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Does Marital Adjustment Mediate Type C Personality-Depressive Symptoms Relation? A Comparison between Breast Cancer Patients and Cancer-Free Women

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Abstract The purpose of this study was to investigate the relation between Type C personality and depressive symptoms in breast cancer patients, and to examine if marital adjustment mediates this relation. The data was collected from 98 married breast cancer patients undergoing post-operative chemotherapy treatment. Also, 97 married cancer-free women were included in the study as the comparison group to test whether the proposed relationship is typical only to breast cancer patients. Regression analyses indicated that marital adjustment partially mediated Type C personality-depressive symptoms relation in breast cancer patients. However, this mediation was not found in cancer-free women. Findings of the study were discussed in relation to current literature and cultural context of Turkey.

Keywords Type C personality · Marital adjustment · Depression · Breast cancer

Cancer diagnosis might engender more psychological problems and emotional distress in patients when compared with other chronic and life-threatening illnesses (Mehnert & Koch, 2008; Meyerowitz, 1980; Shapiro et al., 2001; Vahdaninia et al., 2010 Amongst other mental problems, depression is the most commonly encountered psychological morbidity in this population (Mehnert & Koch, 2008; Meyerowitz, 1980). It was consistently reported that breast cancer patients experience mild to severe depressive symptoms after diagnosis (e.g., Burgess et al., 2005; Massie, 2004). Since these symptoms were associated with decreased quality of life, maladjustment to treatment regimen, increased physical complaints, and increased mortality among breast cancer patients (Al Ghazal, Fallowfield, & Blamey, 2002; Burgess et al., 2005; Massie, 2004; Payne et al., 1999; Shapiro et al., 2001), it is crucial to explore the risk factors for depressive symptomatology in this population.

Similarly to global statistics, breast cancer is the most common cancer type among women in Turkey (35.47%; The Ministry of Health of Turkey). However, only a limited number of studies investigated the psychological reactions of Turkish breast cancer patients in response to diagnosis and treatment process. While those studies mostly provided descriptive information on the nature and prevalence rates of depression (Kutlu, Çivi, Börüban, & Demir, 2011; Şener et al., 1999), more comprehensive research investigating depression in relation to different psychosocial variables seems to be lacking. Thus, the current study aimed to examine the possible roles of two psychological variables in the experience of depressive symptoms in Turkish breast cancer patients.

According to some theorists, certain personality traits might set the ground for depressive symptoms in breast cancer patients. Particularly, Temoshok coined the term 'Type C Personality" to describe the patients who are emotionally non-expressive, calm, compliant, and focusing on other people needs (1987). Type C patients suppress their emotions and try to please others in an effort to preserve relational harmony and prevent social rejection (Fernandez-Ballesteros, Ruiz, & Garde, 1998; Schlatter & Cameron, 2010). Since those patients prioritize others' needs instead of their own, they usually do not benefit from social support networks (Schlatter & Cameron, 2010). Furthermore, they use dysfunctional coping styles (e.g., fatalism, denial, withdrawal) while dealing with

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disease-related problems (Fernandez-Ballesteros et al., 1998; Grossarth-Maticek et al., 1997; Iwamitsu et al., 2003; Watson et al., 1991). Emotion regulation theories asserted that although patients with Type C personality features conceal their inner feelings and needs from the outside world, the emotional turmoil they experience usually remains unresolved (Classen et al., 1996; Gross & John, 2003; John & Gross, 2004¸ Schlatter & Cameron, 2010), which in turn, makes them more vulnerable to depression (Eysenck 1994; Fernandez-Ballesteros et al., 1998, Iwamitsu et al., 2003; Iwamitsu et al., 2005; Stanton et al., 2002; Schlatter & Cameron, 2010) and illness-related distress (Schlatter & Cameron, 2010).

Another psychosocial variable impacting on the depressive level of breast cancer patients is spousal support. Numerous studies have documented that adequate spousal support is associated with decreased depression for women with breast cancer (Frazier, Tix, & Barnett, 2003; Kudel et al., 2008; Manne et al., 1997). However, other researchers claimed that the amount of spousal support alone is not sufficient to ameliorate depressive symptoms for these patients (Frazier et al., 2003; Manne et al., 1997). According to them, to fully benefit from the partner support, the patients need to evaluate their marriage as well-adjusted (Frazier et al., 2003). More specifically, it was claimed that patients usually do not take the advantage of spousal support during the disease process when their marriage is maladjusted since they evaluate their partners' supportive actions in a negative light due to the overall negativity in their marital relationship (Manne et al., 1997; Reis et al., 2000).

In addition to its moderating effect on the spousal support-depression relation, marital adjustment has also direct impacts on depressive symptoms in breast cancer patients (Frazier et al., 2003; Hagedoorn et al., 2000; Wimberly, Carver, Laurenceau, Harris, & Antoni, 2005). In particular, it was suggested that patients with higher marital adjustment benefit from open communication and intimacy offered by their partners as a positive consequence for the psychological distress they experience (Carlson et al., 2000; Figueiredo et al., 2004). Also, partners of these patients usually encourage them to engage in rewarding interpersonal relations, which in turn, lessen the intensity of depressive symptoms. On the other hand, it was reported that patients with lower marital adjustment suffer from relational distress as well as health related concerns that give rise to increased depressive symptom manifestation during disease trajectory (Frazier et al., 2003; Yang & Schuler, 2008; Hagedoorn et al., 2000; Kudel et al., 2008).

Although the effects of Type C personality and marital adjustment on depressive symptoms were examined separately, only a few studies have examined the relation between Type C personality and marital adjustment among breast cancer patients. Iwamitsu and his colleagues (2003; 2005) suggested that patients with Type C personality usually withdraw from close relationships, including marriage, because they believe that their needs would not be appreciated by others. In a similar vein, Fernandez-Ballesteros and his colleagues (1998) indicated that patients with Type C personality who sacrifice their own needs for the sake of others are more likely to suffer from relational distress since their true needs have never been met by their partners. Other studies conducted with cancer-free samples proposed similar findings and suggested that partners who do not express their negative emotions and subjugate their own needs are more likely to experience decreased marital adjustment and increased depressive symptoms (Allan & Gilbert, 2007; Blum and Mehrabian, 1999; Hünler & Gençöz, 2003).

Although the literature suggested a relation between Type C personality and depressive symptoms among breast cancer patients, a third variable, marital adjustment, might provide a clearer interpretation of this relation. Existing evidence suggested that husbands become the main source of intimacy, support, and closeness in case of a life-threatening condition like breast cancer (Bozo et al., 2009). In well-adjusted marriages, patients' adjustment to disease and their mood were significantly improved because they felt valued, appreciated, and cared for by their partners (Carlson et al., 2000; Figueiredo et al., 2004; Hegelson and Cohen, 1996). Considering Type C patients' difficulties in asserting their own needs and emotions, it is very probable that perceived marital adjustment of these patients would eventually be compromised since their true needs have never been satisfied adequately by their partners. Thus, it can be suggested that as Type C patients had lower marital adjustment, they would not fully benefit from the protective aspects of their marital relationship; thereby experiencing more psychological distress during disease trajectory. In that respect, the main aim of this study was to investigate the possible meditating role of marital adjustment on the Type C personality and depressive symptoms relation among post-operative breast cancer patients in Turkey. In order to see whether this relation is typical of breast cancer patients or not, an age and gender matched cancer-free comparison group was also included for exploratory purposes.

Method

Participants

Ninety-eight female breast cancer patients (M_{age} = 49, *SD* = 10, *range* = 28–78) undergoing postoperative chemotherapy treatment participated in the study. Participants were from different cities of Turkey yet receiving treatment in the capital, Ankara. The participants had a history of breast cancer for a minimum of 1 month and maximum of 90 months (*M* = 12, *SD* = 18). Forty five of the patients were at stage 1 (45.9%), 36 of the patients were at stage 2 (36.7%), 7 of the

patients were at stage 3 (7.1%), and 1 of the patients was at stage 4 (1%) of the illness. No information regarding the stage of illness could be obtained from 9 participants (9.2%).

Ninety-seven cancer free women did also take part in the current study as a comparison group (M_{age} = 46.49, *SD* = 12.7, *range* = 19–77) (see Table 1). The inclusion criteria were being female and married, not having previous cancer history, and not being diagnosed with a chronic illness (e.g., diabeties, hypertension, cardiovascular disease). Of these women, 94 did not have any relatives being diagnosed with breast cancer (% 96.91), 2 had second degree relatives (e.g., grandmother and aunt) (2.06%) with breast cancer, and 1 had a first degree relative (e.g., mother) (1.03%) with breast cancer. There was no significant difference between breast cancer patients and cancer-free women in terms of age ($t(1) = -1.48$, $p = .14$).

Measures

Type C Behavior Scale (TCB) TCB was originally developed by Kurrass (2004). The test was adapted to Turkish by Bozo and her colleagues (2012). In TCB, there were 14 items such as 'No matter how much sorrow I feel, I do not feel comfortable expressing it', and 'I feel it is my duty to put others needs above my own' and each item was answered on a 4-point scale ranging from *not like me* to *a lot like me*. As in the original study, the items loaded under two factors, which are emotional non-expressiveness and self-sacrificing behavior, respectively. While the internal consistency reliability was. 81, the test-retest reliability of the Turkish version of TCB was. 86. In the current study, TCB was used to measure Type C personality, and the internal consistency of TCB was. 88 for breast cancer patients, and. 72 for cancer-free women.

Table 1 Demografic Characteristics of the Sample as a Percentage

Characteristics	Breast Cancer Patients (*n* = 98)	Cancer Free Women (*n* = 97)
Education		
No education	15.3	1.1
Literate	6.1	4.1
Primary school graduate	39.8	33
Secondary school graduate	7.1	10.3
High school graduate	24.5	18.6
University graduate	6.1	24.7
Master degree	1	8.2
SES		
Low	27.6	13.4
Average	70.4	75.3
High	1	9.3
Residential Area		
Metropolis	52	50.5
City	37.8	48.5
Other	9.2	1

Dyadic Adjustment Scale (DAS) DAS was originally developed by Spanier (1976). The test was adapted to Turkish by Fışıloğlu and Demir (2000). In DAS, there were 32 items questioning 4 dimensions of marital adjustment, dyadic satisfaction, dyadic cohesion, dyadic consensus, and affectional expression. Items were answered either on a 5, 6, or 7-point scale format, in which higher scores indicate perception of greater marital adjustment. The internal consistency of the Turkish DAS was. 81. In the current study, DAS was used to measure marital adjustment and the internal consistency of it was. 98 for breast cancer patients, and .88 for cancer-free women.

Beck Depression Inventory (BDI) BDI was originally developed by Beck in 1961 and adapted to Turkish by Tegin (1980) and Hisli (1988). BDI includes 21 items and each item is answered on a 4-point scale format, where higher scores indicate higher depressive symptoms. While the internal consistency reliability was .75 for the Turkish version, test-retest reliability was .65. In this study, BDI was used to measure the level of depressive symptoms both in breast cancer patients (α = .88) and cancer-free women (α = .92).

Procedure

Data obtained from breast cancer patients were collected from Ankara Numune Hospital and Başkent University Ankara Hospital. Before the data collection, necessary ethical approvals were received from the City Health Directorship of Ankara and from the aforementioned hospitals. After a brief explanation, the participants were requested to fill out the questionnaires by themselves either in Diurnal Treatment Units or in patients' waiting rooms. It took the breast cancer patients about 30 min to complete all questionnaires.

Data obtained from cancer-free women were also collected from the capital, Ankara. Before data collection, necessary ethical approvals were obtained from the local and regional ethics committees. After a brief explanation, the participants were requested to fill out the questionnaires by themselves. It took cancer-free women about 20 min to complete all questionnaires.

Confidentiality was guaranteed, and informed consent was obtained from both groups before participants have filled in the questionnaires. The subjects were also told that they were free to leave the study at any time during the process. Except for demographic information sheet, the order of all measures in the current study was counterbalanced. In order to test mediation effect, obtained data were analyzed by using SPSS (Statistical Package for Social Sciences).

Data Analysis Strategy

To examine the associations among the main study variables (i.e., Type C personality, marital adjustment, and depressive symptoms), Pearson correlation coefficients were computed for each pair. Subsequently, ad hoc mediational analyses were performed using the steps of Baron and Kenny's (1986) mediation analysis to investigate the possible mediator role of marital adjustment on Type C personaliy − depressive symptoms association for both breast cancer patients and cancer-free women. According to Baron and Kenny, four conditions are necessary to establish a mediational link: (1) the independent and meditating variables are significantly related, (2) the independent and dependent variables are significantly related, (3) the mediator variables and dependent variables are significantly related, and (4) the relation between independent and dependent variables becomes non-significant or weaker when the mediator variable is added to the equation. To examine if these assumptions are met in the current data, the indirect effect of Type C personality on depressive symptoms via marital adjustment was examined through a series of multiple regression analyses for both groups.

Results

To begin with, Pearson correlation coefficients were calculated to examine the relations among the measures of the study (see Table 2). Before calculating correlation coefficients, demographic variables (i.e., age, SES) were controlled for both groups and illness related variables (i.e., stage of cancer, time since diagnosis) were controlled only for breast cancer patients. The correlational analysis showed that depressive symptoms are significantly related to Type C personality (r = .40, p < .001), and marital adjustment (r = −.73, p < .001) among post-operative breast cancer patients. Additionally, Type C personality was significantly and negatively associated with marital adjustment (r = −.32, p < .01) in breast cancer patient group. As for comparison group (see Table 2), correlational analysis indicated that depressive symptoms are significantly related to marital adjustment (r = −.49, p < .001), but not to Type C personality construct (r = .02, p > .05).

After the correlational analyses, in order to examine the mediating role of marital adjustment in the relationship between Type C personality and depressive symptoms among breast cancer patients, mediation analyses were conducted according to the steps proposed by Baron and Kenny (1986). For this path, Type C personality was entered as the independent variable (IV) and depression was entered as the dependent variable (DV) into the equations. Marital adjustment was considered as the mediator variable. First, IV-DV relationship, and then mediator-DV relationship were examined.

Table 2 Intercorrelations among Measures: Type C Personality, Marital Adjustment, and Depressive Symptoms

	1	2	3
Measures for Breast Cancer Patients (Control Variables: Age, SES, Stage of Cancer, Time Since Diagnosis)			
Type C Personality	–		
Marital Adjustment	−.32*	–	
Depressive Symptoms	.40**	−.73**	–
Measures for Cancer Free Women (Control Variables: Age, SES)			
Type C Personality	–		
Marital Adjustment	.11	–	
Depressive Symptoms	.02	−.49**	–

*p < .01 **p < .001

Controlling for the effects of demographic (age and SES) and illness-related variables (stage of cancer and time since diagnosis), Type C personality (β = .35, p < .001) and marital adjustment (β = −.67, p < .001) significantly predicted depressive symptoms of post-operative breast cancer patients. Second, the relationship between the IV and mediator was examined. It was revealed that Type C personality significantly predicted marital adjustment (β = −.31, p < .01) (see Table 3). Since Type C personality-marital adjustment relation

Table 3 Hierarchical Regression Analysis Results Regarding The Mediator Role of Marital Adjustment on Type C Personality-Depressive Symptoms on Post Operative Breast Cancer Patients

	Depressive Symptom Level	
Predictor	ΔR^2	β
Step 1	.27	
Age		.07
SES		−.46**
Stage of Cancer		.21*
Time Since Diagnosis		−.05
Step 2	.12**	
Age		.07
SES		−.41**
Stage of Cancer		.14
Time Since Diagnosis		−.06
Type C Personality		.35**
Step 3	.29**	
Age		.03
SES		−.24**
Stage of Cancer		.11
Time Since Diagnosis		−.04
Type C Personality		.17
Marital Adjustment		−.61**
Total R^2	.68**	

*p < .01 **p < .001

was significant, the successive steps of Baron and Kenny (1986) were followed for the Type C personality-marital adjustment-depressive symptoms path. In this respect, regressions of both Type C personality and marital adjustment on depressive symptoms were examined as a third step in order to check whether the IV-DV relation significantly decreased when the mediator was in the equation than when it was not in the equation. The β value of the relationship between Type C personality and depressive symptoms reduced from .35 ($p < .001$) to .17 ($p < .05$) when the marital adjustment entered into the equation. Lastly, Sobel test was conducted to see whether this decline in the IV-DV relation after the entrance of mediator into the equation was significant. Sobel test revealed that proposed mediation was significant (Sobel $z = -2.31$, $p < .05$). Thus, marital adjustment partially mediated Type C personality-depressive symptoms relationship in cancer patients (see Fig. 1).

The mediating role of marital adjustment in the relationship between Type C personality and depressive symptoms was also investigated for cancer-free women. Analyses indicated that Type C personality did not significantly predict depressive symptoms ($R = .46$; $R^2 = .01$; $F(1, 89) = 1.003$, $\beta = .12$, $p = .32$) in healthy comparison group after controlling for the effects of demographic variables (age and SES). Therefore, mediation analysis was not completed for the comparison group since the first criterion of mediation analysis proposed by Baron and Kenny (1986) (i.e., the relationship between IV and DV must be significant) was not met.

Discussion

The main objective of this study was to investigate the mediating role of marital adjustment on the Type C personality-depressive symptoms relation among post-operative breast cancer patients. Consistent with the expectations and existing literature (Carlson et al., 2000; Figueiredo et al., 2004; Hegelson and Cohen, 1996; Iwamitsu et al., 2005; McKenna et al., 1999), regression analyses revealed an indirect effect of Type C personality on depressive symptoms showing that postoperative breast cancer patients high on Type C personality traits were more likely to have maladjusted marriages,

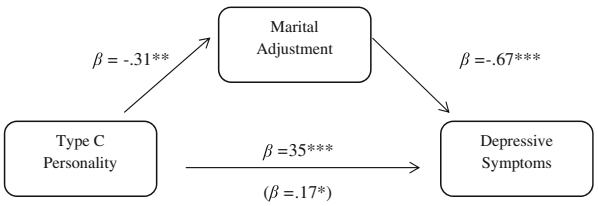

Fig. 1 Model of the mediated relationship of Type C personality-depressive symptoms for post-operative breast cancer patients. *$p < .05$, **$p < .01$ ***$p < .001$

which in turn made them more vulnerable to depressive symptoms.

Our results indicated that postoperative breast cancer patients high on Type C personality are more likely to experience higher levels of depression. This result is consistent with the psycho-oncology literature that has demonstrated a positive relation between Type C personality and psychological problems including depression (Iwamitsu et al., 2003; Iwamitsu et al., 2005). In fact, it is very common for breast cancer patients to experience depression, anger, and fear due to the uncertainty of the disease trajectory and tough treatment conditions (Jackson & Jackson, 2007; Shapiro et al., 2001). Yet, patients with Type C personality put themselves under additional physical and psychological burden due to their submissive and non-expressive personality predisposition (Fernandez-Ballesteros et al., 1998; McKenna et al., 1999; Watson et al., 1991; Schlatter & Cameron, 2010). These patients usually do not share the emotional and medical difficulties they experience, and try to solve the disease related problems on their own (McKenna et al., 1999; Watson et al., 1991; Schlatter & Cameron, 2010). Besides, they are motivated to sacrifice their medical and emotional needs to pursuit harmonious relationships (Fernandez-Ballesteros et al., 1998; Schlatter & Cameron, 2010). For example, emotionally non-expressive breast cancer patients had a tendency to underreport vague side effects of chemotherapy (e.g., constipation, sweating) to minimize others' distress over their suffering (Schlatter & Cameron, 2010). Consequently, these patients experience more emotional distress during treatment process (Fernandez-Ballesteros et al., 1998; Schlatter & Cameron, 2010) due to poor symptom regulation and depletion of cognitive and social resources over time (Schlatter & Cameron, 2010).

In the current study, post-operative breast cancer patients with lower marital adjustment were also found to be more likely to experience increased depressive symptoms. This finding is parallel to the literature documenting that a well-adjusted marital relationship is a good predictor of better mental health outcomes for women with breast cancer (Carlson et al., 2000; Kudel, et al., 2008; Wimberly et al., 2005). It has been found that women with high marital adjustment engage in open disclosure of the disease process (e.g., uncertainty of recurrence, possibility of death) with their partners, which lessen the psychological distress they experience during treatment process (Figueiredo et al., 2004). In a similar vein, Kudel and his colleagues (2008) reported that supportive actions and adaptive coping strategies employed by the partner in a well-adjusted marriage are associated with good adaptation to treatment process and less psychological problems. On the other hand, Figueiredo and his colleagues (2003) stated that patients with lower marital adjustment experience more depressive symptoms due to the unsupportive (e.g., lack of disclosure) and upsetting (e.g., minimization of illness)

actions of their husbands. Thus, as our findings suggested, women with lower marital adjustment have a tendency to experience more depressive during the treatment process.

The results of the current study did also indicate that Type C personality significantly and negatively predicts marital adjustment in post-operative breast cancer patients. Interestingly, only a few studies have so far investigated Type C personality-marital adjustment relation among breast cancer patients. Yet, existing literature proposed results congruent with those of the current study. To illustrate, it was revealed that patients with Type C personality were more likely to have maladjusted marriages, because their non-expressive and self-sacrificing tendencies prevented open communication, reciprocal exchanges and emotional disclosure, which are considered as the active components of a satisfying marital relation (Carlson et al., 2000; Fernandez-Ballesteros et al., 1998; Figueiredo et al., 2004).

Paralel to our expectations, the present study revealed that Type C personality influences depressive symptoms through the mediation of marital adjustment in post-operative breast cancer patients. This proposed model suggested that breast cancer patients higher on Type C personality traits are less likely to have well-adjusted marriages and thereby reported more depressive symptoms. This finding is supported by the existing literature, as well. Bowlby (1988) suggested that almost all people have a tendency to search for closeness and intimacy in times of need. Individuals feel secure and comforted by close relationships, which in turn reduce their anxiety especially in the presence of stressful life events (Bowlby, 1988; Fernandez-Ballesteros et al., 1998; Servaes et al., 1999). When individuals in intimate relationships are diagnosed with a life-threatening disease like breast cancer, their partners become the main source of safety and comfort (Bozo et al., 2009; Manne et al., 1997); and these patients display better adaptation to disease because they feel protected and appreciated by their intimate partners (Hegelson & Cohen, 1996). In that respect, it is highly probable that patients with Type C personality characteristics feel a strong urge to be comforted by their husbands after the breast cancer diagnosis, too. Yet, these patients' inability to communicate and express their own needs may hamper the quality of the relationship they have with their partners. Regarding this, Iwamitsu and his colleagues (2003; 2005) revealed that these patients psychologically withdraw themselves from intimate relationships due to the belief that they would not be understood by their close others. In that sense, they may feel unappreciated and alone in their marital relationships since their husbands rarely figure out their true needs due to the lack of appropriate communication between them. Consequently, these women tend to have lower marital adjustment, which not only impedes use of the protective aspects of the marital relationship (e.g., instrumental support, active coping) (Figueiredo et al., 2004; Kudel et al., 2008) but also increases the psychological distress that each partner experiences (Carlson et al., 2000; Kudel et al., 2008).

The mediator role of marital adjustment on the relationship between Type C personality and depressive symptoms was also investigated in cancer-free women. Unlike the breast cancer group, current results indicated that marital adjustment was not a mediator of the Type C personality-depressive symptoms relation in cancer-free women. In fact, there has been a long controversy in the literature as to whether Type C personality is a cancer-prone personality or not. To illustrate, Temoshok (1987) suggested that individuals with Type C personality organization are at greater risk of developing cancer later in their life. Several others supported this and revealed that especially emotional non-expressiveness feature of Type C personality is a significant predictor of cancer development and mortality from cancer (e.g., Eysenck, 1994; Gross, 1989; Grossarth-Maticek et al., 1985). Other researchers, however, proposed opposing findings and stated that Type C personality traits do not have any direct effect on cancer development and progression (Schlatter & Cameron, 2010; Servaes et al., 1999). Taking into consideration this debate, we may cautiously interpret the non-significant mediational model in cancer-free women in the light of the former evidence suggesting Type C personality as a distinguishing feature for cancer patients. Alternatively, as Servaes and his colleagues (1999) suggested, Type C personality organization might not significantly affect the marital adjustment and depression levels among cancer free women since these women do not experience a highly stressful life event like breast cancer at the time of the study. Still, it is imperative to remember that these results are just preliminary and more rigorous longitudinal studies need to be conducted to investigate possible reasons of this difference between breast cancer patients and women without breast cancer.

The current study is important in capturing not only intra-individual factors such as Type C personality, but also contextual factors such as marital adjustment in the development of depressive symptoms among breast cancer patients. Although in the literature there are studies examining Type C personality-depression and marital adjustment-depression relations among breast cancer patients, to the best of our knowledge, there are no studies examining the full framework of relations among these three variables. Besides, so far, no healthy comparison group has been employed in the previous studies to clarify whether expected relations among aforementioned variables are specific to breast cancer patients or not. In that sense, the present study fills an important gap in the psycho-oncology literature regarding cancer patients' experience of this life-threatening disease. Nevertheless, this study is not without limitations. First, self-report nature of the questionnaires might led Type C patients to hide their negative emotions and underreport their

psychological and relational problems in an effort to please others. Therefore, more implicit mood and relationship measures are suggested to be used for this population in future studies. Second, because of the unequal numbers of participants at different SES levels; high, medium and low SES breast cancer patients and cancer-free women were not equally represented in the present study. Therefore, the differences that might arise from SES might have been overlooked by the researchers. Finally, cross-sectional nature of the data limited the ability of this study to establish cause-effect relationships. Thus, rigorous experimental designs should be implemented to clarify the relationship among aforementioned characteristics among breast cancer patients.

This study has important implications for psycho-oncology practices. First, findings of the present study may help health care professionals to identify breast cancer patients at higher risk for depression. In that sense, patients with higher Type C personality traits and lower marital adjustment might be at risk of developing depressive symptomatology. Also, unlike in the Western cultures, in Turkey - as an Eastern culture - women tend to refrain from expressing their feelings and needs, because in such cultures interdependence, relational harmony, and conformity are highly appreciated (Jones, 1995; Triandis & Suh, 2002). In this respect, culturally sensitive intervention programs might be more effective to alleviate the depressive symptoms of breast cancer patients with Eastern values. Therefore, intervention programs for this specific group are suggested to include appropriate emotional expression and assertiveness training. Moreover, since in Eastern cultures women are taught to comply with their husbands' claims as an expression of respect (Kulu, 1990), spouses of those patients might also be included to the intervention programs to promote open communication about emotional and medical needs of breast cancer patients.

Conclusions

The present findings revealed an indirect effect of Type C personality on depressive symptoms showing that postoperative breast cancer patients high on Type C personality traits were more likely to have maladjusted marriages, which in turn made them more vulnerable to depressive symptoms. Thus, interventions targeting the Type C personality characteristics and marital adjustment of breast cancer patients would be beneficial in alleviating their depressive symptoms.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interests.

Ethical Approval All procedures performed in the studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amenmends or comprable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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