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Brief Report

Personal control after a breast cancer diagnosis: stability and adaptive value

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Abstract

Objective: This longitudinal study aims to gain more insight in both the changes in personal control due to a breast cancer diagnosis, as well as in the stress-buffering effect of personal control.

Methods: Personal control and distress were assessed in breast cancer patients not treated with chemotherapy ($n=47$), breast cancer patients treated with chemotherapy ($n=32$) and in healthy women ($n=58$) at 3, 9 and 15 months after diagnosis.

Results: Results indicate that personal control was affected only in patients treated with chemotherapy, particularly right after the completion of treatment. Furthermore, the cross-sectional and longitudinal results provide modest support for the stress-buffering potential of control.

Conclusions: The findings and future directions of research on the role of personal control in the adjustment to cancer will be discussed.

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Keywords: cancer; oncology; perceived control; adjustment; distress

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Introduction

Women diagnosed with breast cancer are confronted with different stressors throughout the illness trajectory, e.g. awaiting diagnosis, having surgery, anticipating the possibility that the cancer has spread, coping with side effects and, finally, facing the risk of recurrence. Despite the uncertain and uncontrollable character of these stressors, personal control is generally believed to be an important resource for successful psychological adjustment.

Personal control refers to the belief that life is not ruled by fate but that one is personally able to influence the important events or situations in life. This belief is consistently shown to be related to a variety of positive outcomes such as a lower risk of disease [1], successful adjustment to illness [2] and even survival [3]. Although a sense of control is largely shaped by personality, overwhelming aversive events challenge control perceptions. Yet, it is especially in the face of overwhelming negative events that personal control might constitute a stress-buffering resource.

The first aim of this study is to examine whether personal control changes after a breast cancer diagnosis. The surprisingly few studies that examined the impact of a cancer diagnosis on personal control yielded mixed results [4,5]. Most studies

were cross-sectional and time passed since diagnosis varied greatly. As a consequence, it remains unclear at what point in time changes in personal control occur and if changes are permanent or temporary in nature. Additionally, most studies did not take differences in the stressors faced after diagnosis into consideration. The present study adopts a longitudinal case-control design and takes into account the impact of chemotherapy on control perceptions. Chemotherapy is prescribed when prognostic characteristics are relatively unfavorable, i.e. the tumor is larger, more aggressive or has spread to the lymph nodes. Moreover, chemotherapy causes unpleasant side effects and increases treatment duration considerably. For these reasons, it is expected that the prescription of chemotherapy poses a substantial threat to control perceptions throughout the illness trajectory.

The second aim of this study is to examine the stress-buffering effect of personal control in women with breast cancer. Several researchers suggested that the adaptive value of a basic sense of control over life increases in stressful circumstances, but studies that actually test this assumption are scarce. A high sense of personal control might have stress-buffering potential in women with breast cancer, as it fosters effective coping strategies [6], determines the way social support is used [7], influences the way

the situation is *appraised* [8] and promotes positive *attributions* about one's own role in limiting the negative impact of the disease [9].

In conclusion, the current study aims to explore the two-sided position of personal control in the stress process [10]. It is hypothesized that personal control is affected by the various stressors women with breast cancer face (*Aim 1*), but that a sense of control also regulates the impact of the disease (*Aim 2*).

Method

Procedure and sample

The data used were part of a larger dataset collected in a longitudinal study on dyadic coping with cancer. The Medical Ethical Committees of the five participating hospitals approved the study protocol. Newly diagnosed breast cancer patients were included if (1) they had a partner willing to participate, (2) they were between 30 and 75 years old, (3) their survival prognosis was at least 15 months, (4) both partners had no previous history of cancer and (5) they both understood Dutch. Women in the reference group were selected from the register office of several townships and were matched to patients on the basis of age and region. Only women without a history of cancer and with a partner willing to participate were included ($n = 64$).

For the present study, only the data of women were examined. Informed consent was obtained from 92 patients (32% response rate). Hinnen *et al.* [11] reported results based on the same data and presented detailed information on response and refusal. Participants did not differ from non-participants with respect to age and region of residence. The current study reports on data collected at 3, 9 and 15 months post-diagnosis. After the deletion of drop-outs and incomplete cases (13 patients and 6 healthy women), the complete data of 58 healthy women and 79 patients were available for analysis. Drop-outs and non-completers generally reported less mastery and/or more distress than completers at the various occasions, although none of these differences were significant.

Instruments

Personal control was assessed with the 7-item Mastery List [12], which reflects perceived control over events and problems in life. The alphas range from 0.70 to 0.80. *Psychological distress* was assessed with the 12-item version of the General Health Questionnaire [13]. Item scores were dichotomized conform the CGHQ scoring method of Goodchild and Duncan-Jones. Compared with the original way of scoring, this method gives a more accurate index of a subject's present state [14]. Alphas are higher than 0.80. Social-demographic characteristics included *age*, *educational*

level, and two types of *co-morbidity* (the number of diseases present in the past 12 months treated or not treated by a medical specialist).

Analysis

Three groups were distinguished: healthy women ($n = 58$), breast cancer patients not treated with computed chemotherapy (CT) ($n = 47$) and breast cancer patients treated with CT ($n = 32$). To examine whether and when a breast cancer diagnosis affects perceptions of personal control (*Aim 1*), an ANOVA repeated measures was performed. Cohen's d based on within- or between-group differences in raw means will be presented to indicate effect size (ES).

To examine the relationship between personal control and distress (*Aim 2*), three cross-sectional regression analyses were performed. Possible confounders were entered in the first step. Two dummy variables contrasting the two patient groups with the reference group were entered in the second step, followed by personal control in the third step. Two interaction terms (dummy $\times$ personal control) were entered in the final step. A significant negative coefficient for an interaction term provides support for a stress-buffer effect. R^2 will be presented for each step to indicate ES.

The longitudinal control-distress relationships were examined as well, once with control at 3 months post-diagnosis as a predictor of changes in distress over the next 6 months and once with control at 9 months post-diagnosis as a predictor of changes in distress over the next 6 months. These longitudinal relationships were examined in patients only. In patients, distress was expected to be highest shortly after diagnosis and to decrease over time as a result of psychological adjustment. Such changes were not expected in the reference group. When a high level of personal control is related to a decrease in distress, the stress-buffer hypothesis is supported.

Results

Patients treated with CT were younger, reported less additional diseases than the other two groups and were more highly educated than patients not treated with CT (Table 1). The three groups were not significantly different with respect to the number of diseases for which one consulted a medical specialist. At 9 months post-diagnosis (T2), all patients completed treatment, with the exception of hormone therapy. A GLM repeated measures analysis showed that, controlling for age differences, the course of distress in patients was different from that in healthy women, $F_{\text{time} \times \text{group}}(4,266) = 6.23$, $p < 0.01$. Patients reported most distress 3 months post-diagnosis

Table 1. Sample characteristics, means and standard deviations of personal control and distress

	Healthy women	Patients non-CT	Patients CT
Age, M (SD) ^a	52.8 (10.1)	54.9 (9.1)	48.3 (7.6)
Educational level, n (%) ^a			
Elementary/lower professional	23 (39.7%)	26 (55.3%)	8 (25.0%)
Intermediate-level professional	13 (22.4%)	10 (21.3%)	14 (43.8%)
Higher professional/academic	22 (37.9%)	11 (23.4%)	10 (31.3%)
Diseases not treated by specialist, n (%) ^b			
0	19 (32.8%)	20 (42.6%)	23 (71.9%)
1 or 2	22 (37.9%)	10 (21.3%)	6 (18.8%)
3 >	17 (29.3%)	17 (36.2%)	3 (9.4%)
Diseases treated by specialist, n (%) ^c			
0	38 (65.5%)	27 (57.4%)	21 (65.6%)
1 or 2	13 (22.4%)	12 (27.7%)	8 (25.0%)
3 >	7 (12.1%)	7 (14.9%)	3 (9.4%)
Treatment modalities			
Breast surgery	—	47 (100%)	32 (100%)
Radiotherapy	—	33 (70.2%)	2 (6.3%)
Hormone	—	19 (40.4%)	12 (37.5%)
Personal control, M(SD) ^d			
3 months (T1)	24.60 (4.04)	24.43 (4.74)	24.44 (4.57)
9 months (T2)	25.43 (3.71)	25.04 (4.07)	23.19 (3.92)
15 months (T3)	25.47 (3.68)	25.11 (5.05)	24.06 (3.94)
Distress, M(SD) ^d			
3 months (T1)	4.07 (2.09)	5.15 (3.22)	6.91 (3.01)
9 months (T2)	3.50 (3.50)	3.68 (3.68)	5.25 (3.29)
15 months (T3)	3.91 (2.90)	3.04 (2.96)	3.97 (3.29)
Total n	58	47	32

^a Groups differ significantly, $p < 0.05$.^b Groups differ significantly, $p < 0.01$.^c Groups do not differ significantly.^d Test results are reported in the text.

(T1). In patients not treated with CT, distress decreased in the subsequent 6 months (T2). In patients treated with CT, the level of distress was no longer different from that in healthy women at 15 months post-diagnosis (T3).

Aim 1

Results show that, when controlling for group differences in educational level, in neither of the groups did personal control change significantly over time, $F_{\text{time}}(2,256) = 1.08$, $p = 0.34$ and $F_{\text{time} \times \text{group}}(4,256) = 1.65$, $p = 0.16$. Yet, the overall mean level of personal control post-diagnosis did differ across groups, $F_{\text{group}}(2,128) = 3.68$, $p = 0.03$. Patients treated with CT reported less personal control after diagnosis than the reference group of healthy women, $\Delta\text{EM} = 1.67$, $\text{SE} = 0.74$, $p = 0.03$. Univariate analyses show that this difference in personal control is largest at 9 months after diagnosis ($\text{ES}_{\text{T1}} = 0.04$, $\text{ES}_{\text{T2}} = 0.60$, $\text{ES}_{\text{T3}} = 0.37$). The general

level of personal control in patients not treated with CT did not differ from that in healthy women.

Aim 2

Results presented in Table 2 indicate that the diagnosis of breast cancer explained a significant percentage of variance in distress at T1 and T2 but not in distress at T3. The percentage of explained variance added by personal control was significant at all three occasions. Only at 9 months post-diagnosis (T2), a significant interaction effect was found. At that time, the control–distress relationship was significantly stronger in patients treated with CT than in healthy women. Longitudinal analyses showed that only in patients treated with CT a higher level of control at T1 was significantly related to declines in distress over the next 6 months. Control at T2 was significantly related to changes in distress over a period of 6 months (T3) in neither of the two patient groups.

Table 2. Standardized regression coefficients (step 3), unstandardized coefficients (step 4) and percentages of explained variance per step

	Distress								
	3 months			9 months			15 months		
	β (step 3)	B (step 4)	ΔR^2	β (step 3)	B (step 4)	ΔR^2	β (step 3)	B (step 4)	ΔR^2
<i>Cross sectional^a</i>									
1. Age	−0.23**	−0.08**	0.06**	−0.11	−0.03	0.03*	−0.19*	−0.06*	0.04*
2. Patient non-CT	0.18*	1.21*	0.09**	0.02	0.15	0.04*	−0.13	−0.80	0.01
Patient CT	0.32**	2.44**		0.13	0.49		−0.07	−0.55	
3. Personal control	−0.23**	−0.28**	0.05**	−0.43**	−0.25	0.18**	−0.32**	−0.16	0.10**
4. Interaction patient non-CT		0.22	0.02		0.02			−0.08	
Interaction patient CT		0.09			−0.35*	0.04*		−0.12	0.00
<i>Longitudinal (patients non-CT)^a</i>									
1. Initial level of distress (T1/T2)				0.51		0.31**	0.57		0.35**
2. Age				−0.10		0.05	−0.05		0.00
3. Personal control				−0.20		0.04	−0.03		0.00
<i>Longitudinal (patients CT)^a</i>									
1. Initial level of distress (T1/T2)				0.57		0.43**	0.92**		0.59**
2. Age				−0.03		0.00	−0.19		0.03
3. Personal control				−0.31*		0.09*	0.21		0.02

** $p < 0.01$; * $p < 0.05$.^a Controlled for group differences in age, related to distress.

Discussion

Results indicate that only patients treated with chemotherapy, who face a longer treatment trajectory and relatively less good prognostic prospects, report lower levels of personal control than healthy women (*Aim 1*). Although personal control was shown to be related to lower levels of distress, the results provide only modest support for the stress-buffering potential of control (*Aim 2*). Longitudinally, personal control 3 months post-diagnosis predicted a decrease in distress only in patients treated with chemotherapy. Cross-sectionally, women treated with chemotherapy were shown to profit more from a high sense of control over life than healthy women at 9 months after diagnosis. Interestingly, it is also in this phase of the illness trajectory, just after the completion of treatment, that the maintenance of sense of control seemed hardest in this group. Patients are no longer monitored strictly and are assumed to get back to life as usual, without cancer playing a major role. There is finally time to reflect on the cancer experience and to face the risk of recurrence [15,16]. Apparently, personal control is a valuable but threatened personal resource in this particular phase.

Patients who were not treated with chemotherapy resembled healthy women with respect to the reported levels of personal control and distress (with the exception of 3 months post-diagnosis). This study indicates that it is not the breast cancer diagnosis but the required treatment modality and perhaps the related prognostic prospects that define the stress experience [17]. Although some researchers suggest that objective clinical charac-

teristics do not affect psychosocial outcomes in cancer patients [18], the current findings show that it is inadvisable to simply ignore differences.

The study has several limitations. First of all, the response rate was low and the two patient groups were rather small, consisted exclusively of women with an intimate partner and may have existed from the least distressed women, as drop-outs and non-completers generally reported more distress and less personal control. Despite the limitations such a sample obviously has, such as limited external validity, one could argue that when significant relationships are found between variables that are restricted in range, results are even more robust. Moreover, the results did not depend on a few influential cases with more extreme scores.

Second, the study leaves questions about *why* personal control is adaptive and *how* personal control is maintained unanswered. Future studies should explore the possible behavioral and cognitive mediators of the control–distress relationship, including engagement in treatment decisions or self-efficacy for coping with cancer. Furthermore, researchers should try to gain more insight into the strategies people use to maintain personal control over life in the face of stressors such as cancer. Possibly, patients who maintain control are those who are able to focus attention away from uncontrollable illness aspects and towards aspects that are still subject to personal control [19,20], such as collecting information or reducing the impact of the illness on daily living. Moreover, by simply increasing the valence of life domains that are still controllable, like intimate relationships or spirituality, women might maintain a general sense

of control over life. Insight into these underlying mechanisms can provide clinical practice with valuable data to design interventions aimed at perceptions of control in cancer patients. Distress after a cancer diagnosis might be relieved by helping patients to reappraise or let go of temporarily unattainable goals and to identify the areas that are still subject to personal control.

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