Short Communication: Stress-related predictors of optimism in breast cancer survivors

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Summary
Optimism is a key variable for adjustment in aversive conditions. The purpose of this study was to examine whether optimism is predicted by two stress-related variables which represent information about self and the environment (i.e. illness-related stress and self-efficacy), in a sample of breast cancer survivors. Ninety-two women who had undergone a mastectomy participated in the study (minimum time elapsed since diagnosis = 3 years). Most participants (51 per cent) reported that at least one of four illness-related concerns had been quite or very stressful in the past 6 months. Analyses showed that illness-related stress exerted influence on optimism through coping, whereas self-efficacy exerted influence both directly and through coping. Stress was predicted by two medical variables (time since diagnosis and time since mastectomy). These findings confirmed our hypothesis that knowledge about personal abilities, as well as about environment difficulties can predict the way a person evaluates future outcomes. This study has significant implications for clinical practice with patients. Copyright © 2007 John Wiley & Sons, Ltd.

Key Words
optimism; illness-related stress; self-efficacy; breast cancer survivors

Introduction
Breast cancer diagnosis and treatment incorporate a series of stressful events and breast cancer patients have to cope with great amount of psychological distress throughout the course of the illness (e.g. Compas & Luecken, 2002; Green et al., 1998; Morasso et al., 2001; Okamura, Yamawaki, Akechi, Taniguchi, & Uchitomi, 2005). The loss of a breast can have a truly negative impact on patients’ life and well-being, especially since breasts are related to femininity, physical appearance and motherhood (e.g. Knight, 2004; Pikler & Winterowd, 2003).

Some studies have found that the impact of breast cancer diminishes over the years (e.g. Anagnostopoulos, Vaslamatzis, & Markidis, 2004). On the other hand, several studies have shown that the impact of cancer experience on patients’ quality of life exceeds the first few years after diagnosis. For example, Omne-Ponten, Holmberg, and Sjoden (1994) found that 29 per cent of their sample had suboptimal psychosocial...
adjustment. Amir and Ramati (2002) compared long-term survivors of breast cancer with matched women who had not been exposed to any chronic disease, and found that survivors revealed higher rates of full or partial post traumatic stress disorder (PTSD), scored significantly higher on emotional distress and lower on quality of life.

A key factor regarding cancer patients’ well-being is optimism. Optimism predicts concurrent and future adjustment to a stressful condition. Daukantaite and Bergman (2005) found that optimism at age 13 was the only factor that was consistently related to women’s subjective well-being at age 43. Giltay, Geleijnse, Zitman, Hoekstra, and Schouten (2004) provided evidence for a protective relationship between dispositional optimism and all-cause mortality in old age. Optimism is a significant predictor of physical and psychological functioning in patients suffering from various medical conditions (Carver et al., 1993; Fournier, de Ridder, & Bensing, 2002), as well as of adjustment in people with cancer. Epping-Jordan et al. (1999) found that, at diagnosis and at a 6-month follow-up, symptoms of anxiety and depression were predicted by low dispositional optimism. Carver et al. (2005) found that optimism the first year after surgery predicted follow-up adjustment 5–13 years later, even after controlling for earlier adjustment. Additionally, pessimism was found to be the strongest predictor of anxiety and depression 1 year after a breast cancer surgery (Schou, Ekeberg, Ruland, Sandvik, & Kåresen, 2004). Scheier and Carver (2001) argued that those who preserve their hope during and after their encounter with the disease are also those who adapt well to the adversity.

Optimism is an appraisal process about future outcomes. Recently, Cervone (2004), based on previous social cognitive literature, proposed a new model about personality, which distinguishes between ‘knowledge structures’ and ‘appraisal processes’. The first refers to mental representations of current or prospective features of (a) oneself and (b) others or the environment. Appraisals are evaluations of the interaction between oneself and the environment within particular encounters. In other words, ‘knowledge’ about self and the environment is combined to produce a particular appraisal, as an evaluation of the personal implications of information.

The purpose of this study is to examine whether optimism, as a critical factor for adjustment in an aversive chronic condition like breast cancer, is predicted by two stress-related variables which represent knowledge about self and the environment. These two variables are self-efficacy and illness-related stress. Self-efficacy expectations are part of the broader cognitive appraisal that takes place in the stress process. It is also a construct that represents knowledge about self and personal abilities to master adversities or achieve desired outcomes (Bandura, 1997). Stress reflects personal knowledge about the aversiveness of the environment or of a specific situation (Ursin & Eriksen, 2004). Research has identified these factors as influential as far as adjustment to a chronic medical condition, like cancer, is concerned. Furthermore, coping, medical and sociodemographic variables were included in the study, since they are closely related to stress, self-efficacy and adjustment.

Regarding stress, Meyer and Aspegren (1989) found that 71 per cent of long-term breast cancer survivors feared disease recurrence, while 29 per cent reported elevated anxiety or mood difficulties. Also, Golden-Kreutz and Andersen (2004) in a prospective study of breast cancer survivors found that stress at first diagnosis and surgery predicted physical and psychological quality of life 4 and 12 months later. Moreover, more than 30 per cent of the variance in depressive symptoms was accounted for by stress variables.

A factor strongly associated with stress is coping. Research has demonstrated that coping efforts are significant for the psychological adjustment of breast cancer patients. For example, Hack and Degner (2004) in a sample of women 3 years after diagnosis found that those who responded to their breast cancer with cognitive avoidance and resignation were at significant risk for poor long-term adjustment. Cohen (2002) found that among breast cancer patients with recurrence, those who reported higher levels of depression and anxiety used significantly fewer problem-solving and positive-focusing strategies. In general, coping that involves disengagement from the stressful situation (e.g. avoidance) is predictive of poorer psychological adjustment and poorer health outcomes (Compas & Luecken, 2002).

Self-efficacy is associated with the well-being of many patient populations. High self-efficacy is related to the regulation of the stress process, to higher self-esteem, better physical condition, better adaptation to and recovery from acute and chronic diseases (Bandura, 1997; Bisschop,
Knegsman, Beekman, & Deeg, 2004; Kuijer & de Ridder, 2003). Lower self-efficacy has been related to worst psychological functioning 2–6 months after initial diagnosis and treatment of breast cancer (Gallagher, Parle, & Cairns, 2002), as well as to problems in the interaction with medical staff (Han et al., 2005).

Besides stress and self-efficacy, demographic and medical variables are also related to adjustment. However, the results of relevant research are contradictory. Some researchers (e.g. Deimling, Kahana, Bowman, & Schaefer, 2002; Schnoll, Knowles, & Harlow, 2002) reported that demographic variables are related to adjustment. Other researchers (e.g. Alferi, Carver, Antoni, Weiss, & Durán, 2001; Helgeson, Snyder, & Seltman, 2004) reported that demographic variables do very little in predicting adjustment. With respect to medical variables, Helgeson et al. (2004) showed that they had very little relation to functioning overtime. On the contrary, Deimling et al. (2002) found that illness symptoms and the type of treatment can predict distress in long-term survivors.

This study is part of a broader research effort that aims to investigate the psychological adjustment of breast cancer survivors with a mastectomy. Its purpose is to examine the interplay between optimism, self-efficacy, illness-related stress and certain associated factors (i.e. coping, medical factors) in this specific population. Our hypotheses are: (a) certain illness-related concerns (e.g. fear about the future) are still stressful years after initial diagnosis and treatment; (b) stress, self-efficacy and coping strategies can predict optimism even after controlling for medical and socio-demographic variables; and (c) illness-related stress, as an indicator of current illness-related difficulties, and self-efficacy, as a representation of a capable self, predict optimism directly and indirectly, through coping strategies.

Method

Participants

Ninety-two breast cancer survivors who had undergone a mastectomy participated in the study. All of them were members of the Hellenic Association of Women with Breast Cancer and voluntarily participated in the study during a meeting of the Association. The mean age of the sample was 54.89 years [standard deviation (SD) = 9.14] ranging from 35 to 68 years of age. The majority of the participants had up to 12 years of education (57.8 per cent) and 42.2 per cent were holders of a higher education degree. Most of them were married and living with their families (88.6 per cent). The median time elapsed since diagnosis, as well as since mastectomy was 9 years (ranging from 3 to 19 years). All of them were free of any metastasis, while 23.9 per cent had a lymphoedema.

Measures

Illness-related stress. Based on previous research (Dunkel-Schetter, Feinstein, Taylor, & Falke, 1999) participants were asked to indicate the stressfulness of a small set of four illness-related concerns (Cronbach’s alpha = 0.79): (a) limitations concerning functioning or lifestyle; (b) fear and insecurity about the future; (c) pain and other symptoms or discomfort resulting from their health condition; and (d) problems with family and friends associated with cancer. Participants indicated the degree to which each concern had been stressful in the past 6 months on a Likert-type scale (1 = not stressful, 4 = very stressful).

Coping strategies. The revised Ways of Coping Questionnaire (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986) as adapted in a larger sample of Greek breast cancer survivors (Karademas, Argyropoulou, Sidiropoulou, & Karvelis, 2005) was used in order to identify the coping strategies that participants used for dealing with the above-mentioned illness-related concerns in the past 6 months. Participants were asked to rate items across a four-point Likert-type scale (0 = not used, 3 = used a great deal). The questionnaire consists of five factors: (a) focusing on the positive, which reflect positive reappraisal and problem-solving efforts (Cronbach’s alpha = 0.79, 10 items, e.g. ‘looked for the silver lining’, ‘knew what had to be done, so I doubted my efforts to make things work’); (b) use of social support (Cronbach’s alpha = 0.75, five items, e.g. ‘talked to someone who could do something concrete about the problem’, ‘talked to someone about how I was feeling’); (c) cognitive avoidance (Cronbach’s alpha = 0.79, four items, e.g. ‘day-dreamed or imagined a better time or place’, ‘wished that the situation would go away’); (d) passive hope (Cronbach’s alpha = 0.68, four items, e.g. ‘hoped a miracle would happen’); and
variables (entered on Step 1), medical variables and socio-demographic variables are presented in Table I. A hierarchical regression procedure of optimism at demographic variables is performed to examine our second hypothesis. Results are presented in Table II. Twenty-four per cent of the variance in optimism was accounted for by medical and socio-demographic variables, while 51 per cent was accounted for by stress, self-efficacy and coping. Optimism was predicted by time elapsed since diagnosis (β = −0.56, p < 0.01), time since mastectomy (β = 0.50, p < 0.01), self-efficacy (β = 0.34, p < 0.01), focusing on the positive (β = 0.42, p < 0.01), and behavioural avoidance (β = −0.25, p < 0.01).

The third hypothesis was tested through a structural equation model employing LISREL 8.54 (Joreskog & Sorbom, 1996). It was assumed that optimism is predicted by stress, self-efficacy and the two coping strategies that emerged from the regression analysis as significant predictors (i.e. focusing on the positive and behavioural avoidance). Stress was assumed to be predicted by two medical variables. That is, time since mastectomy and time since diagnosis. Coping strategies were predicted by stress, self-efficacy, as well as by each other. Finally, it was assumed that stress and self-efficacy predict each other. Socio-demographic variables were not included because no association was found with the psychological variables of the study.

The model provided a very good fit to the data. The chi-square was 6.14 (df = 7, p = 0.54, root mean square error of approximation (RMSEA) = 0.00, comparative fit index (CFI) = 1.00, normed fit index (NFI) = 0.98). Figure 1 provides the maximum likelihood estimates of the model. Non-significant estimates are not presented in the figure. According to the results, stress is positively predicted by time since diagnosis and negatively by time since mastectomy. Stress predicts positive approach in a negative way and avoidance in a positive way. Positive approach is also positively predicted by self-efficacy. Finally, optimism is predicted by self-efficacy directly and through focusing on the positive, as well as by stress through both coping strategies.

Discussion

Breast cancer and especially a breast loss is a source of various problems and difficulties (Compas & Luecken, 2002; Pikler & Winterowd, 2003). Many breast cancer patients are faced with concerns related to their health condition for
Table I. Descriptive statistics and intercorrelations of optimism, self-efficacy, illness-related stress, coping, medical and socio-demographic variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
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<td>2. Educational level</td>
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<td>3. Marital status</td>
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<td>-0.17</td>
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<td>4. Time since diagnosis</td>
<td>9.47</td>
<td>5.72</td>
<td>0.35**</td>
<td>-0.11</td>
<td>-0.18</td>
<td>1.00</td>
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<td>5. Time since mastectomy</td>
<td>8.60</td>
<td>4.62</td>
<td>0.26*</td>
<td>-0.02</td>
<td>-0.25*</td>
<td>0.66</td>
<td>1.00</td>
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<td>6. Lymphoedema</td>
<td>1.76</td>
<td>0.43</td>
<td>-0.06</td>
<td>-0.35**</td>
<td>-0.11</td>
<td>0.05</td>
<td>-0.04</td>
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<td>7. Self-efficacy</td>
<td>18.20</td>
<td>4.15</td>
<td>-0.03</td>
<td>-0.14</td>
<td>-0.04</td>
<td>0.03</td>
<td>0.10</td>
<td>-0.06</td>
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<tr>
<td>8. Illness-related stress</td>
<td>8.11</td>
<td>4.15</td>
<td>0.06</td>
<td>-0.18</td>
<td>0.28**</td>
<td>-0.03</td>
<td>-0.12</td>
<td>-0.25*</td>
<td>1.00</td>
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<td>9. Optimism</td>
<td>24.88</td>
<td>5.61</td>
<td>0.06</td>
<td>-0.08</td>
<td>0.12</td>
<td>-0.15</td>
<td>0.11</td>
<td>0.15</td>
<td>0.58**</td>
<td>-0.49**</td>
<td>1.00</td>
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<td>10. Positive approach</td>
<td>21.61</td>
<td>5.24</td>
<td>-0.13</td>
<td>-0.01</td>
<td>-0.19</td>
<td>-0.01</td>
<td>0.23*</td>
<td>0.52**</td>
<td>-0.35*</td>
<td>0.68**</td>
<td>1.00</td>
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<td>11. Use of social support</td>
<td>9.66</td>
<td>3.51</td>
<td>-0.01</td>
<td>-0.10</td>
<td>0.04</td>
<td>-0.12</td>
<td>-0.03</td>
<td>0.14</td>
<td>-0.06</td>
<td>-0.03</td>
<td>0.12</td>
<td>0.28*</td>
<td>1.00</td>
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<tr>
<td>12. Cognitive avoidance</td>
<td>7.61</td>
<td>3.29</td>
<td>0.08</td>
<td>-0.01</td>
<td>0.03</td>
<td>-0.10</td>
<td>0.05</td>
<td>-0.13</td>
<td>0.24*</td>
<td>-0.12</td>
<td>0.06</td>
<td>0.15</td>
<td>1.00</td>
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<tr>
<td>13. Passive hope</td>
<td>7.59</td>
<td>2.92</td>
<td>-0.01</td>
<td>-0.09</td>
<td>-0.13</td>
<td>-0.17</td>
<td>0.08</td>
<td>0.08</td>
<td>-0.12</td>
<td>0.02</td>
<td>0.24*</td>
<td>0.22*</td>
<td>0.19</td>
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<td>14. Behavioural avoidance</td>
<td>6.46</td>
<td>2.74</td>
<td>0.08</td>
<td>0.14</td>
<td>-0.19</td>
<td>0.17</td>
<td>-0.04</td>
<td>-0.11</td>
<td>-0.20</td>
<td>0.42**</td>
<td>-0.46**</td>
<td>-0.05</td>
<td>0.12</td>
<td>0.23*</td>
<td>0.12</td>
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</tbody>
</table>

Notes: Marital status coding: 1 = living alone, 2 = living with family. Educational level coding: 1 = high school or lower, 2 = higher education. Lymphoedema: 1 = yes, 2 = no.
* p < 0.05, ** p < 0.01.
a prolonged period of time (Gotay & Muraoka, 1998). In this study of women who had undergone a mastectomy three or more years ago, 20 per cent–30 per cent of the participants rated limitations in functioning, pain and discomfort, or interpersonal problems related to their health condition, as highly stressful. More than one third rated fear and insecurity about the future as highly stressful. For the majority (51 per cent), at least one of the four illness-related concerns had been quite or very stressful in the past 6 months. For them, breast cancer seems to be a situation that still impacts their life years after initial diagnosis and treatment.

The focus of this study was on optimism as a critical variable for long-term adjustment in a stressful situation, such as breast cancer. In line with previous research (e.g. Alferi et al., 2001; Helgeson et al., 2004), demographic variables (i.e. age, education level and marital status) had almost no impact on optimism or other psychological factors. On the contrary, certain medical variables (i.e. time since diagnosis and time since mastectomy) predicted optimism. They also predicted illness-related stress, as shown by the path analysis. An interesting, but also rather puzzling, finding about medical variables is that more time since initial diagnosis is associated with more stress and less optimism, whereas more time since mastectomy is related to less illness-related stress and more optimism. A possible explanation for this paradox may be that stress decreases and optimism increases as the aversive experience of mastectomy distances in time. On the other hand, more time since diagnosis may be related to fear of a recurrence or metastasis, resulting to elevated stress and reduced optimism.

With respect to the coping strategies studied, focusing on the positive and behavioural avoid-
Stress predictors of optimism in breast cancer survivors

Stress proved to be significant predictors of optimism. Coping is of high importance for psychological adjustment and in line with previous research (Cohen, 2002; Compas & Luecken, 2002; Hack & Degner, 2004), focusing on the positive is positively related to optimism, whereas avoidance is negatively related.

The findings of this study offered support to our hypotheses. Optimism is predicted by psychological factors (i.e. illness-related stress, self-efficacy, coping) even after controlling for medical and socio-demographic variables. Furthermore, the path analysis showed that optimism is influenced by stress and self-efficacy directly and indirectly. Stress reflects the aversiveness of the situation and is predicted by the medical variables. Thus, stress represents a part of ‘knowledge’ about the environment (Cervone, 2004). Stress exerts influence on optimism through coping that is through behaviour and thought. In the same way, self-efficacy, which represents ‘knowledge’ about self, exerts influence on optimism both directly and through focusing on the positive. These findings suggest that, within a stressful illness condition, appraisal about the future (optimism) lies on information about the environment (the illness) and about self (personal abilities to cope with the stressful situation). Stronger self-efficacy expectations and a more benign perception of the condition result in more use of positive reappraisal and problem-solving, and less avoidance, and through these in a more optimistic outlook of self in the future.

The present study is faced with certain limitations. It is cross-sectional, while the time elapsed since diagnosis or mastectomy in our sample was broadly ranging from just a few years to more than a decade. It is also based on self-reported data with all limitations that self-assessment imposes. Moreover, our sample consisted of women who were active members of an association of women with breast cancer, rather well educated, free of any metastasis since mastectomy and who voluntarily participated in the study. Therefore, the sample may not be representative of breast cancer patients in general. These limitations should be taken into consideration when interpreting the findings.

Nonetheless, our study has a noteworthy clinical implication. The results indicate that an effective intervention that aim to strengthen self-efficacy for dealing with adversities, as well as coping skills training (techniques that aim to enhance positive reappraisal evaluations, use problem solving efforts, and lessen avoidance) can enhance optimism and equip persons with a more positive view of the future. In other words, our data suggest a specific pathway which can be used to change the evaluation of the self-environment interaction, and thus lead to better well-being and adjustment.

References


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