difference = 1.78) in marital satisfaction at T1 (t(132) = .018, p = .985, 95%CI: -3.48 to 3.59). Also at T2 no differences in relationship satisfaction (t(132) = 1.26, p = .210, 95%CI: -5.90 to 1.31) were found between women with cancer and controls (mean difference = -2.39, SE difference = 1.82).

**Personal assertiveness and relationship satisfaction**

*Cross-sectional analyses.* We performed hierarchical regression analyses of patient and comparison-control data at T1 and T2. In these analyses relationship satisfaction was the dependent variable and the two assertiveness dimensions and the interaction between these dimensions were explanatory variables (see Tables 2a and 2b). In the T1 analysis for patients, the tension dimension explained 11% of the variance in patients and the interaction term of tension by frequency approaches significance. At T2 the tension dimension explained 15% of the variance in relationship satisfaction in patients and the interaction term added another 7%.

This significant interaction effect at T2 is plotted in Figure 1. In patients who express assertive behaviors less frequently, more tension was associated with less relationship satisfaction (B = -10.49). In patients who express assertive behaviors more frequently, tension was unrelated to relationship satisfaction (B = -.54). In other words, women low on frequency and high on tension (unassertive interpersonal style) reported relatively low levels of relationship satisfaction.

In comparison-controls assertiveness did not explain variation in relationship satisfaction at T1 and neither at T2 (see Tables 2a and 2b). This indicates that personal assertiveness predicts relationship satisfaction for women with breast cancer but not for women who do not have breast cancer.

**Longitudinal analysis.** To investigate whether personal assertiveness was associated with changes in relationship satisfaction over time, we conducted a hierarchical regression analysis with relationship satisfaction at T2 as dependent variable and relationship satisfaction at T1, and the two assertiveness dimensions as explanatory variables. The same pattern occurred as in the cross-sectional analyses (see Table 3). This finding indicates that patients, but not comparison-controls, who express personal thoughts and feelings less frequently and experience high levels of tension when doing so (i.e., an unassertive interpersonal style), became less satisfied about their relationship over time. Overall, these findings are in accordance with hypotheses 1 and 2.

**Personal Assertiveness as Moderator between Relationship Focused Coping and Relationship Satisfaction**

*Cross-sectional analysis.* To test Hypotheses 3 and 4, we regressed relationship satisfaction on the two assertiveness dimensions, one of the relationship focused coping strategies (i.e., either active engagement or protective buffering), and all possible two- and three-way interactions. Active engagement was positively associated with relationship satisfaction at T1 (B = 2.06, p < .001) and T2 (B = 2.36, p < .001) explaining 44% and 56% of the variance, respectively. Thus, the more patients perceived their partner to be actively engaged, the more satisfied they were with their relationship. We found no significant main effects of the two assertiveness dimensions (i.e., frequency and tension) and no significant interaction effects. Thus, Hypothesis 3 was not supported.

Protective buffering was negatively related to relationship satisfaction at T1 and T2 explaining 24% and 27% of the variance.
in relationship satisfaction, respectively (see Table 4). Some two-way interactions were significant but were qualified by a three-way interaction of protective buffering and the two assertiveness dimensions. This three-way interaction added 9% explained variance at T1 and 6% explained variance at T2. Since the interactions show the same pattern at T1 and T2, only the interaction of the first measurement is plotted in Figure 2. In women who frequently express assertive behaviors and feel comfortable when doing so (assertive interpersonal style), the negative association between protective buffering and relationship satisfaction was found to be significant at T1 (B = -2.02) as well as T2 (B = -2.39, p < .001). Also in women who score low on frequency of assertive behaviors and high on tension (unassertive interpersonal style) a negative association between protective buffering and relationship satisfaction was found, but only at T1 (B = -.94). In all other women protective buffering was not significantly related to relationship satisfaction. In accordance with Hypothesis 4, these results indicate that especially more assertive women with breast cancer were less satisfied with their marriage when they indicated that their partner frequently used protective buffering strategies.

**Discussion**

In the present study women with breast cancer and comparison-controls did not differ in relationship satisfaction and, thus, breast cancer itself does not seem to be a risk factor for relationship distress. However, when confronted with cancer, patients’ assertiveness and partners’ relationship focused coping strategies, as perceived by the patients, appear to account for variation in relationship satisfaction.

First, women with cancer who express their personal thoughts and feelings less frequently and who experience high levels of tension when doing so (unassertive interpersonal style) showed a decrease in relationship satisfaction, respectively (see Table 4). Some two-way interactions were significant but were qualified by a three-way interaction of protective buffering and the two assertiveness dimensions. This three-way interaction added 9% explained variance at T1 and 6% explained variance at T2. Since the interactions show the same pattern at T1 and T2, only the interaction of the first measurement is plotted in Figure 2. In women who frequently express assertive behaviors and feel comfortable when doing so (assertive interpersonal style), the negative association between protective buffering and relationship satisfaction was found to be significant at T1 (B = -2.02) as well as T2 (B = -2.39, p < .001). Also in women who score low on frequency of assertive behaviors and high on tension (unassertive interpersonal style) a negative association between protective buffering and relationship satisfaction was found, but only at T1 (B = -.94). In all other women protective buffering was not significantly related to relationship satisfaction. In accordance with Hypothesis 4, these results indicate that especially more assertive women with breast cancer were less satisfied with their marriage when they indicated that their partner frequently used protective buffering strategies.

**Longitudinal analysis.** Hierarchical regression analyses with relationship satisfaction at T2 as the dependent variable and relationship satisfaction at T1, and the two assertiveness dimensions, and either active engagement or protective buffering as explanatory variables showed that active engagement and protective buffering were not associated with changes in relationship satisfaction over time. Results did reveal, however, an unexpected interaction effect of active engagement by frequency of assertive behaviors explaining 3% of the variance in relationship satisfaction over time (B = -1.02, p = .029). This regression showed that active engagement was significantly associated with an increase in relationship satisfaction in women who reported fewer assertive behaviors (B = .899, p = .005), but not in women who frequently displayed such behaviors (B = -.474, p = .245).

1. After imputing missing data, the three-way interaction between the two social competence dimensions and protective buffering was no longer significant (p = .249) at T1. Protective buffering and the tension dimension of personal assertiveness did both have a main effect on marital satisfaction (p < .001 and p = .011, respectively), suggesting that women who indicated that their partner frequently used protective buffering strategies and women who reported more tension when engaging in assertive behaviors were less satisfied with their relationship. At T2, the three-way interaction remained significant (p = .047) showing the same pattern.

2. It could be argued that personal assertiveness reflects involvement in a relationship that is relatively constant in the opportunities it provides for assertive behaviors. In other words, people involved in more satisfying relationship or with partners who are more open and less defensive may become more assertive. In order to test this alternative hypothesis we conducted some additional multivariate analyses with the two assertiveness dimensions at T2 as dependent variables and the two assertiveness dimensions at T1 and either relationship satisfaction or spousal support as explanatory factor. These analyses revealed, however, that neither relationship satisfaction nor spousal support behavior explained changes in assertiveness over a six months period. This does not mean that over a prolonged period of time assertiveness may change as a result of stable interpersonal experiences.

3. In the analysis on the dataset after imputing missing data not the two-way interaction between frequency and active engagement, but a three-way interaction between frequency, tension, and active engagement was significant (p = .044). This interaction showed a trend indicating that active engagement was associated with an increase in relationship satisfaction especially in women who scored low on frequency and high on tension (i.e., unassertive interpersonal style) (B = .545, p = .091). In the other women active engagement was not associated with an increase in relationship satisfaction.
relationship satisfaction over time and reported significantly lower levels of distress at nine months after diagnosis. This pattern was found in the analysis on dataset with only complete cases and after imputing missing data. Thus, women who indicated not to engage in assertive behavior frequently, and to experience tension when doing so, seem to be less able to maintain a satisfactory relationship when confronted with a physical and psychological threat such as breast cancer. This pattern was not found in comparison-controls suggesting that an inability to express personal thoughts and feelings due to high levels social anxiety may be especially deleterious in times of threat. This finding is in accordance with contemporary psychology which suggests that, while expressing personal thoughts and feelings in times of stress may promote intimacy and closeness, an inability to do so may be associated with relationship dissatisfaction and conflict (Reis & Shaver, 1988; Pietromonaco, Greenwood, & Barret, 2004).

In accordance, we found that all women with cancer, regardless of their personal assertiveness, did evaluate their relationship as more satisfying when their partner was perceived as more actively engaged. This findings is in accordance with previous studies showing that partner support which is open and responsive promotes intimacy and relationship satisfaction (Kuijer et al., 2000; Manne et al., 2004; Hagedoorn et al., 2000).

Moreover, we found that perceived active engagement was associated with greater relationship satisfaction over time, especially in women with breast cancer who scored relatively low on frequency of assertive behavior. Thus, women who are more reluctant to express feelings and thoughts by themselves (i.e., low frequency) seem to appreciate it when invited to do so by their partner. This association was not hypothesized and should be treated with caution as a somewhat different pattern occurred after imputing missing data. In this secondary analysis, women with breast cancer who scored low on frequency and high on tension (unassertive interpersonal style) were found to show an increase in relationship satisfaction over time when a partner was believed to be more actively engaged. These findings should be replicated in future studies.

Fourth, the present study showed that women with breast cancer who frequently initiate assertive behaviors and express personal thoughts and feelings with low levels of tension (i.e. assertive interpersonal style) may become dissatisfied about their intimate relationship if they believe their partner frequently used protective buffering strategies. This pattern was found at three and nine months after cancer diagnosis in the dataset with only complete cases, and at nine months after diagnosis in the dataset after imputing missing data. These findings suggest that a mismatch between relationship focused coping and personal assertiveness may have a deleterious effect on relationship satisfaction. These results complement previous studies suggesting that buffering support does negatively affect individuals who are less confident (Coyne & Smith, 1994) and more psychologically distressed or physically impaired (Hagedoorn et al., 2000; De Ridder, Schreurs, & Kuiper, 2005). It complements these studies by showing that buffering support by a partner may be deleterious for more assertive patients but not for less assertive patients. This implies that the opportunity to express personal thoughts and feelings openly may not be equally important for everyone, as is often suggested (Pistrang et al., 1995; Suls, Green, Rose, Lounsby, & Gordon, 1997; Figueiredo, Fries, & Ingram, 2004). Our results seem to indicate that those who are inherently inclined to express their personal thoughts and feelings openly that is, women with an assertive interpersonal style, will be dissatisfied by a partner who provides support in a more defensive and avoidant manner. In contrast, those who are more
reluctant and/or more anxious to express personal thoughts and feelings seem to be less hampered by partner support characterized by protective buffering strategies (e.g., avoiding and dismissing negative feelings).

This study has several noteworthy strengths, such as longitudinal data, a homogeneous sample of women with breast cancer and a comparison-control group, but also some limitations. In the present study the response rate of patients was rather low potentially biasing our sample. The finding that most results were similar for the analyses on the dataset with only complete cases and after imputing missing data increases the representativeness of the findings. However, findings should be replicated in future studies to establish whether the results found in the present sample are also representative for the population of women whose partners might not agree to participate, as these women may have quite a different kind of relationship. Moreover, in the present study we were able to detect medium and large effects but no small effects. Consequently, some relationships that were not found to be significant may prove to be significant in a larger sample. Furthermore, the present study included only women with breast cancer and did not include men with cancer. Men have been found to be more reluctant to acknowledge threatening experiences, to respond to distress with more repressive and distancing strategies (Kring & Gordon, 1998; Lutzky & Knight, 1994), and to appreciate active engagement strategies less than women (Acitelli & Antonucci, 1994; Hagedoorn et al., 2000). Therefore, we should be careful generalizing the present findings to males with cancer. In future research it would be interesting to see whether gender differences in the association between relationship focused coping and relationship satisfaction may be explained by differences in assertiveness (Arrindell et al., 1990b; Bridges, Sanderman, Breukers, Ranchor, & Arrindell, 1991).

The findings of the present study may have some useful clinical implications. Promoting open communication, either by training assertive behavior or by improving the quality of spousal support behavior, are potentially promising resources to prevent relationship distress and enhance relationship satisfaction in persons diagnosed with cancer. Furthermore, the present study may invite researchers to investigate the role of assertiveness and other individual difference variables in the outcome and effectiveness of different support behaviors (e.g., relationship focused coping strategies) of various sources (e.g., doctors).


### Table 1.

<table>
<thead>
<tr>
<th></th>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td>mean SD</td>
</tr>
<tr>
<td><strong>Active engagement</strong></td>
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<td>-0.31**</td>
</tr>
<tr>
<td><strong>Protective buffering</strong></td>
<td>0.13</td>
<td>0.18</td>
</tr>
<tr>
<td><strong>Tension</strong></td>
<td>0.35**</td>
<td>0.71**</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
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<td>-0.16</td>
</tr>
<tr>
<td><strong>Relationship satisfaction</strong></td>
<td>0.61**</td>
<td>0.72**</td>
</tr>
</tbody>
</table>

Note: the correlations for the patients are shown below the diagonal and for the comparison-controls are shown above the diagonal.

*p < .05, ** p < .01
Table 2a.

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<thead>
<tr>
<th></th>
<th>Relationship satisfaction (T1)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients</td>
<td>Comparison-controls</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \Delta R^2 )</td>
<td>( \Delta F ) (( p ) value)</td>
<td>( \beta ) (( p ) value)</td>
</tr>
<tr>
<td>Step 1</td>
<td>.11</td>
<td>4.38 (( p = .016 ))</td>
<td>( .00 )</td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
<td>-1.07 (( p = .640 ))</td>
<td>( .53 ) (( p = .862 ))</td>
</tr>
<tr>
<td>Tension</td>
<td></td>
<td>4.90 (( p = .026 ))</td>
<td>( -.80 ) (( p = .751 ))</td>
</tr>
<tr>
<td>Step 2</td>
<td>.05</td>
<td>3.87 (( p = .053 ))</td>
<td>( .00 )</td>
</tr>
<tr>
<td>Frequency X Tension</td>
<td></td>
<td>6.20 (( p = .053 ))</td>
<td>( -1.37 ) (( p = .784 ))</td>
</tr>
</tbody>
</table>

* Unstandardized regression coefficients of the final model are presented

Table 2b.

<table>
<thead>
<tr>
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<th>Relationship satisfaction (T2)</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Patients</td>
<td>Comparison-controls</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( \Delta R^2 )</td>
<td>( \Delta F ) (( p ) value)</td>
<td>( \beta ) (( p ) value)</td>
</tr>
<tr>
<td>Step 1</td>
<td>.15</td>
<td>6.05 (( p = .004 ))</td>
<td>( .01 )</td>
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<tr>
<td>Frequency</td>
<td></td>
<td>1.56 (( p = .488 ))</td>
<td>( .83 ) (( p = .667 ))</td>
</tr>
<tr>
<td>Tension</td>
<td></td>
<td>-5.51 (( p = .028 ))</td>
<td>( 1.60 ) (( p = .426 ))</td>
</tr>
<tr>
<td>Step 2</td>
<td>.07</td>
<td>6.36 (( p = .014 ))</td>
<td>( .04 )</td>
</tr>
<tr>
<td>Frequency X Tension</td>
<td></td>
<td>8.02 (( p = .014 ))</td>
<td>( 5.24 ) (( p = .128 ))</td>
</tr>
</tbody>
</table>

* Unstandardized regression coefficients of the final model are presented
Table 3.

Variation in relationship satisfaction over time in patients and comparison-controls explained by personal assertiveness

<table>
<thead>
<tr>
<th></th>
<th>Relationship satisfaction (T2)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients</td>
<td>Comparison-controls</td>
</tr>
<tr>
<td></td>
<td>$\Delta R^2$</td>
<td>$\Delta F$ ($p$ value)</td>
</tr>
<tr>
<td>Step 1</td>
<td>.77</td>
<td>74.14 ($p &lt; .001$)</td>
</tr>
<tr>
<td>Relationship satisfaction (T1)</td>
<td>.88 ($p &lt; .001$)</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>2.95 ($p = .023$)</td>
<td></td>
</tr>
<tr>
<td>Tension</td>
<td>-1.06 ($p = .395$)</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.02</td>
<td>5.213 ($p = .026$)</td>
</tr>
<tr>
<td>Frequency X Tension</td>
<td>4.11 ($p = .026$)</td>
<td></td>
</tr>
</tbody>
</table>

$^*$ Unstandardized regression coefficients of the final model are presented
Table 4.

| Relationship satisfaction at t1 and t2 explained by protective buffering and personal assertiveness in women with cancer |
|---|---|---|---|---|---|---|---|---|
| | Relationship satisfaction | T1 | | T2 | | | |
| | ΔR² | ΔF (p value) | B (p value) | ΔR² | ΔF (p value) | B (p value) | |
| Step 1 | .24 | 6.96 (p < .001) | .27 | 8.18 (p < .001) | |
| Buffering | -.925 (p = .001) | | -.773 (p = .003) | |
| Frequency | -2.29 (p = .273) | | -2.29 (p = .702) | |
| Tension | -3.03 (p = .132) | | -2.37 (p = .290) | |
| Step 2 | .06 | 1.74 (p = .168) | .14 | 5.12 (p = .003) | |
| Buffering X Frequency | -.382 (p = .482) | | -.098 (p = .367) | |
| Buffering X Tension | .685 (p = .117) | | 1.16 (p = .049) | |
| Tension X Frequency | 7.15 (p = .016) | | 9.81 (p = .005) | |
| Step 3 | .09 | 8.08 (p < .004) | .06 | 6.72 (p = .012) | |
| Buffering X Frequency X Tension | 1.89 (p = .004) | | 2.37 (p = .012) | |

* Unstandardized regression coefficients of the final model are presented.
Figure 1. The relationship between personal assertiveness and relationship satisfaction at T2 in women with breast cancer.

![Graph showing the relationship between personal assertiveness and relationship satisfaction at T2 in women with breast cancer.](image1)

High frequency, $p = .885$

Low frequency, $p = .001$

Figure 2. The relationship between protective buffering and relationship satisfaction at T1 as a function of personal assertiveness in women with breast cancer.

![Graph showing the relationship between protective buffering and relationship satisfaction at T1 as a function of personal assertiveness in women with breast cancer.](image2)

Low frequency and low tension (indifferent style), $p = .333$

High frequency and high tension (anxious performer style), $p = .898$

Low frequency and high tension (unassertive style), $p = .017$

High frequency and low tension (assertive style), $p = .001$