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Type of social support matters for prediction of posttraumatic growth among cancer survivors

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Abstract

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Objective: Previous research in people with cancer on social support and psychological well-being has mainly focused on the short-term negative outcomes of adjustment. Little is known about the role of social support in the experience of positive outcomes in the long term. This study examined the relation between emotional support in the period following diagnosis and the experience of positive consequences of the illness, so called posttraumatic growth, at 8 years after diagnosis. We focused on three distinct types of emotional support: perceived availability, actual received, and dissatisfaction with received emotional support.

Methods: This longitudinal study was conducted in a sample of 206 long-term cancer survivors. Social support was assessed with the Social Support List (SSL) at 3 months and 8 years after diagnosis. Positive consequences of the illness were assessed with the Silver Lining Questionnaire (SLQ) at 8 years after diagnosis. Correlation- and regression analyses were used to examine the associations of initial levels of emotional support with the long-term report of posttraumatic growth.

Results: Regression analyses showed that more received emotional support at 3 months after diagnosis significantly predicted a greater experience of positive consequences of the illness at 8 years after diagnosis. This association remained significant, when controlling for concurrent levels of emotional support at 8 years after diagnosis.

Conclusions: The findings suggest that getting support from family and friends, characterized by reassuring, comforting, and problem-solving, in the period following diagnosis is an important resource that may help cancer survivors to find positive meaning in the cancer experience.

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Keywords: cancer; oncology; survivors; adjustment; posttraumatic growth; social support

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Introduction

A diagnosis of cancer may have a profound impact on patients' psychological functioning, both in the initial period after diagnosis as many years thereafter [1–4]. The sudden confrontation with a life-threatening disease and the often painful and impairing cancer treatment may be associated with severe physical side effects and disruptions of daily and social activities. Common psychological reactions include feelings of depression and uncertainty about the effectiveness of treatment, the future, the possibility of long-term side effects, and cancer recurrence.

A growing body of literature suggests that such a stressful or traumatic event may also be a catalyst for positive psychosocial changes [5,6]. These positive changes, which have been referred to as 'benefit finding', 'stress-related growth', or 'posttraumatic growth', may concern changes in the perceptions of oneself, social relationships with family and friends,

and life priorities and appreciation of life. Also among cancer survivors, there is evidence indicating that a substantial number of survivors experience such positive changes, especially in the long term [7,8]. For instance, cancer survivors frequently report having altered priorities, more concern for others, a greater sense of purpose, and a greater appreciation of oneself and one's life [9–15].

Less is known about why some cancer survivors experience more positive changes than others. The few studies that examined individual differences in the report of positive changes were generally not guided by theory and examined a wide variety of demographic, clinical, and psychosocial factors. These studies are important for the understanding of positive consequences of the cancer experience, but more theory-driven research is needed to enhance our understanding of this phenomenon. In the present study, we used the cognitive processing theory of posttraumatic growth of Tedeschi *et al.* [5,16] as a theoretical framework.

Tedeschi *et al.* use the term 'posttraumatic growth' to refer to 'positive psychological change experienced as a result of the struggle with highly challenging life circumstances' [5]. These positive changes are looked upon as an outcome in itself rather than as a coping process. These changes are also regarded as real rather than as illusions or cognitive distortions. According to Tedeschi and Calhoun, posttraumatic growth differs from other concepts such as resilience and optimism, which they regard as personal characteristics that allow people to manage challenging life events [5].

The cognitive processing theory of posttraumatic growth proposes that the experience of a highly stressful life event may challenge valued personal life goals and fundamental beliefs about oneself, the future, and the world. Through the use of cognitive processes, involving a recurrent thinking about the event and a re-evaluation and redefinition of beliefs and goals, people may be able to find meaning in the event, which eventually results in the perception of growth. According to this theory, the social context plays an important role in the development of posttraumatic growth. By providing opportunities for self-disclosure, stimulating cognitive processing, and offering new perspectives, supportive others can assist people to find positive meaning and to perceive posttraumatic growth. The aim of the present study is to examine the role of the social environment in cancer survivors' report of posttraumatic growth.

The cognitive processing theory of posttraumatic growth does not explicitly describe which type of social support is most beneficial for the experience of posttraumatic growth. Social support theories suggest that it is important to make a distinction between (1) perceived availability of support, (2) actual received amount of support, and (3) the extent to which this amount of received support fits the needs of the person, thus satisfaction with actual received support [17–19]. Furthermore, a distinction can be made between different forms of social support: emotional support, informational support, and instrumental/tangible support. Most research on the role of social support in psychological adjustment to cancer has focused on negative outcomes (e.g. distress), mainly in the first year after diagnosis [20–22]. Emotional support seems to be particularly important for people's adjustment to cancer [23]. Regarding the type of support, it has been found that especially the perceived availability of support and the satisfaction with received support are related to less distress and negative affect [21,22,24,25]. The findings regarding received emotional support seem equivocal. One study among people with cancer found this type of support to be related to more rather than less psychological distress [26].

Less is known about the role of social support in the experience of positive outcomes. In a

cross-sectional study among 70 breast cancer survivors (mean of 2 years after diagnosis), it was found that satisfaction with emotional support was unrelated to posttraumatic growth, whereas actual received support in terms of more prior talking about the breast cancer experience was associated with greater posttraumatic growth [27]. In a sample of 216 cancer patients, on average 3 years after diagnosis, Harper *et al.* [28] found that perceived social support was not related to positive psychosocial changes. Yet, Kinsinger *et al.* [29] found a significant association between perceived emotional support and benefit finding in a sample of 250 men with prostate cancer, about 6–18 months post treatment. A longitudinal study of 117 patients found a significant association of received emotional support in the period before cancer surgery with posttraumatic growth in the year following surgery [30]. Two longitudinal studies failed to find a significant relationship between perceived support and posttraumatic growth in people with cancer [31,32]. In a study of 72 cancer survivors who underwent bone marrow transplantation (BMT) (mean of 2 years post-BMT), no significant association was found between greater pre-BMT perceived availability of social support and post-BMT posttraumatic growth [31]. Also in women with breast cancer in the first year after diagnosis, Sears *et al.* [32] did not find a significant relationship between perceived emotional support and posttraumatic growth 1 year later.

The use of different definitions and measures of social support and posttraumatic growth, at different points in time since diagnosis, makes it difficult to draw definite conclusions about the role of social support for the experience of positive consequences by long-term cancer survivors. The aim of the present study is to fill this gap. Using a longitudinal design, with fixed points in time since diagnosis, we examined the associations of initial levels of emotional support at 3 months after diagnosis with the report of posttraumatic growth at 8 years after diagnosis. We focused on emotional support in the acute phase of the illness, as this period seems to be most stressful for the majority of cancer patients and emotional support is believed to be most important for adaptation in times of high stress [23]. What is innovative about the present study is that we distinguished three types of emotional support: perceived availability of emotional support, actual received emotional support, and satisfaction with actual received emotional support. Using multivariate analyses, we will examine the unique contribution of all three types of emotional support to the level of posttraumatic growth. Based on the theoretical framework of Tedeschi and Calhoun and the empirical evidence reviewed above, we hypothesized that especially actual received supportive interactions with family and friends will assist

people with cancer in cognitively processing the experience and finding positive meaning in the event.

We controlled for the effects of demographic and disease-related characteristics, as the cognitive processing theory and previous studies on post-traumatic growth suggest that such factors may play a role in the experience of posttraumatic growth. The theory also suggests that perceived threat and feelings of uncertainty may be involved in the development of posttraumatic growth. It has been found that such feelings of distress may also influence the level of support, with more distressed patients seeking and receiving more support and being less easily satisfied with received support [26,33,34]. In order to control for the possibility that the relationship between emotional support and posttraumatic growth partly reflects an association of perceived threat and feelings of uncertainty with posttraumatic growth, we controlled for the level of feelings of cancer-related uncertainty at 3 months after diagnosis.

Method

Sample and procedures

The study was conducted among cancer survivors who had previously participated in a study on short-term adjustment to cancer [35].

Initial study: People with cancer were recruited from 12 hospitals in the Netherlands, with the assistance of the Comprehensive Cancer Centre North Netherlands (CCCNN). The inclusion criteria were: (a) age 18 years or older; (b) newly diagnosed with cancer; (c) no distant metastases; (d) a life expectancy of at least 1 year; and (e) informed on the diagnosis of cancer. Patients were approached for participation by their physician. Initially, 516 patients returned a participation form. At 3 months after diagnosis, 475 of the 516 (92%) eligible patients entered the study. These patients completed a written questionnaire and were interviewed at home. In total, 403 patients (85% of 475) participated at 15 months after diagnosis. The main reasons for drop out ($n = 72$) were serious illness and death.

Follow-up study: At 15 months after diagnosis, 358 (of the 403) patients gave informed consent to be approached for a follow-up study. Of these persons, 102 patients died in the following 7 years. The remaining 256 patients were sent a participation form. In total, 206 (80% of the 256) patients participated at 8 years after diagnosis. Again, patients completed a written questionnaire and were interviewed at home. The main reasons for non-response ($n = 50$) were ill health, unwillingness to participate, and reluctance to talk about the

cancer experience. We compared patients who participated at followup with those who dropped out since the first interview (including those who died). Those who dropped out were significantly more often diagnosed with colorectal or lung cancer, stage III or IV, treated with radiotherapy or chemotherapy, older, male, and lower educated ($p < 0.01$).

Of those who participated in the study, the majority were female and living with a partner. Survivors' age ranged from 31 to 90 years at 8 years after diagnosis ($M = 61.9$, $SD = 13.6$). Half of the sample was diagnosed with breast cancer. The majority of the survivors were initially diagnosed with stage I or stage II (Table 1).

Measures

For the present study, we used the data collected at 3 months after diagnosis (T1) and 8 years after diagnosis (T2). The data were collected by means of a written questionnaire.

Posttraumatic growth: The positive changes due to the cancer experience at 8 years after diagnosis (T2) were assessed with the Silver Lining Questionnaire (SLQ) [36]. This is a 38-item self-report questionnaire that measures a wide variety of positive changes of illness, with items related to perceptions of oneself, relationships with others, and meaning/appreciation of life (e.g. 'My illness gave me more confidence', 'My illness strengthened

Table 1. Demographic and medical characteristics of cancer survivors ($n = 206$)

Gender (% female)	79
Age (mean \pm SD)	61.9 \pm 13.6
Marital status (% having a partner)	74
Education (%)	
Primary	31
Lower vocational/secondary	43
Middle vocational/secondary	15
Higher vocational/university	11
Cancer site (%)	
Breast	53
Colorectal	22
Gynaecological	19
Lung	4
Other	2
Stage (%)	
I	49
II	42
III-IV	9
Initial treatment (%)	
Only surgery	48
Surgery+radiotherapy	22
Surgery+chemotherapy	9
Surgery, radio \pm chemotherapy	9
Surgery+hormonal therapy	4
Surgery, radio \pm hormonal therapy	5
Other	3
Recurrence or new primary tumour (%)	20

my relationships with others', 'I appreciate life more because of my illness'). On a 5-point scale [ranging from 1 to 5], persons are asked to indicate whether they agree or not (or no opinion) with each of the statements. The total score is based on the sum of all 38 items, with higher scores referring to greater posttraumatic growth. Cronbach's alpha was 0.97.

Social support: Emotional support at 3 months after diagnosis (T1) and at 8 years after diagnosis (T2) was measured with the Social Support List (SSL) [37,38]. Psychometric research has shown that this self-report questionnaire has good construct validity and high reliability [38]. To measure perceived emotional support, we used the subscale 'Perceived problem-focused emotional support' (7 items, measuring perceptions of having someone to talk to and who can be counted on when needed). Participants were asked to indicate the extent to which they perceived support on a 4-point scale, ranging from (1) 'not at all' to (4) 'very much'. Cronbach's alpha was 0.88. To measure actual received emotional support and dissatisfaction with received emotional support, we used the subscales 'Received problem-focused emotional support' and 'Lack of received problem-focused emotional support'. Cancer survivors were first asked to indicate the amount of received support with 8 items (e.g. reassurance, encouragement, problem-solving, advice), each of which was rated on a 4-point scale, ranging from (1) 'seldom or never' to (4) 'very often'. Next, survivors were asked to indicate for each of the 8 items the extent to which the amount of support differed from their preferred amount of support (thus taking into account the individual's need for support). Items can be scored on a 3-point scale: (1) 'just right, this is as I would like to have it', (2) 'I do not really miss it, but it would be pleasant if it happened somewhat more often', and (3) 'I really miss it, I would like it to happen more often.' Thus, higher scores indicate a greater dissatisfaction with received emotional support. Cronbach's alpha was 0.89 for received emotional support and 0.91 for dissatisfaction with received emotional support.

Illness uncertainty: Illness uncertainty at 3 months after diagnosis (T1) was measured by four questions (e.g. 'To what extent do you experience feelings of uncertainty due to your illness?', 'To what extent do you feel uncertain about the future due to the illness?'), which could be answered on a 4-point scale, ranging from (1) 'not at all' to (4) 'very much'. Cronbach's alpha was 0.86.

Analyses

Preliminary analyses were conducted to examine the association of survivors' demographic and medical characteristics with posttraumatic growth at 8 years after diagnosis. Results of *t*-test and

analysis of variance (ANOVA) indicated no significant differences in posttraumatic growth with regard to gender, education, marital status, cancer site, disease stage, treatment, and cancer recurrence ($p > 0.05$). We found a significant negative correlation between age and posttraumatic growth ($r = -0.21$, $p < 0.01$), such that younger women reported more growth. A younger age was also significantly associated with more perceived emotional support ($r = -0.22$, $p < 0.01$). Therefore, the regression analyses controlled for age. We also found a significant positive relation between illness uncertainty and posttraumatic growth ($r = 0.19$, $p < 0.01$). More illness uncertainty was also significantly associated with more received emotional support ($r = 0.39$, $p < 0.001$) and more dissatisfaction with emotional support ($r = 0.40$, $p < 0.001$). We therefore also controlled for illness uncertainty.

We used correlation and regression analyses to examine the association of emotional support at 3 months after diagnosis with the report of posttraumatic growth at 8 years after diagnosis. We checked for outliers and influential cases. The standardized residuals and Cook's distance showed that the model fit the observed data well and was not influenced by a small number of cases. None of the cases exerted undue influence on the model. The variance inflation factor showed that multicollinearity was not an issue. The hierarchical regression analysis was performed in three steps. First, age and illness uncertainty were entered into the model. In the second step, we entered the three measures of emotional support at 3 months after diagnosis. In the third step, we entered emotional support at 8 years after diagnosis. This latter step was added to the model, in order to examine whether the associations between initial levels of emotional support with posttraumatic growth were not the result of concurrent relationships at 8 years after diagnosis between emotional support and posttraumatic growth.

Results

Correlations between emotional support and posttraumatic growth

First, we examined the correlations among the different types of emotional support and posttraumatic growth (Table 2). The three measures of emotional support were only weakly to moderately related to each other. Only received emotional support was significantly associated with posttraumatic growth ($r = 0.29$, $p < 0.001$). Survivors who had received more emotional support shortly after diagnosis reported more posttraumatic growth at 8 years after diagnosis.

Table 2. Correlations among study variables

	Age	Illness uncertainty	Perceived emotional support	Received emotional support	Dissatisfaction with emotional support	Posttraumatic growth
Age	–					
Illness uncertainty T1	–0.17*	–				
Perceived emotional support T1	–0.22**	–0.10	–			
Received emotional support T1	–0.12	0.39***	0.21**	–		
Dissatisfaction with emotional support T1	–0.01	0.40***	–0.32***	–0.12	–	
Posttraumatic growth T2	–0.21**	0.19**	0.02	0.29***	0.07	–

Note. T1 = 3 months after diagnosis; T2 = 8 years after diagnosis. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 3. Standardized regression coefficients for emotional support predicting posttraumatic growth at 8 years after diagnosis

Model		B	SE B	β
1:	Age	–0.48	0.19	–0.18*
	Illness uncertainty T1	2.37	0.99	0.17*
2:	Age	–0.47	0.19	–0.18*
	Illness uncertainty T1	0.26	1.20	0.02
	Perceived emotional support T1	–0.61	0.72	–0.06
	Received emotional support T1	2.07	0.57	0.29***
	Dissatisfaction with received emotional support T1	0.87	0.85	0.08
3:	Age	–0.49	0.19	–0.18*
	Illness uncertainty T1	0.34	1.20	0.02
	Perceived emotional support T1	–0.59	0.72	–0.06
	Received emotional support T1	1.89	0.62	0.27**
	Dissatisfaction with received emotional support T1	0.78	0.86	0.07
	Received emotional support T2	0.50	0.65	0.06

Note. T1 = 3 months after diagnosis; T2 = 8 years after diagnosis. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Regression analyses

To examine the predictive value of initial levels of emotional support for long-term posttraumatic growth, regression analysis was performed (Table 3). In step 1, age and illness uncertainty explained 7% of the experience of posttraumatic growth ($p < 0.01$), with a younger age and more illness uncertainty significantly associated with more posttraumatic growth. In step 2, initial levels of received emotional support explained an additional amount of 6% of posttraumatic growth ($p < 0.01$). A greater amount of received emotional support significantly predicted more posttraumatic growth ($\beta = 0.29$, $p < 0.001$). The other two types of emotional support were not significantly related to growth. In other words, when taken into account all three different types of emotional support, only cancer patients who actually received more emotional support in the months following diagnosis, and not those who perceive more support to be available to them or those who were more satisfied with the amount of received support, reported more long-term posttraumatic growth.

In order to examine whether these results were not confounded by correlations between initial and long-term levels of received emotional support and concurrent associations of received emotional

support with posttraumatic growth, we added received emotional support at 8 years after diagnosis in the third step of the model. The results showed that received emotional support at 8 years after diagnosis was not significantly related to posttraumatic growth and only explained an additional 0.5% of the variance (not significant). The association of initial received emotional support with posttraumatic growth remained significant, even after controlling for concurrent level of emotional support ($\beta = 0.27$, $p < 0.01$). The total model explained 13% of the variance ($F(6, 188) = 4.87$, $p < 0.001$).

Discussion

The present study examined whether cancer survivors' report of emotional support in the first months after diagnosis is related to their experience of posttraumatic growth 8 years later. This study focused on three different types of emotional support: perceived emotional support, received emotional support, and dissatisfaction with received emotional support. Consistent with the cognitive processing theory [5], we found a significant association of emotional support with the report of posttraumatic growth. As

hypothesized, cancer patients who actually received more emotional support from family and friends in the period following diagnosis significantly experienced more posttraumatic growth in the long term. In contrast, patients who merely perceived others to be available for emotional support and patients who were satisfied with the emotional support they receive did not report significantly more posttraumatic growth. These findings are interesting for several reasons.

Rather than general perceptions of the availability of emotional support, it seems more important for the experience of posttraumatic growth that cancer survivors actually receive emotional support from others in the initial period following diagnosis. Those who were more able to talk about their experiences with others and had received more support in terms of reassurance, advice, and encouragement, experienced more posttraumatic growth. This finding is in line with other studies that have shown that prior talking about cancer experience and receiving emotional support from others, especially in the early crisis phase, is associated with greater report of posttraumatic growth [27,39,40]. How can we explain these findings? It has been argued that supportive others such as family and friends may provide coping assistance, by helping patients to reinterpret the situation and bolstering the patient's self-esteem and sense of mastery or competence [17,41]. Cognitive processing theory [5,16] suggests that talking to others may facilitate cognitive processes and coping responses that may promote positive change. Among people with cancer, there is evidence that the support from others may improve psychological well-being by stimulating cognitive processing and a search for meaning [42]. Assuming that cognitive processing is crucial for the development of posttraumatic growth, it can be imagined that merely perceiving others to be available when needed is not sufficient to stimulate such processes. An alternative explanation for the associations of social interactions with posttraumatic growth might be that, by reporting such positive consequences of the cancer experience, cancer patients who have more social interactions live up to the expectations held by people around them and by society in general, with a positive attitude being highly valued.

Our findings do not support the notion that perceptions of support and support satisfaction have a stronger influence on psychological functioning than the actual receipt of support [17]. One explanation for this discrepancy may be that the role of support in psychological functioning may depend on the type of outcome, that is, positive or negative. Although previous research found a weak or inconsistent relationship between received support and psychological distress [26], the present study and those of others suggest that

received support may play a role in the report of posttraumatic growth [27,30]. Previous research found that especially the perceived availability of support and the satisfaction with support is associated with psychological distress [21,22,24,25]. However, we as well as others found that these types of support were not significantly associated with a greater report of growth [27,32]. Overall these findings suggest that positive and negative outcomes are two relatively independent dimensions of well-being, each domain having its own distinct predictors [43,44].

The major strengths of the study are that it is theory driven, using a large sample size, longitudinal design, and examining distinct types of emotional support. However, there are several limitations that need to be taken into account. First, about half of the original sample dropped out, especially lower educated, older, male survivors diagnosed with colorectal or lung cancer and an advanced stage of disease. These processes of selective drop out and the fact that most survivors were diagnosed with an early disease stage should be taken into account when interpreting the results. Secondly, the timing and method of the assessment of posttraumatic growth need to be considered. Posttraumatic growth was assessed at 8 years following diagnosis, by a written questionnaire asking survivors about the positive consequences of the illness. In other words, we asked cancer survivors to look back at a long period in time, hereby asking them about their subjective perceptions of growth. In research on long-term cancer survivorship, a followup at least 5 years after diagnosis is inevitable, yet we realize that a lot can happen in such a period, including other stressful events and concurrent diseases. Therefore, we need to be careful about the meaning of such retrospective reports of posttraumatic growth, as there is evidence that positive changes may sometimes represent biased, self-enhancing, and self-protecting illusions rather than actual improvements [45,46]. More research is needed to clarify the function of the experience of positive changes in the process of adjustment to life-threatening events. It might be fruitful to include a healthy comparison group in future research on positive changes in cancer survivors [47]. As we lacked such a group, we cannot be sure whether positive changes were actually due to dealing with the cancer experience, with other stressful events or co-morbidities, or whether positive changes reflect other processes, such as protective illusions. Another issue related to the assessment of posttraumatic growth is that the questionnaire that we used views growth as unifactorial. This is regarded as a valid method to assess growth [45], and most existing posttraumatic growth scales use such a single score as an indicator of growth. However, such an overall assessment of growth impedes drawing conclusions about the role

of support in specific domains of posttraumatic growth (e.g. in the domains of personal strengths, social relationships, and appreciation of life). Thirdly, it should be noted that emotional support explained a small portion of the variance of posttraumatic growth. The finding that only one of the three types of support was significantly yet marginally related to posttraumatic growth, suggests that other factors play a role in the experience of posttraumatic growth as well, such as coping strategies (e.g. rumination and positive reframing) and personal resources such as optimism, self-esteem, and control [32,48–51]. Future studies should try to incorporate these other factors as well.

Given these limitations, this study shows that actual supportive emotional interactions with family and friends in the months following diagnosis may facilitate cancer survivors' perception of posttraumatic growth. What are the clinical implications of this finding? Health-care professionals may promote the experience of positive changes, by supporting patients and assisting them to elicit supportive behaviors from others. For instance, they may explore with the patient his or her supportive network, the need for emotional support, and whether the patient is able to seek, ask for, and receive emotional support. Patients with few social resources may benefit from a psychosocial group intervention, aimed to provide support and the opportunity to discuss cancer-related worries and thoughts. There is evidence that such a group intervention may increase perceptions of posttraumatic growth in people with cancer [52]. By increasing the amount of support, psychological interventions may help patients to adjust to the illness and find positive meaning in the cancer experience.

References

- Kornblith AB, Herndon JE, Weiss RB *et al.* Long-term adjustment of survivors of early-stage breast carcinoma, 20 years after adjuvant chemotherapy. *Cancer* 2003; **98**(4):679–689.
- Kornblith AB. Psychosocial adaptation of cancer survivors. In *Psycho-oncology*, Holland J (ed.). Oxford University Press: New York, 1998; 223–253.
- Schroevers MJ, Ranchor AV, Sanderman R. Adjustment to cancer in the 8 years following diagnosis: a longitudinal study comparing cancer survivors with healthy individuals. *Soc Sci Med* 2006; **63**:598–610.
- Schroevers MJ, Ranchor AV, Sanderman R. Depressive symptoms in cancer patients compared to individuals from the general population: the role of sociodemographic and medical factors. *J Psychosoc Oncol* 2003; **21**:1–26.
- Tedeschi RG, Calhoun LG. Posttraumatic growth: conceptual foundations and empirical evidence. *Psychol Inquiry* 2004; **15**(1):1–18.
- Updegraff JA, Taylor SE. From vulnerability to growth: positive and negative effects of stressful life events. In *Loss and Trauma: General and Close Relationships Perspectives*, Harvey J, Miller E (eds). Brunner-Routledge: Philadelphia, PA, 2000; 3–28.
- Thornton AA. Perceiving benefits in the cancer experience. *J Clin Psychol Med Settings* 2002; **9**(2):153–165.
- Tomich PL, Helgeson VS, Vache E. Perceived growth and decline following breast cancer: a comparison to age-matched controls 5-years later. *Psycho-Oncology* 2005; **14**(12):1018–1029.
- Dow KH, Ferrell BR, Haberman MR, Eaton L. The meaning of quality of life in cancer survivorship. *Oncol Nurs Forum* 1999; **26**(3):519–528.
- Ferrell BR, Grant M, Funk B, Otisgreen S, Garcia N. Quality of life in breast cancer part II: psychological and spiritual well-being. *Cancer Nurs* 1998; **21**(1):1–9.
- Pelusi J. The lived experience of surviving breast cancer. *Oncol Nurs Forum* 1997; **24**(8):1343–1353.
- Fromm K, Andrykowski M, Hunt J. Positive and negative psychosocial sequelae of bone marrow transplantation: implications for quality of life assessment. *J Behav Med* 1996; **19**(3):221–240.
- Fredette SL. Breast cancer survivors: concerns and coping. *Cancer Nurs* 1995; **18**(1):35–46.
- Curbow B, Somerfield MR, Baker F, Wingard JR, Legro MW. Personal changes, dispositional optimism, and psychological adjustment to bone marrow transplantation. *J Behav Med* 1993; **16**(5):423–443.
- Schroevers MJ, Ranchor AV, Sanderman R. The role of age at the onset of cancer in relation to survivors' long-term adjustment: a controlled comparison over an eight-year period. *Psycho-Oncology* 2004; **13**(10):740–752.
- Tedeschi RG, Park CL, Calhoun LG. Posttraumatic growth: conceptual issues. In *Posttraumatic Growth: Positive Changes in the Aftermath of Crisis*, Tedeschi RG, Calhoun LG (eds). Lawrence Erlbaum Associates, Inc: Mahwah, NJ, USA, 1998; 1–22.
- Thoits PA. Stress, coping, and social support processes: where are we? what next? *J Health Soc Behav* 1995; extra issue: 53–79.
- Thoits PA. Conceptual, methodological, and theoretical problems in studying social support as a buffer against life stress. *J Health Soc Behav* 1982; **23**:145–159.
- Lepore SJ. Social-environmental influences on the chronic stress process. In *Coping with Chronic Stress. The Plenum Series on Stress and Coping*, Gottlieb BH (ed.). Plenum Press: New York, NY, USA, 1997; 133–160.
- Schroevers MJ, Ranchor AV, Sanderman R. The role of social support and self-esteem in the presence and course of depressive symptoms: a comparison of cancer patients and individuals from the general population. *Soc Sci Med* 2003; **57**(2):375–385.
- Alferi S, Carver C, Antoni M, Weiss S, Duran R. An exploratory study of social support, distress, and life disruption among low-income hispanic women under treatment for early stage breast cancer. *Health Psychol* 2001; **20**(1):41–46.
- Courtens AM, Stevens FC, Crebolder HF, Philipsen H. Longitudinal study on quality of life and social support in cancer patients. *Cancer Nurs* 1996; **19**(3):162–169.
- Helgeson VS, Cohen S. Social support and adjustment to cancer: reconciling descriptive, correlational, and intervention research. *Health Psychol* 1996; **15**(2): 135–148.
- Grassi L, Malacarne P, Maestri A, Ramelli E. Depression, psychosocial variables and occurrence of life events among patients with cancer. *J Affect Disord* 1997; **44**(1):21–30.
- Sollner W, Zschocke I, Zingg-Schir M *et al.* Interactive patterns of social support and individual coping strategies

- in melanoma patients and their correlations with adjustment to illness. *Psychosomatics* 1999; **40**:239–250.
26. De Leeuw JR, De Graeff A, Ros WJG, Hordijk GJ, Blijham GH, Winnubst JAM. Negative and positive influences of social support on depression in patients with head and neck cancer: a prospective study. *Psycho-Oncology* 2000; **9**:20–28.
 27. Cordova MJ, Cunningham LL, Carlson CR, Andrykowski MA. Posttraumatic growth following breast cancer: a controlled comparison study. *Health Psychol* 2001; **20**(3):176–185.
 28. Harper FWK, Schmidt JF, Beacham AO *et al.* The role of social cognitive processing theory and optimism in positive psychosocial and physical behavior change after cancer diagnosis and treatment. *Psycho-Oncology* 2007; **16**(1):79–91.
 29. Kinsinger DP, Penedo FJ, Antoni MH, Dahn JR, Lechner S, Schneiderman N. Psychosocial and socio-demographic correlates of benefit-finding in men treated for localized prostate cancer. *Psycho-Oncology* 2006; **15**(11):954–961.
 30. Schwarzer R, Luszczynska A, Boehmer S, Taubert S, Knoll N. Changes in finding benefit after cancer surgery and the prediction of well-being one year later. *Soc Sci Med* 2006; **63**(6):1614–1624.
 31. Widows MR, Jacobsen PB, Booth-Jones M, Fields KK. Predictors of posttraumatic growth following bone marrow transplantation for cancer. *Health Psychol* 2005; **24**(3):266–273.
 32. Sears SR, Stanton AL, Danoff-Burg S. The yellow brick road and the emerald city: benefit finding, positive reappraisal coping and posttraumatic growth in women with early-stage breast cancer. *Health Psychol* 2003; **22**(5):487–497.
 33. Wonghongkul T, Moore SM, Musil C, Schneider S, Deimling G. The influence of uncertainty in illness, stress appraisal, and hope on coping in survivors of breast cancer. *Cancer Nurs* 2000; **23**(6):422–429.
 34. Herzer M, Zakowski SG, Flanigan R, Johnson P. The relationship between threat appraisal and social constraints in cancer survivors and their spouses. *J Behav Med* 2006; **29**(6):549–560.
 35. De Ruiter JH. *Social Support and Quality of Life in Cancer Patients*. University of Groningen: Groningen, 1995.
 36. Sodergren SC, Hyland ME. What are the positive consequences of illness? *Psychol Health* 2000; **15**(1):85–97.
 37. Sonderen FLPv. *Measurement of Social Support*. University of Groningen: Groningen, 1991.
 38. Van Sonderen FLP. *The measurement of social support with the SSL-I and the SSL-D. Dutch manual*. Groningen: Noordelijk Centrum voor Gezondheidsvraagstukken, Rijksuniversiteit Groningen, 1993.
 39. Schulz U, Mohamed NE. Turning the tide: benefit finding after cancer surgery. *Soc Sci Med* 2004; **59**(3):653–662.
 40. Luszczynska A, Mohamed NE, Schwarzer R. Self-efficacy and social support predict benefit finding 12 months after cancer surgery: the mediating role of coping strategies. *Psychol Health Med* 2005; **10**(4):365–375.
 41. Thoits PA. Social support as coping assistance. *J Consult Clin Psychol* 1986; **54**(4):416–423.
 42. Roberts KJ, Lepore SJ, Helgeson V. Social-cognitive correlates of adjustment to prostate cancer. *Psycho-Oncology* 2006; **15**(3):183–192.
 43. Schroevers MJ, Sanderma R, van Sonderen E, Ranchor AV. The evaluation of the Center for Epidemiologic Studies Depression (CES-D) scale: depressed and positive affect in cancer patients and healthy reference subjects. *Qual Life Res* 2000; **9**:1015–1029.
 44. Watson D, Clark LA, Carey G. Positive and negative affectivity and their relation to anxiety and depressive disorders. *J Abnorm Psychol* 1988; **97**(3):346–353.
 45. Park CL, Helgeson VS. Introduction to the special section: growth following highly stressful life events—current status and future directions. *J Consult Clin Psychol* 2006; **74**(5):791–796.
 46. Taylor SE, Armor DA. Positive illusions and coping with adversity. *J Pers* 1996; **64**(4):873–898.
 47. Tomich PL, Helgeson VS. Five years later: a cross-sectional comparison of breast cancer survivors and healthy women. *Psycho-Oncology* 2002; **11**:154–169.
 48. Bellizzi KM, Blank TO. Predicting posttraumatic growth in breast cancer survivors. *Health Psychol* 2006; **25**(1):47–56.
 49. Urcuyo KR, Boyers AE, Carver CS, Antoni MH. Finding benefit in breast cancer: relations with personality, coping, and concurrent well-being. *Psychol Health* 2005; **20**(2):175–192.
 50. Helgeson VS, Snyder P, Seltman H. Psychological and physical adjustment to breast cancer over 4 years: identifying distinct trajectories of change. *Health Psychol* 2004; **23**(1):3–15.
 51. Porter LS, Clayton MR, Belyea M, Mishel M, Gil KM, Germino BB. Predicting negative mood state and personal growth in African American and white long-term breast cancer survivors. *Ann Behav Med* 2006; **31**(3):195–204.
 52. Antoni MH, Lehman JM, Kilbourn KM *et al.* Cognitive-behavioral stress management intervention decreases the prevalence of depression and enhances benefit finding among women under treatment for early-stage breast cancer. *Health Psychol* 2001; **20**(1):20–32.