

Take Care! The Evaluation of a Team-Based Burnout Intervention Program for Oncology Care Providers

Pascale M. Le Blanc, Joop J. Hox, and
Wilmar B. Schaufeli
Utrecht University

Toon W. Taris
Utrecht University and Radboud University Nijmegen

Maria C. W. Peeters
Utrecht University

In this quasi-experimental study among staff of 29 oncology wards, the authors evaluated the effects of a team-based burnout intervention program combining a staff support group with a participatory action research approach. Nine wards were randomly selected to participate in the program. Before the program started (Time 1), directly after the program ended (Time 2), and 6 months later (Time 3), study participants filled out a questionnaire on their work situation and well-being. Results of multilevel analyses showed that staff in the experimental wards experienced significantly less emotional exhaustion at both Time 2 and Time 3 and less depersonalization at Time 2, compared with the control wards. Moreover, changes in burnout levels were significantly related to changes in the perception of job characteristics over time.

Keywords: burnout intervention, team, multilevel analysis, oncology care providers

To date, most burnout interventions have focused on the individual employee (Schaufeli & Enzmann, 1998). In this article, we take a different perspective by studying the effectiveness of a team-based burnout intervention program that was developed as part of a larger research project on burnout in oncology care providers. Although oncology can be an exciting and challenging specialty for those who work in it, oncology care providers are also faced with a host of psychosocial problems in their daily routine. As cancer patients are confronted with a life-threatening disease, its treatment, and severe physical side effects, they may experience feelings of uncertainty, a diminished self-image, and changes in social relationships (Moos & Schaefer, 1984) as well as depressive symptoms (McDaniel, Musselman, Porter, Reed, & Nemeroff, 1995). These and many other patient reactions to cancer (e.g., regressive behavior, numbness and inappropriate denial, panic and grief, a need to propitiate and bargain, disappointment and anger) are difficult to handle with professional demeanor. Difficult patients may cause staff to become angry, unempathic, or deperson-

alized (Maslach, 1982). Alternatively, some patients may become special to a caregiver—usually because of personal experiences—and these patients may arouse overinvolvement (Lederberg, 1998). Thus, in caring for cancer patients, the question is how to remain remote enough to be able to think and function yet close enough to relate (Himmelsbach, 1978) or, in other words, to show *detached concern*. This term was introduced by Lief and Fox (1963) to refer to the medical profession's ideal of blending compassion with emotional distance. Although the care provider is concerned about the patient's well-being, he or she recognizes the necessity of avoiding overinvolvement with the patient and maintaining a detached objectivity.

In addition to a high level of patient-related emotional demands, oncology care providers also may be confronted with stressors common to those experienced by other health care workers; these stressors may include high quantitative job demands (i.e., workload) or problems in working relationships with colleagues, such as lack of social support (Hürny, 1988; Schaufeli, 1999). The results of a nationwide, questionnaire-based survey among members of five professional associations of Dutch oncology care providers ($n = 816$) that was performed in the first part of the present project indeed showed that—besides emotionally demanding situations—time pressure, lack of control in work planning, lack of support from colleagues, and work-related conflicts were significantly related to feelings of burnout (Le Blanc & Schaufeli, 2003). In conclusion, working in oncology can be considered stressful and may give rise to ambivalent feelings among care providers.

Burnout

Unfortunately, in the formal training of oncology care providers, no solid basis of psychosocial awareness, knowledge, and skills is

Pascale M. Le Blanc, Wilmar B. Schaufeli, and Maria C. W. Peeters, Department of Social and Organizational Psychology, Utrecht University, Utrecht, the Netherlands; Joop J. Hox, Department of Methodology and Statistics, Utrecht University; Toon W. Taris, Department of Social and Organizational Psychology, Utrecht University, and Department of Work and Organizational Psychology, Radboud University Nijmegen, Nijmegen, the Netherlands.

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Correspondence concerning this article should be addressed to Pascale M. Le Blanc, Department of Social and Organizational Psychology, Utrecht University, P.O. Box 80.140, Utrecht 3508 TC, the Netherlands. E-mail: p.m.leblanc@fss.uu.nl

given to facilitate coping with the above-mentioned issues. The emotionally demanding nature of their job may drain the enthusiasm of oncology care providers and damage their commitment to ideals that initially drew them to this specialty (Flint Sparks, 1989). Eventually, this may lead to *burnout*, a form of chronic job stress that is usually construed as a three-dimensional construct. As a result of high emotional demands in interpersonal relationships with patients, workers may feel *emotionally exhausted*, that is, emotionally overextended and drained by their interactions with other people (Maslach, 1982). To cope with these feelings of exhaustion, they may try to protect themselves by detaching from their patients, that is, by treating their patients in an indifferent and cynical way (Lee & Ashforth, 1996; Leiter & Maslach, 1988). This detached attitude toward patients is called *depersonalization*. As a result of this dysfunctional attitude, workers are unable to perform adequately, and the quality of their care is impaired. In turn, this may lead to a decline in their feelings of personal accomplishment, or *professional efficacy*. In this study, we restricted ourselves to the emotional exhaustion and depersonalization dimensions of burnout. These two dimensions generally are considered as the core of burnout (Green, Walkey, & Taylor, 1991), whereas personal accomplishment largely reflects a personality characteristic similar to self-efficacy (e.g., Cordes & Dougherty, 1993; Shirom, 2003). Researchers during the past few decades have shown that burnout is related to negative outcomes not only for the individual but also for the organization, including absenteeism, turnover rates, and lowered productivity (for reviews, see Cordes & Dougherty, 1993; Lee & Ashforth, 1996; Schaufeli & Buunk, 2002). Therefore, both from the individual and from the organizational points of view, efforts to combat this form of chronic job stress seem important.

Despite their importance, relatively few empirical studies have been conducted on interventions aimed at reducing burnout. The two primary approaches to intervention programs have been either changing individual employees or changing the organization (Schaufeli & Buunk, 2002). The former type of program has been most prominent both in research and in practice, and generally seeks to develop coping skills to assist individual workers in dealing with the stress that has resulted in burnout (Halbesleben & Buckley, 2004). Although the evaluation of these programs has yielded mixed results, some of the strategies that are used have proven to be effective. For instance, training in cognitive and behavioral strategies appears to reduce burnout—most notably, emotional exhaustion (see Schaufeli & Enzmann, 1998, for an overview). However, the emphasis on individual strategies for prevention of burnout is particularly paradoxical, as the vast bulk of the research has found that social and organizational factors play a much larger role in the development of burnout than do individual factors (Maslach, Schaufeli & Leiter, 2001; Schaufeli & Buunk, 2002). Very little attention has been given to situational or organizational strategies for burnout prevention; in particular, situational strategies that are geared toward eliminating or modifying work stressors are seldom implemented (e.g., see Taris et al., 2004, for a 2-year nationwide intervention in the Dutch home care sector). Some other programs have focused on social support as a key to intervention, and empirical evidence for their effectiveness in reducing exhaustion and/or depersonalization has been found (e.g., R. J. Burke & Richardson, 2000; Cooley & Yovanoff, 1996; Rabinowitz, Kushnir, & Ribak, 1996; Vandenberghe & Huberman,

1999). So, although further research on different types of burnout interventions is badly needed, there is some empirical support for their effectiveness.

Background of the Intervention

The results of our nationwide, questionnaire-based survey also showed that Dutch oncology care providers had significantly higher mean scores on each of the two core burnout dimensions (emotional exhaustion and depersonalization) compared with norm scores for Dutch health care providers¹ (Le Blanc & Schaufeli, 2003). Therefore, a burnout intervention program was developed, specifically targeting this group of health care professionals.

Especially in oncology, a properly functioning interdisciplinary team can be an important source of physical and emotional support. A review of the literature on stress management in oncology shows that the earliest and still most frequently used means of assisting oncology care providers in coping with work-related stressors is a *staff support group*, that is, regular meetings during which care providers have the opportunity to share personal, work-related experiences and feelings with colleagues in a supportive, nonjudgmental environment (Lederberg, 1993, 1998; Ryerson & Marks, 1982). The availability of social support at work is crucial in the adaptation of the care provider to the care of cancer patients. Empathic concern and active care from one's coworkers can greatly reduce the effects of the accompanying stress and help prevent burnout (Flint Sparks, 1989). Maslach (1978) suggested that a person should frequently analyze his or her personal feelings related to work. She found that burnout rates were lower in health care workers who actively expressed, analyzed, and shared their personal feelings with their colleagues. In addition, support groups can defuse tension and aid in problem solving, as new perspectives on and solutions to perceived and real problems can ensue from such peer interaction. Also, sharing responsibility for the quality of the working environment and for the mutual support of staff is important in maintaining staff morale (Cull, 1991; Lewis, 1999). Kash and Holland (1989) found that increasing sensitivity, support, and communication for staff members also increased the patients' positive perception of care.

Detailed inspection of the literature on stress management interventions also underlines the importance of social support. According to McLeroy, Gottlieb, and Heaney (2002), interventions that reduce interpersonal tension and conflict and strengthen social ties decrease unnecessary stress and increase employee health. Moreover, in his recent review on job stress interventions, Semmer (2003) presented the results of empirical studies illustrating the positive effects of control and participation interventions on em-

¹ The Dutch Maslach Burnout Inventory—Human Services Survey norm group from the test manual that we are referring to (Schaufeli & Van Dierendonck, 2000) consisted of 3,272 care providers working in somatic health care. It included nurses ($n = 2,313$), physicians ($n = 521$), and nurses' aides ($n = 438$) who work in general hospitals and in university hospitals. Therefore, this broad group is very comparable to our study sample as regards the type of health care institution they work in. However, as these care providers work in various types of wards and departments (i.e., with a wide variety of somatic patients), there may be differences between our sample of oncology care providers and some (but not all) of these care providers as regards the caseload provided by patients.

ployee (mental) health and well-being. According to some authors (e.g., Griffiths, 1999), organizational interventions designed to promote employee health cannot take place without the participation and experience of the individuals under study. *Participatory action research (PAR)* approaches (Mikkelsen & Gunderson, 2003; Murphy & Hurrell, 1987) are based on this philosophy of worker control and participation. They take the users' local context as a starting point for the research and share control over the research and knowledge generation process with them. In this way, a better understanding of work stress in a local context can be developed and translated into effective interventions. The goal of PAR in work stress intervention is building an organization's capacity to solve self-identified problems (Hughes, 2003). PAR involves workers in a cyclic process participating in (a) defining issues or problems, (b) developing methodology and collecting data to inform the problem, (c) making sense of the data, (d) defining the interventions, (e) helping to implement these interventions, and (f) evaluating the results (Wadsworth, 1998). In this way, workers are likely to regain job control, which, in turn, is known to contribute to a decrease in job-related strain (Karasek & Theorell, 1990).

Previous studies on PAR approaches to stress management intervention showed that these approaches have been effective in decreasing depressive symptoms (Heaney, Price, & Rafferty, 1995), registered absenteeism (Munz, Kohler, & Greenberg, 2001; Van Gorp & Schaufeli, 1996), psychosomatic complaints (Van Gorp & Schaufeli, 1996), and work-related stress (Mikkelsen, Saksvik, & Landsbergis, 2000) as well as in increasing work-unit performance (Munz et al., 2001). This result is not surprising, as there are many parallels and overlaps between PAR principles and the best practice recommendations in organizational stress intervention that were made by Kompier and Cooper (1999) on the basis of 11 European case studies. For example, they emphasized the importance of using a stepwise method to reduce occupational stress, they considered the involvement and participation of workers in the process of stress management as crucial to its success, and they argued that interventions must be context specific and based on an accurate assessment of both individual and organizational factors rather than relying on prepackaged, context-independent programs (see also Israel, Baker, Goldenhar, Heaney, & Schurman, 1996; Ivancevich, Matteson, Freedman, & Philips, 1990; Karasek, 1994; Murphy, Hurrell, & Quick, 1992; Sauter, Murphy, & Hurrell, 1990). Therefore, Kompier and Cooper's (1999) recommendations refer to the defining characteristics of a PAR approach.

On the basis of the above considerations, a team-based burnout intervention program for oncology care providers was developed that included support group meetings during which care providers were able to share their work-related feelings and to discuss work-related problems and ways of solving them. The program, titled "Take Care!" (De Geus, Van Son, Le Blanc, & Schaufeli, 2000), was developed in close collaboration with two experienced team counselors from an independent (i.e., unrelated to members of the research team) consultancy firm and combined the advantages of a support group with those of a PAR approach (control and participation).

Hypotheses

The design of the study consisted of a pretest and two posttest measurements (see Method section for more details). First, we hypothesized that care providers participating in the intervention program would experience lower levels of burnout at both follow-ups than would care providers in the control group (Hypothesis 1). If Hypothesis 1 is supported, it is important to attempt to understand precisely how this intervention is effective in reducing burnout levels. To this aim, we formulated two additional hypotheses that focused on individual-level factors that may change as a result of our intervention program and that may account for the presumed group-level reduction in burnout levels. In line with what is known from the literature on key components of effective stress management intervention (McLeroy et al., 2002; Semmer, 2003) and what is also reflected in the basic principles of our intervention program (combining a staff support approach and a PAR approach), we decided to include social support, job control, and participation in decision making in the research. In particular, we expected that individual changes in burnout levels over time would be related to synchronous changes in the level of social support, job control, and participation in decision making (Hypothesis 2). Moreover, as far as job characteristics are concerned, Schaufeli and Enzmann's (1998) review showed that quantitative demands (i.e., workload) and patient-related emotional demands are important correlates of burnout. High demands also were frequently mentioned as a demotivating job aspect during the in-depth interviews with 20 oncology care providers that were conducted as a pilot to the present study. Therefore, we expected that, regardless of relationships between burnout and other, ward-specific stressors, individual changes in burnout levels over time would be related to synchronous changes in the level of quantitative demands (i.e., workload) as well as patient-related emotional demands (Hypothesis 3).

Method

Participants and Procedure

The quasi-experimental design of this study consisted of pretest, posttest, and follow-up measurements among a sample of 664 staff members of 29 oncology wards of 18 general hospitals spread throughout the Netherlands. The intervention was carried out at the ward level. Nine experimental wards were randomly selected from the total number of 29 wards participating in this study; the remaining 20 wards served as controls. We deliberately included a much larger number of control wards than experimental wards in our study to compensate for the presumably higher risk of participant attrition in the control wards. However, none of the control units dropped out, which resulted in a sample including approximately one third experimental wards and two thirds control wards.

Four hospitals contributed 1 experimental ward each, three hospitals contributed 1 experimental and 1 control ward, two hospitals contributed 1 experimental and 2 control wards, seven hospitals contributed 1 control ward each, and the remaining two hospitals contributed 3 control wards each. Therefore, the experimental (or intervention) group ($n = 260$; 39.2%) included staff members of 9 experimental wards, whereas the control group ($n = 404$; 60.8%) contained staff members of the remaining 20 wards. All participating wards were very comparable in regards to structure, composition, staff qualifications, and patient population. Moreover, only those wards in which staff members could be considered as a functional team were allowed to participate in this study. A *functional team* is defined as a group of employees who work together on common tasks and goals within

the same organizational unit (i.e., ward) and under the supervision of one or more common supervisors. The 9 experimental ward participant sample sizes ranged from 14 to 43; the 20 control ward participant sample sizes ranged from 10 to 39.

Participants were care providers (physicians, nurses, and radiotherapy assistants) working in direct care for oncology patients. In the experimental wards, staff members were offered the opportunity to participate in the Take Care! program. Participation in the program was voluntary, and there was neither a reward for participation nor a sanction for not participating. However, as the focus of the program was at the team level, supervisors tried to recruit as many staff members as possible. Participation rates across the staff of each of the experimental wards varied from 80% to 100% (i.e., 80%–100% of the total sample size of these wards participated in all program sessions). Control wards did not receive any special attention during the research period. Participants of all 29 wards were asked to fill out three questionnaires on their work situation and well-being: one questionnaire before the training program started (Time 1 [T1]); the second questionnaire 6 months later, directly after the training program ended (T2); and the last questionnaire 6 months after T2 (T3). There was no ongoing training between T2 and T3 in the experimental groups.

Although there is, as yet, no gold standard for the intervals between measurements, literature with comparable PARs (e.g., Landsbergis & Vivona-Vaughan, 1995; Mikkelsen et al., 2000; Mikkelsen & Saksvik, 1999; Munz et al., 2001) suggests that using relatively short time intervals (i.e., several months) increases the likelihood of detecting significant intervention effects. Moreover, the literature on burnout prevention programs, in general, shows significant intervention effects on burnout dimensions, most notably emotional exhaustion, across periods of time ranging from 6 months to 1 year. Therefore, we decided to include two follow-up measurements in our study, at 6 months and 1 year, respectively, to be able to distinguish between short- and long-term intervention effects (cf. Kompier & Kristensen, 2000).

The Intervention Program: Take Care!

According to Kompier and Cooper (1999), management support is a critical success factor for work site stress management interventions. Therefore, our team counselors held extensive intake interviews with the management (e.g., head nurses, physicians, coordinators, and team leaders) of all wards at which the Take Care! program was to be implemented. During these meetings, the protocol of the intervention was clarified, and potential intervention effects (benefits) were discussed. The counselors also inquired after the ward management's reasons for participating in the intervention program, their main objectives, and their criteria for the success of the intervention. Moreover, the counselors gathered information on the structure and policies of the larger organization. Finally, they discussed the ward management's perception of the work situation, including the main sources of job stress. By means of these intake interviews, the team counselors tried to increase the ward management's motivation for the implementation of organizational change processes.

Next, a kickoff meeting was organized for the entire team of each of the experimental wards. During this meeting, the team counselors presented the protocol of the intervention program, and the researcher explained the design of the evaluation study. Staff members were encouraged to ask questions about the intervention protocol and/or the study design. By means of these meetings, staff's commitment to participate was increased, and positive anticipatory attitudes toward the intervention program were promoted. For each ward, the information that was gathered during the intake interviews (see Background of the Intervention section) and the kickoff meetings was written down in a *take-off document*, which was the first in a series of reports about the progress and results of the program. After each session, the team counselors updated the document with information on the course of that session. Together, these reports formed a log book on the intervention process, which also was used to keep all partic-

ipants informed during the periods in between the program sessions. Because it was considered important for the participating wards to work on their own context-specific problems, the design of the training was guided by methodological (i.e., PAR) considerations instead of a uniform and theory-based approach (e.g., equity theory in a previous study by Van Dierendonck, Schaufeli, & Buunk, 1998).

The basis of what participants actually did in the PAR training program was a framework that team counselors developed in the mid-1990s to classify potential determinants of organizational (health) problems, to map team functioning and relate it to the broader organizational context, and to structure and stimulate the exchange of information between team counselors and groups of participants (De Geus & Brakel, 1996; De Geus et al., 2000). In addition, as both counselors were registered behavior therapists, during the sessions much attention was paid to principles of operant conditioning of behavior as applied to team functioning (e.g., "In what way do groups preserve [collective] behavior?").

The training program itself consisted of six monthly sessions of 3 hr each, which were supervised by both team counselors. The first session formed a general introduction to the training program. It started with some education about the working mechanisms of job stress. Next, the results of the first (T1) questionnaire measurement on participants' work situation were fed back to the participants (survey feedback method). We used the above-mentioned framework to help participants structure their subjective feelings by providing them with relevant topics for discussion and for their plans to reduce work stress. However, participants were informed only about their ward's scores on (perceptions of) aspects of the work situation, because these formed the starting point for later actions. We purposely refrained from informing the team counselors and the participants about the team's burnout scores because we wanted to avoid unwanted labeling effects. For example, if the counselors had been informed about the wards' burnout scores, they might have been inclined to put more effort into the training of high-burnout wards than into the training of low-burnout wards. At the end of the first session, the job stressors that were to be dealt with during the training period were selected.

The remaining sessions each consisted of an educational and an action part. During the educational part, the following topics were addressed by the counselors: the emergence and preservation of unwanted collective behavior (Session 2), communication and feedback (Session 3), building a social support network (Session 4), and balancing job-related investments and outcomes (Session 5). During the action part, participants formed problem-solving teams that collectively designed, implemented, evaluated, and reformulated plans of action to cope with the most important stressors in their work situation. In the last session, on the basis of participants' own experiences during the past months, potential problems in dealing with processes of change (transition) and ways to overcome them were discussed. Next, the state of affairs with respect to the tackling of job stressors was presented by the different problem-solving teams and discussed in plenary. Outcomes of these sessions were, for example, the introduction of more efficient procedures in regards to reporting about patients and ordering supplies (quantitative demands), the appointment of staff members as "guardian angels" who should watch over team members' well-being (support), and restructuring of the weekly work meetings to enable more participation (voice) of staff members (participation in decision making). Finally, some handles for continuation and consolidation of processes of change were given by the counselors.

The sessions were facilitated in several ways by the management of the experimental wards. Meeting rooms (outside the wards themselves) were booked, and, as sessions often took place at the end of the day, catering arrangements for the participants were made. Moreover, in between the training sessions, the topics that were discussed during the latest session and the plans and agreements that were made were put as items on the agenda of the weekly work meetings of the respective experimental wards.

As agreed on with the researcher, between T1 and T3 the control wards conducted business as usual. At the start of the project, these wards signed

a written agreement that they would refrain from participating in specialized training programs similar to the Take Care! program during the entire study period.

Measures

Burnout. Burnout was assessed by two subscales of the Dutch version (Schaufeli & Van Dierendonck, 2000) of the Maslach Burnout Inventory—Human Services Survey (Maslach & Jackson, 1986): Emotional Exhaustion and Depersonalization. Response scales range from 0 (*never*) to 6 (*every day*). Schaufeli and Van Dierendonck (2000) have demonstrated that the reliability and construct validity of the Dutch version are comparable to the original American version. Emotional exhaustion was measured with eight items—for instance, tapping the degree to which participants felt exhausted at the end of the working day (Cronbach's $\alpha = .86$)—and depersonalization was measured with five items—for example, asking whether participants felt that they treated some patients as if they were impersonal objects (Cronbach's $\alpha = .64$). Although the reliability of the Depersonalization subscale is usually low, both in the Netherlands and internationally (see Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998, for reviews), it is acceptable according to the Dutch standards, especially given that in the present study, this scale was used for group comparisons and not for individual diagnosis.

Social support. Social support was measured by a set of items from two scales (Peeters, 1994; Peeters, Buunk, & Schaufeli, 1995) dealing with social support from colleagues (four items) and from the direct supervisor (four items). These scales tap the four dimensions of social support that were distinguished by House (1981): emotional support, appraisal support, informational support, and instrumental support. In two sample items, participants were asked to rate (a) how often their colleagues and/or direct supervisor paid attention to participants' problems and feelings and (b) how often their colleagues and/or direct supervisor offered them advice (if necessary) on how to deal with work-related issues. All items are scored on a 5-point scale ranging from 1 (*never*) to 5 (*always*). A factor analysis on the items at the first measurement occasion revealed one dominant underlying factor. Therefore, these items were combined to form one scale, which had a reliability (Cronbach's alpha) of .64. As item selection did not lead to a higher reliability coefficient, we decided to maintain this variable in the analysis.

Participation in decision making. The level of (perceived) participation in decision making (i.e., the degree to which employees were authorized and able to participate in decision making) was assessed by means of an eight-item scale constructed by Van Veldhoven, Meijman, Broersen, and Fortuin (1997). The items were slightly reworded to fit better to the current sample. Sample items included questions about (a) how often participants were able to influence the decisions made on their wards and (b) how often participants were able to contribute to decisions associated with their personal work responsibilities. Items are scored on a 4-point scale ranging from 1 (*never*) to 4 (*always*). Cronbach's alpha for this scale was .86.

Job control. Job control was measured by a four-item scale (Biessen & De Gilder, 1993) assessing to what extent respondents had the freedom to decide on the organization of their work and the way of working. A sample item of this scale asks participants to rate to what extent, in their jobs, they are given the freedom to decide how they work. Items are scored on a 5-point scale ranging from 1 (*not at all*) to 5 (*completely*). Cronbach's alpha for this scale was .81.

Job demands. In line with the main types of job demands that oncology care providers are confronted with in their daily routines, we made a distinction between quantitative job demands (i.e., workload) and emotional job demands. Quantitative job demands were measured by a 10-item scale based on an original scale by Furda (1995) that was extended by Pascale M. Le Blanc and assessed how often respondents were confronted with demands such as a high work pace, large amounts of work, and long

working hours. Items were scored on a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely often*; $\alpha = .83$).

Emotional job demands were assessed by means of three scales that were based on original scales by Herschbach (1992) and Kleiber, Gusy, Enzmann, and Beerlage (1992). In line with the results of the in-depth interviews with oncology care providers that were performed in our pilot study, these scales were extended by Pascale M. Le Blanc. The first scale was called Problems in Interacting With Patients. This 12-item scale assessed the extent to which respondents were confronted with demands such as distrustful patients, aggressive patients, uncooperative patients, and patients with unrealistic expectations. The second scale was called Confrontation With Death and Dying. This six-item scale included items that measured the extent to which respondents were confronted with demands such as the death of several patients simultaneously and having to inform relatives about the death of a patient. The third scale was called Identification With Patients. This four-item scale included items that assessed the extent to which respondents were confronted with demands such as patients who reminded them of someone in their private life and identifying themselves with the suffering of patients. Items were scored on 5-point scales ranging from 1 (*not at all*) to 5 (*extremely often*). A factor analysis on this set of items on the data from the first measurement occasion showed a single underlying factor, and the items of these three scales were, therefore, combined into one scale, Emotional Job Demands, which had an alpha reliability of .78.

Evaluation of Take Care!

At T2, members of the experimental wards were asked to evaluate the methods and content of the Take Care! training program. First, they had to rate the quality of the team counselors, the training manual, and the structure and content of the program and the surplus value of the program for the functioning of their team on a 5-point scale ranging from 1 (*very poor*) to 5 (*very good*). Next, they had to indicate to what extent they agreed with the following statements, which were rated on a 5-point scale ranging from 1 (*completely disagree*) to 5 (*completely agree*): (a) "The Take Care! training addressed topical issues in our working situation," (b) "Compared with the situation before the Take Care! training, job stress is now considered more as a shared responsibility of all team members," and (c) "As a result of the Take Care! training, I gained more insight into the development and manifestation of my own as well as my colleagues' stress complaints."

Analysis

One serious problem in longitudinal research is the occurrence of missing data caused by panel attrition. In our study, there were 664 participants at T1 (experimental group: 260; control group: 404), at T2 the number of participants had dropped to 376 (experimental group: 231; control group: 145), and at T3 it had dropped to 304 (experimental group: 208; control group: 96). An analysis of the dropout pattern (cf. De Leeuw, Hox, & Huisman, 2003) revealed that panel attrition was the dominant pattern, with a group of 54 respondents who were missing at T2 but returned at T3. Given this pattern, we created a variable indicating whether a person was missing at T2 but not at T1 and T3. Next, we performed a multivariate analysis of variance to check whether this specific group differed from the remaining participants in scores at T1 or T3 on the two outcome measures—emotional exhaustion and depersonalization. No significant differences emerged between the two groups at either T1, $F(2, 657) = 0.67, p = .51$ ($\eta^2 = .002$), or T3, $F(2, 306) = 1.06, p = .35$ ($\eta^2 = .007$), which suggests that panel attrition was not selective. Similarly, we used multivariate analysis of variance to test the relationships between the outcome variables and missingness at T2, $F(2, 657) = 1.83, p = .16$ ($\eta^2 = .006$), and T3, $F(2, 657) = 1.02, p = .36$ ($\eta^2 = .003$). Finally, we used chi-square in a cross-table to test whether membership in the experimental or control

Table 1
Sample Composition at the Three Measurement Occasions

Variable	Time 1 (<i>n</i> = 664)		Time 2 (<i>n</i> = 376)		Time 3 (<i>n</i> = 304)		Effect size (<i>f</i>)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Age	36.2	8.4	36.7	8.4	37.5	8.6	0.06
Gender	0.72	0.45	0.73	0.44	0.75	0.44	0.03
Work experience (in years)	9.6	6.8	10.1	6.9	10.8	7.4	0.07

group was related to missingness at T2, $\chi^2(1, N = 628) = 0.28, p = .67$ ($w = 0.05$), and missingness at T3, $\chi^2(1, N = 628) = 0.65, p = .50$ ($w = 0.02$). Thus, attrition was not related to the variables that were central in our analysis. However, the large percentage of dropouts does call for a special analysis strategy, which is described two paragraphs later. Table 1 presents the composition of the sample at the three measurements in regards to age, gender, and years of working experience. The last column is for the effect size (*f*), as defined by Cohen (1988); effect sizes below 0.10 may be considered as small (Cohen, 1988).

To check the internal validity of the design, we compared the experimental and control wards on the two outcome measures at T1. We found no significant difference, $t(27) = 1.20, p = .24$ (Cohen's $d = 0.48$), for emotional exhaustion; we found $t(27) = 0.73, p = .47$ (Cohen's $d = 0.29$) for depersonalization.

The large percentage of dropouts calls for a special analysis strategy: *multilevel regression analysis* (Bryk & Raudenbush, 1992; Goldstein, 1995). Multilevel analysis regards longitudinal data as having two levels: measurement occasions nested within individuals. In contrast to standard methods for analyzing longitudinal data, such as repeated-measures analysis of variance, multilevel regression analysis does not require listwise deletion of missing data but uses all available information (Hox, 2002; Raudenbush, 2001). Thus, given the attrition rate in our study, multilevel

regression analysis is a highly efficient method for analyzing our data. In addition, listwise deletion of incomplete cases makes the strong assumption that data are missing completely at random, which means that the dropout process must be unrelated to all variables in the model. In contrast, multilevel analysis assumes only that data are missing at random (Little, 1995), which is a weaker assumption that allows for correlations between the dropout process and variables included in the model. Although the relations between dropout and other variables were weak, it is an advantage that multilevel analysis requires fewer assumptions about the dropout process.

In addition to the occasions-within-individuals nesting, our data show two more levels of nesting: (a) individuals within wards and (b) wards within hospitals. Preliminary multilevel analyses showed that whereas there was no variance at the hospital level, there was a relatively small but significant amount of variance at the ward level. Therefore, the main analysis model is a three-level regression model, with successive measurement occasions nested within individuals, who are nested within wards.

Results

Table 2 presents, separately for the experimental and control wards, the means and standard deviations for each of the variables at each measurement, and Table 3 presents their intercorrelations. Compared with the table of norm scores for Dutch somatic health care providers ($N = 3,272$), in which five categories were distinguished, ranging from very low (Category 1) to very high (Category 5), at T1 the mean levels of exhaustion as well as depersonalization in our sample could be classified as clinically average (Category 3). This was also true when we looked at the mean scores of the experimental and control groups separately. This means that at T1, staff of the participating wards actually did experience some feelings of burnout.

Table 2
Means and Standard Deviations of the Study Variables at the Three Measurement Occasions

Variable	Experimental		Control		<i>t</i>	<i>df</i> ^a	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
T1 emotional exhaustion	1.54	0.89	1.46	0.80	1.20	624	.23	.10
T2 emotional exhaustion	1.49	0.91	1.68	1.00	-1.82	363	.07	-.20
T3 emotional exhaustion	1.53	0.92	1.65	1.00	-0.99	295	.32	-.13
T1 depersonalization	0.96	0.70	0.86	0.58	1.93	624	.06	.16
T2 depersonalization	0.94	0.82	1.00	0.65	-0.67	362	.50	-.08
T3 depersonalization	0.98	0.65	0.93	0.62	0.66	293	.51	.08
T1 quantitative job demands	2.79	0.79	2.87	0.75	-0.21	624	.84	-.10
T2 quantitative job demands	2.72	0.84	2.86	0.79	-1.61	364	.11	-.17
T3 quantitative job demands	2.87	0.81	2.87	0.73	0.05	295	.96	.00
T1 job control	3.54	0.70	3.48	0.77	0.97	625	.33	.08
T2 job control	3.56	0.76	3.47	0.80	1.03	364	.30	.12
T3 job control	3.48	0.80	3.45	0.84	0.25	295	.80	.04
T1 emotional job demands	2.15	0.71	2.04	0.67	0.89	624	.06	.16
T2 emotional job demands	1.95	0.63	2.04	0.64	-1.31	363	.19	-.14
T3 emotional job demands	1.95	0.67	2.00	0.69	-0.59	295	.05	-.07
T1 social support	3.56	0.61	3.47	0.61	1.84	624	.07	.15
T2 social support	3.54	0.52	3.40	0.61	2.05	361	.04	.25
T3 social support	3.49	0.59	3.40	0.59	1.27	295	.21	.15
T1 participate decision making	2.76	0.57	2.66	0.53	2.29	620	.02	.18
T2 participate decision making	2.76	0.53	2.63	0.53	2.21	363	.03	.26
T3 participate decision making	2.75	0.55	2.60	0.58	2.10	292	.04	.27

Note. *d* is the standardized mean difference. T1 = Time 1; T2 = Time 2; T3 = Time 3.

^a Because of occasional missing values, the number of degrees of freedom varies within occasions.

Table 3
Intercorrelations Among the Study Variables at the Three Measurement Occasions

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. Emotex1	—	.78	.78	.38	.41	.42	-.03	.02	.39	.42	.51	-.16	-.14	.07	.18	.19	.05	-.21	-.24	-.33	-.15	-.24	-.19	-.02	.03
2. Emotex2	.63	—	.82	.36	.56	.36	.04	.00	.28	.47	.49	-.12	-.08	.12	.06	.20	.00	-.13	-.22	-.22	-.07	-.23	-.06	-.12	.02
3. Emotex3	.62	.68	—	.20	.29	.35	-.06	.02	.31	.42	.47	-.08	.06	.05	.07	.13	.05	-.20	-.28	-.22	-.05	-.16	-.16	.01	-.05
4. Depers1	.38	.29	.30	—	.61	.51	-.02	-.03	.26	.19	.28	-.20	-.25	-.08	.22	.17	.19	-.19	-.27	-.23	-.18	-.25	-.19	.07	-.09
5. Depers2	.34	.54	.35	.57	—	.72	.05	.02	.15	.29	.25	-.25	-.03	.07	.12	.15	.15	-.04	-.19	-.13	-.22	-.14	-.16	.02	-.13
6. Depers3	.45	.53	.63	.56	.62	—	.11	-.12	.27	.26	.30	-.15	-.02	.10	.17	.12	.12	-.19	-.22	-.20	-.08	.01	-.10	-.09	-.10
7. Age	.12	-.06	.09	.05	.02	.07	—	-.24	-.01	-.07	-.04	.15	.10	.09	-.07	-.16	-.15	-.14	-.02	-.25	.24	.25	.08	-.10	-.18
8. Gender	.03	.05	.01	-.07	-.04	-.04	-.22	—	-.05	.00	-.15	-.09	-.18	-.14	.05	.21	.22	.03	.00	.00	.17	-.14	-.20	.08	.21
9. Wrkld1	.44	.33	.30	.39	.23	.32	-.05	.14	—	.73	.78	-.03	.07	.31	.59	.41	.38	-.15	-.27	-.16	.04	-.01	.15	-.49	.43
10. Wrkld2	.30	.37	.31	.25	.25	.28	-.14	.12	.76	—	.82	-.03	.06	.25	.41	.48	.41	-.13	-.27	-.10	-.06	-.11	.00	-.54	.41
11. Wrkld3	.51	.49	.47	.28	.25	.30	-.04	-.15	.78	.82	—	.05	.16	.25	.48	.42	.42	-.11	-.29	-.11	.04	-.04	.10	-.46	.30
12. Jobcon1	-.05	-.03	-.03	-.04	-.04	-.12	.00	-.09	.06	.14	.16	—	.69	.60	-.04	-.19	-.09	.17	.15	.23	.64	.49	.60	-.41	.26
13. Jobcon2	-.02	-.17	-.04	-.01	-.14	-.14	.10	-.09	.06	.03	.08	.70	—	.73	-.09	-.22	-.23	-.03	.07	.08	.48	.48	.55	-.44	.29
14. Jobcon3	.07	.04	-.13	.01	.01	-.18	.06	-.07	.20	.26	.15	.74	.72	—	.00	-.14	-.14	-.09	-.01	.13	.52	.48	.65	-.49	.32
15. Emdem1	.23	.22	.24	.27	.17	.30	-.10	.14	.56	.44	.37	-.02	-.03	.05	—	.72	.72	.00	-.21	-.08	-.03	-.15	-.06	-.39	.34
16. Emdem2	.15	.26	.17	.25	.23	.27	-.18	.24	.49	.57	.50	.00	-.08	.13	.73	—	.79	.08	-.05	-.05	-.22	-.23	-.26	-.31	.28
17. Emdem3	.12	.20	.11	.29	.21	.22	-.17	.18	.39	.40	.50	.05	-.04	.07	.63	.68	—	.22	.04	.11	-.08	-.19	-.13	-.27	.24
18. Socsup1	-.22	-.12	-.12	-.06	-.05	-.10	-.16	.10	.00	.08	.07	.18	.09	.05	.07	.11	.15	—	.53	.58	.29	.19	.15	-.01	.11
19. Socsup2	-.15	-.22	-.12	-.07	-.07	-.14	-.07	.11	.02	.06	.04	.06	.12	.11	.06	.19	.14	.55	—	.64	.21	.39	.23	.04	.01
20. Socsup3	-.25	-.29	-.37	.00	-.10	-.23	-.21	.12	.00	-.02	-.09	.03	.00	.15	.09	.14	.11	.54	.57	—	.26	.33	.36	-.05	.23
21. Partdec1	-.18	-.18	-.17	-.05	-.10	-.15	.11	-.19	-.08	.01	-.03	.53	.43	.38	.17	-.18	-.14	.40	.29	.21	—	.73	.70	-.35	.23
22. Partdec2	-.14	-.20	-.12	-.02	-.10	-.13	.18	-.15	-.01	.01	.00	.42	.52	.42	-.15	-.10	-.10	.29	.45	.25	.70	—	.73	-.33	.25
23. Partdec3	-.10	-.19	-.36	.01	-.09	-.21	.03	-.15	.07	.11	-.06	.44	.39	.50	-.09	.00	-.07	.18	.30	.44	.62	.66	—	-.41	.27
24. Rtass	-.16	-.03	.02	-.15	-.07	.02	-.06	-.01	-.51	-.51	-.40	-.41	-.43	-.59	-.32	-.37	-.33	-.11	-.14	-.07	-.25	-.25	-.36	—	-.76
25. Nurse	.15	.06	.03	.10	.02	-.07	-.16	.27	.49	.50	.35	.27	.33	.48	.32	.41	.33	.15	.17	.18	.13	.16	.22	.22	-.77

Note. Correlations above the diagonal: experimental wards; correlations below the diagonal: control wards. Because of varying sample sizes, significance levels differ. Emotex = emotional exhaustion; Depers = depersonalization; Wrkld = work load (quantitative job demands); Jobcon = job control; Emdem = emotional demands; Socsup = social support; Partdec = participation in decision making; Rtass = radiotherapy assistant; numbers refer to occasions (Time 1, Time 2, Time 3).

Table 4
Multilevel Models for Development Over Time and Effect of Intervention

Variable	Outcome variable					
	Emotional exhaustion			Depersonalization		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Intercept	1.47*	0.07		0.87*	0.05	
Time and intervention						
Experimental group	-0.09	0.12	.05	-0.10	0.09	.07
Time 2	0.24*	0.05	.12	0.14*	0.08	.10
Time 3	0.20*	0.05	.09	0.08*	0.04	.05
Experimental Group \times Time 2	-0.23*	0.08	-.07	-0.12*	0.06	-.06
Experimental Group \times Time 3	-0.15*	0.08	-.05	-0.02	0.07	-.02
Variance components						
Ward	0.04	0.02		0.02	0.01	
Individual	0.49*	0.04		0.25*	0.02	
Occasion	0.27*	0.02		0.17*	0.01	

* $p < .05$.

As already mentioned in the introduction, the first part of the present project consisted of a nationwide, questionnaire-based survey (Le Blanc & Schaufeli, 2003). In the Netherlands, almost all oncology care providers are affiliated with a professional association. A random sample of 1,585 members of the five Dutch associations of oncology care providers (nurses, physicians, and radiotherapy assistants) received an extensive questionnaire on their work and well-being at their home address. In total, 52% of these care providers filled out the questionnaire, which resulted in a national database of 816 oncology care providers. In the absence of nationally representative data, we used the results of this survey as a benchmark for the level of job demands and support in the present sample.² Comparison of the mean scores of our study sample on the two demand variables and on the support variable with the mean scores of the nationwide sample of 816 oncology care providers, by means of *t* tests, showed that the present study sample had significantly higher mean scores on quantitative demands, $t(1446.95) = -2.41$, $p < .05$ ($d = 0.12$), and support, $t(1473) = -7.58$, $p < .01$ ($d = 0.39$), and significantly lower mean scores on emotional demands, $t(1470.98) = 7.88$, $p < .01$ ($d = 0.41$), at the first measurement (T1) than did the benchmarking group. Thus, at the start of the project, the staff of the participating wards experienced comparatively high quantitative job demands and support and comparatively low emotional job demands.

Both outcome variables, exhaustion and depersonalization, showed a significant variance component at each of the three levels. In general, there was little variation among wards (5% for both exhaustion and depersonalization). For both outcome variables, the variance associated with individuals (61% and 57%, respectively) was larger than the variance associated with measurement occasions (34% and 39%, respectively). Thus, there appeared to be considerable intraindividual stability for exhaustion and depersonalization. This stability also was evident when we inspected the pairwise correlations between the outcome variables over the three measurement occasions, which varied between .65 and .70.

The three measurement occasions were coded with two dummy variables for the second and third measurements, which made the

first measurement the reference category. In addition, the intervention (i.e., experimental) group was coded with a dummy variable, with the control group as the reference category. In this configuration, the intercept refers to the expected overall outcome at the first measurement (T1), which was before the intervention, and T2 and T3 refer to the expected overall outcome at the second and third measurements, respectively, which occurred after the intervention. Furthermore, the interactions of the experimental group with the T2 and T3 dummy variables (i.e., Experimental Group \times T2, Experimental Group \times T3), which reflect the difference between the experimental group and the control group on T2 and on T3, respectively, were added to the model. Table 4 presents the results. To provide a measure of the size of an effect, we also give the standardized regression coefficients (cf. Cohen, 1988).

At T2, the interactions reflecting the difference between the experimental group and the control group were significant for both emotional exhaustion and depersonalization. Six months later, at T3, this difference was still significant for emotional exhaustion. The combined effect of the experimental intervention with the overall change over time can be viewed more directly in a graph. Figure 1 presents the modeled trajectories over time for both outcome variables. At T1, there were no significant differences in either emotional exhaustion or depersonalization between the experimental group and the control group. However, at both T2 and T3, the level of emotional exhaustion was significantly lower in the experimental group than in the control group. At T2, the level of depersonalization was significantly lower in the experimental group than in the control group, but at T3, the difference between the experimental group and the control group had ceased to be significant. The betas were all in the region of .10, which Cohen (1988) defined as small for correlations.

These results imply that Hypothesis 1 is confirmed for emotional exhaustion, whereas it is partly—in the short term only—

² As different scales were used in the nationwide survey to assess job control and participation in decision making, mean scores on these predictor variables could not be compared across these studies.

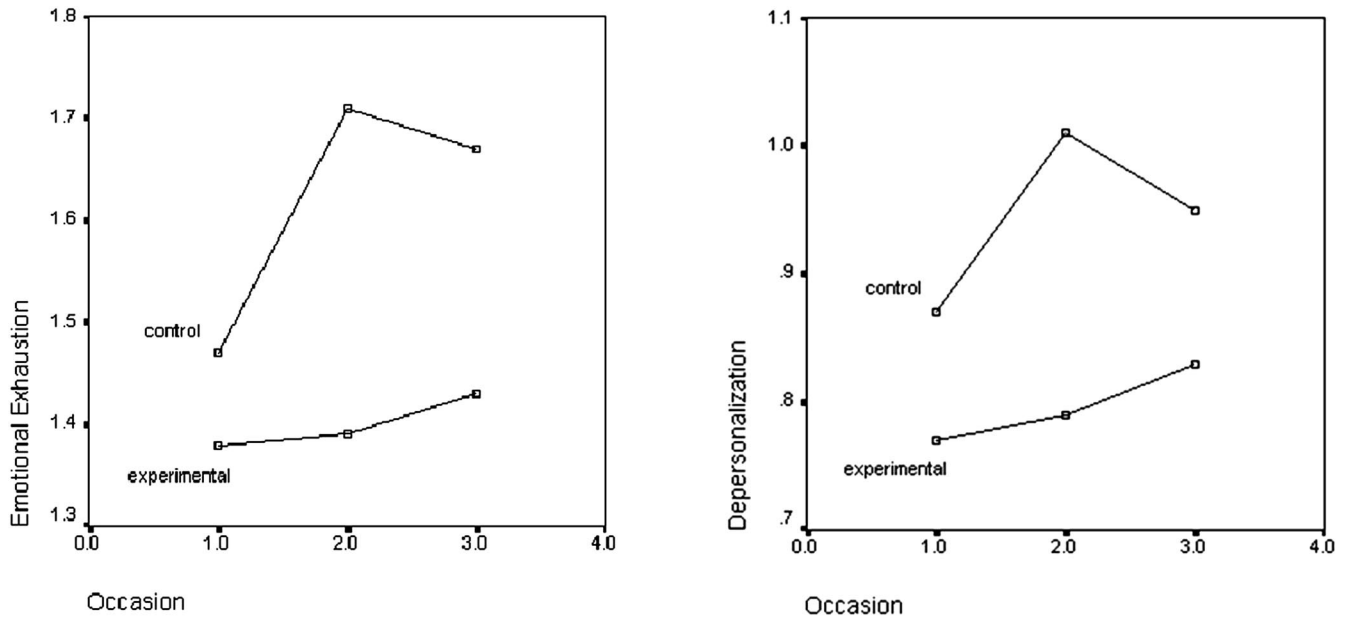


Figure 1. Modeled trajectories over time for each of the outcome variables.

confirmed for depersonalization. However, it should be noted that—compared with the norm scores for Dutch somatic health care providers—at T2 and T3 mean burnout scores still could be classified as average (Category 3) for the experimental group as well as for the control group.

The regression slopes for both dummies of the occasion variable, T2 and T3, showed significant variation across persons but not across wards. Thus, after we took into account the effects of the intervention, there still were differences among individuals in the amount of change in the outcome variables.

To explore the mechanism of change further, we performed detailed multilevel analyses by adding additional predictor variables (demographics and job characteristics) to the model. In this way, we could relate demographics and changes in (the perceptions of) job characteristics to synchronous changes in each of our outcome variables. Two types of predictor variables could be distinguished: time-constant and time-varying ones. *Time-constant variables* are variables that are person-level covariates, such as demographics. The results of our earlier national survey (Le Blanc & Schaufeli, 2003) showed that Dutch oncology care providers' burnout levels varied with age and with working experience in oncology; moreover, we found significant gender differences and differences between occupational groups in mean scores on the two core burnout dimensions. Therefore, we included age at T1, years of working experience in oncology at T1, gender (coded with a dummy variable), and occupational group (physician, nurse, or radiotherapy assistant; coded with two dummy variables) in the model. As time-varying variables, we included the job characteristics (emotional demands, quantitative demands, social support, job control, and participation in decision making) mentioned in the introduction. These job characteristics were observed at all three measurement occasions. Table 5 shows the results of the multilevel regression models when these additional predictor variables were included.

To obtain a parsimonious model and test the robustness of our findings, we repeated the analyses presented in Table 5 using a

step-down analysis in which all nonsignificant regression coefficients were removed except the coefficients involving the experimental manipulation and the trends over time. However, this did not change the results; all variables that were significant in Table 5 remained so in the step-down analysis.

The results presented in Table 5 show that an increase in quantitative demands (workload) between T1 and T3 was significantly related to a synchronous increase in both emotional exhaustion and depersonalization. Furthermore, T1–T3 decreases in both job control and social support were significantly related to synchronous decreases in both outcome variables. An increase in participation in decision making between T1 and T3 was related to a synchronous decrease in feelings of emotional exhaustion but not to a decrease in depersonalization. Effect sizes of all relationships were small, except for the relationship of workload and exhaustion, which was medium to high (Cohen, 1988).

Thus, over time, changes in (the perception of) the key characteristics of our intervention program (support, control, and participation) were significantly and negatively related to changes in individual levels of exhaustion and/or depersonalization. From the results in Table 5, it can be concluded that Hypothesis 2 is completely confirmed for emotional exhaustion and partly confirmed for depersonalization. Moreover, changes in (the perception of) quantitative demands were significantly, positively related to changes in individual burnout levels over time, whereas changes in (the perception of) emotional demands were unrelated to changes in individual burnout levels. Hypothesis 3 is, therefore, confirmed for quantitative job demands (workload) but not for emotional job demands.

Finally, some evaluative information was gathered among the participants of the Take Care! training. It appeared that, in total, all members of the experimental wards who participated in the second measurement ($n = 231$) filled out the evaluative questions on the Take Care! training program. The quality of the training program was rated as very good: the team counselors ($M = 4.2$, $SD = 0.80$),

Table 5
Multilevel Model for Development Over Time, Effect of Intervention, and Time-Constant and Time-Varying Covariates

Variable	Outcome variable					
	Emotional exhaustion			Depersonalization		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Intercept	1.14*	0.31		0.76*	0.25	
Time and intervention						
Experimental group	0.14	0.08	.07	0.10	0.07	.07
Time 2	0.18*	0.05	.04	0.12*	0.04	.08
Time 3	0.14*	0.04	.06	0.06	0.04	.04
Experimental Group \times Time 2	-0.16*	0.08	-.05	-0.08	0.06	-.04
Experimental Group \times Time 3	-0.18*	0.08	-.05	-0.03	0.07	-.01
Time varying						
Workload	0.47*	0.04	.41	0.23*	0.03	.28
Emotional demands	-0.03	0.04	-.02	0.06	0.03	.06
Job control	-0.08*	0.03	-.07	-0.11*	0.03	-.13
Social support	-0.18*	0.04	-.12	-0.06*	0.03	-.06
Participation in decision making	-0.16*	0.05	-.09	0.00	0.04	.00
Time invariant						
Age	0.01*	0.01	.09	0.00	0.00	.03
Gender	0.01	0.07	.00	-0.05	0.05	-.04
Work experience	0.00	0.00	-.03	0.00	0.00	-.02
Occupation: rt. assist.	0.14	0.11	.08	-0.05	0.09	-.04
Occupation: nurse	0.00	0.11	.00	-0.15	0.09	-.12
Variance component						
Ward level						
Intercept	0.01	0.01		0.01	0.01	
Individual level						
Intercept	0.53	0.03		0.33	0.02	
Time 2	0.52	0.04		0.35	0.03	
Time 3	0.44	0.04		0.35	0.03	

Note. Rt. assist = radiotherapy assistant.

* $p < .05$.

the training manual ($M = 3.5$, $SD = 0.94$), the structure and content of the training program ($M = 4.5$, $SD = 0.79$), and the surplus value of the program ($M = 4.0$, $SD = 0.85$). Moreover, participants were of the opinion that (a) the training addressed topical issues in their working situation ($M = 4.0$, $SD = 0.74$); (b) compared with the situation before the training, job stress was considered more as a shared responsibility of all team members ($M = 4.2$, $SD = 0.88$); and (c) they gained more insight into the development and manifestation of both their own and their colleagues' stress complaints ($M = 3.5$, $SD = 0.76$).

Discussion

The results of the present study provide evidence that a team-based, participatory approach to burnout intervention may have a stabilizing effect on levels of chronic, work-related stress (i.e., burnout). In line with our expectations, care providers in the experimental group felt significantly less exhausted than did care providers in the control group directly after the program ended as well as 6 months later. Whereas the short-term, stabilizing effects of the intervention on levels of exhaustion might be interpreted as a nonspecific "feel-good factor" (Reynolds & Briner, 1994) following the program, this does not apply to the significant difference in exhaustion between the experimental group and the control group, which was still found after 6 months. Also, for the second

component of burnout, depersonalization, a significant difference between the experimental and control groups was found, such that incumbents of the experimental group experienced lower levels of depersonalization than did the members of the control group at T2. Six months later, at T3, this significant difference between the two groups had disappeared. However, closer inspection of Figure 1 makes clear that the latter finding can be attributed, for the greater part, to a decrease in depersonalization in the control group between T2 and T3 rather than to an increase in depersonalization in the experimental group during the same period. Nevertheless, previous studies on the effects of multifaceted burnout workshops also showed that they are especially effective in reducing levels of emotional exhaustion, even across relatively long periods of time (see Schaufeli & Enzmann, 1998, for an overview). Most of these workshops focused on reducing arousal—for example, by addressing (the perception of) job demands—thereby preventing further energy depletion or exhaustion. In contrast, our intervention program also addressed (the perception of) job resources—such as job control and within-team interpersonal support relationships—which have been found to be related to motivational outcome measures, such as depersonalization (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

Our results also show that, over time, changes in (the perception of) key job characteristics—the most notable being quantitative

job demands, job control, and social support—were significantly related to changes in burnout levels. This finding is in line with Johnson and Hall's (1988) well-known demand-control support model. Moreover, the significant, synchronous relationships of changes in (perceived) support with changes in both burnout dimensions underline the usefulness of a team-based approach to burnout intervention. Even though in some of the experimental wards participation rates were not 100%, more than three quarters of the staff in each of these wards attended the training sessions. In our view, this guarantees a quite comparable impact of the training program across experimental wards as far as staff involvement is concerned. Moreover, as the outcomes that resulted from the training program were implemented on the team (i.e., ward) level, the training program also, inevitably, affected the work situation of those staff members who did not actively participate in the training program itself.

In addition, these results lend support to the effectiveness of a participatory approach, as changes in participation in decision making were significantly related to synchronous changes in feelings of exhaustion. Previous studies by Mikkelsen and colleagues (Mikkelsen et al., 2000; Mikkelsen and Gunderson, 2003; Mikkelsen & Saksvik, 1999) have shown that participatory organizational interventions may have positive effects on perceived job stress and subjective health. To our surprise and contrary to our expectations, we did not find significant relationships between changes in patient-related emotional demands and changes in oncology care providers' burnout levels over time. Apparently, burnout is more strongly related to general types of job stressors than to occupation-specific ones. Some previous studies (e.g., Peeters, Schaufeli, & Buunk, 1995; Van der Ploeg & Kleber, 2004) also found that stressors that are typical for a profession (e.g., dealing with survivors of accidents for policemen or ambulance workers) were appraised as least significant. Workers seem to expect a certain type of stressor to be indissolubly connected with their profession, and, as a result of this, they habituate to these particular stressors and do not perceive them to be very significant. One could expect a similar process for oncology care providers with respect to patient-related emotional demands. An alternative explanation could be the two-sided nature of the patient-provider relationship: In oncology, the relationship with patients can be emotionally demanding, for reasons that are described in the introduction of this article, yet rewarding because of the closeness, gratitude, and respect of patients and their families. According to Siegel (1986), these rewarding aspects are essential for maintaining emotional vitality in high-risk burnout conditions. He argued that care providers need to be taught a rational concern, which allows the expression of feelings without impairing the ability to make decisions, instead of a detached concern. Care providers who never learn to relate to and talk with their patients will end up feeling like lonely "mechanics." In contrast, those who open up to their patients, accept them as individuals with choices and options, and share with them on an emotional level will become privileged listeners. In addition to being more fulfilling, this latter role also will make them more willing and able to respond to patients' needs.

Finally, we emphasize that the evaluation of Take Care! concerns the effectiveness of the training program as a whole. Take Care! should be considered as a systematic and stepwise approach to burnout intervention, in which the different parts of the program are not randomly presented and discussed but build on each other to jointly produce the intended effects on workers' well-being. In

other words, effects that are found are tied to the program as a whole, including the order of presentation of the different parts of the program.

To date, there still are only a handful of well-designed, quantitative studies assessing the effectiveness of burnout intervention programs. The design of the present study is especially suitable for assessment of the effects of the Take Care! program on oncology care providers' burnout levels. First, the three measurement occasions enabled a thorough examination of both short-term and long-term effects of the training program. Moreover, our study included an adequate control group: The experimental (intervention) and control groups performed the same kind of work within the same medical setting. Second, wards were randomly assigned to the experimental group, and the principles of the intervention were standardized. Although, in line with PAR philosophy, the specific kinds of stressors that were discussed and dealt with during the training sessions were determined by the participants themselves and could, therefore, vary among the different experimental wards, some common themes could be identified (e.g., balancing between managing a high workload and giving quality time to patients, building a work site support network and using this as a feedback mechanism). Third, our data were analyzed by means of a sophisticated statistical method—multilevel regression analysis—that is very appropriate for this type of longitudinal study because it deals effectively with missing values.

The strength of the Take Care! program is supported by the fact that we found significant intervention effects even when we evaluated it as if it were some form of treatment. We tended to look for changes in measures of psychological well-being following our program, in spite of the fact that there is no reason to assume that a preventive intervention such as Take Care! will, in itself, produce immediate health benefits. As Briner (1997) argued, stress management training can be effective if (perceptions of) those aspects of the job environment that are addressed by this intervention are actually the cause of lowered psychological well-being among many employees. Results of our nationwide survey among Dutch oncology care providers (Le Blanc & Schaufeli, 2003) underline the relevance of the job characteristics that were targeted by the Take Care! program (and are included in this study) for workers in oncology.

However, clinically speaking, mean burnout scores for the experimental group as well as the control group were still average (Category 3) at both T2 and T3, whereas the absolute differences (in terms of *d* values) between the groups were only small. Therefore, in spite of the consistent and statistically significant differences between the groups, some may be tempted to argue that the practical relevance of our intervention is low. We disagree with this position in several respects. First, our findings are important in that they support the notion that a well-developed team-based intervention is, in principle, appropriate for lowering the risk of burnout among the members of these teams. Second, our findings show that to obtain these effects, even a relatively low-cost and undemanding intervention is sufficient. In this sense, we consider our findings as promising, in that we believe that counselors can enhance the practical significance of the intervention by intensifying the intervention—for example, by increasing the number of sessions and adding so-called booster sessions as a follow-up to the main part of the program. Third, it should be noted that even at the start of our study, levels of burnout were only moderate in this population, which is not surprising considering the fact that we

were dealing with a nonclinical sample of workers. In the absence of high levels of burnout, it is difficult for the intervention to result in a strong decrease in burnout. Indeed, given that our intervention already had a stabilizing effect on feelings of burnout in the current sample, one might expect much stronger effects (i.e., decreases) in samples of participants who suffer severely from burnout. On the basis of this reasoning, it seems fair to conclude that our findings are also important from a substantive point of view.

One limitation of this study is the fact that the attrition rate over time was high, especially at T2. Nonresponse is a well-known problem in longitudinal survey research in general (Taris, 2000). Therefore, in the present study, we tried to reduce its detrimental impact as much as possible by using a method of data analysis that enabled us to include observations with incomplete data (i.e., multilevel regression analysis). The fact that the response rate dropped significantly at T2 probably can be explained by the timing of this measurement (i.e., in June, almost at the start of the summer holidays). Because of this fact, participants might not have had the time (or the motivation) to fill out our quite lengthy questionnaire at that particular moment (perhaps some of them even had left on holidays already). In contrast, the T3 questionnaire was distributed among the participants during a regular working period, in the beginning of December (i.e., well before the Christmas holidays). Therefore, participants might have had more time and a higher motivation to fill out the questionnaire at this specific occasion, which might also explain why some participants dropped out for T2 but again participated for T3. Moreover, even though the attrition problem in this study is serious, it is about the same size as the attrition in comparable studies that have used PAR approaches to stress management. In Landsbergis and Vivona-Vaughan's (1995) study, the attrition rate between the two measurements was almost 30%, whereas in Mikkelsen et al.'s (2000) study, the response rate at Posttest 2 (i.e., third measurement) was only 20% of the original sample in their experimental group and even lower in their control group (in fact, the response rate in the latter group was too low for inclusion of the respective data in the analyses). Finally, the study by Van Dierendonck et al. (1998), which is comparable to ours in regards to the aim of the intervention (burnout reduction) and the time lags between the three measurements (6 months), showed an attrition rate of 41% between T1 and T2, which is almost equal to the attrition rate in our study (43%).

A second limitation of this study is that no objective (i.e., non-self-report) outcome measures were included. Unfortunately, we were unable to obtain objective measures of health status and objective measures of organizational outcomes because of a lack of resources and privacy restrictions. Of course, questionnaires are useful for obtaining information on employee perceptions and attitudes from large numbers of workers, and they can be administered easily at later points in time to assess changes and to detect emerging trends (Murphy, 1995). However, self-reports are also known to be influenced by many other factors that have nothing to do with objective job conditions (Spector, 1992) or well-being in an organic or clinical sense (Coyne, 1994; Pennebaker, 1982)—for example, current affective state (Salovey, O'Leary, Stretton, Fishkin, & Drake, 1991) and individual differences (M. J. Burke, Brief, & George, 1993). Moreover, they carry the risk of inflated relationships between job characteristics and well-being because of common method variance. In addition, we did not monitor or control for organizational factors (e.g., general policies regarding

working conditions) or macroeconomic factors (Landsbergis & Vivona-Vaughan, 1995).

Also, restriction of the intervention to the ward level rather than the hospital-wide level might have resulted in fewer substantive changes. Another factor that might have affected our findings is interaction of the experimental (training) and control groups, which cannot be ruled out completely for those five control wards that were in the same hospital as one of the experimental wards. However, this only applies to a minority (25%) of the total of 20 control wards that participated in this study. Moreover, the constellation of job perceptions, the selection of key issues, and the ways of discussing and dealing with these issues is inextricably bound up with the team dynamics of each ward. Therefore, different wards (i.e., teams), even if from the same organization, may have different and unique ways of perceiving, prioritizing, and dealing with work-related issues. In addition, as members of those five control wards did not receive any training and were, therefore, not able to design and practice a team-based approach to deal with work-related issues, we expect that potential interaction between members of experimental and control wards had negligible effects and did not lead to confounding. Finally, as participation in the survey and training program was voluntary, selection bias is a potential threat to the internal validity of our findings.

In conclusion, this study demonstrates that shared responsibility for the quality of the working environment and mutual support are effective means of maintaining staff morale among professionals working in highly demanding, specialized occupations. By means of a relatively brief, team-based intervention program, we could influence not only the stress component of burnout (emotional exhaustion) but also its motivational component (depersonalization). This, again, underlines the importance of social resources for the success of a burnout intervention program, which also was emphasized by Cooley and Yovanoff (1996). As burnout might reduce professionals' ability to use the special capabilities that have taken years of training to develop (Flint Sparks, 1989), "intensive care" for the well-being and retention of these workers is of vital importance from an organizational perspective.

From a practical point of view, the high voluntary participation rate in the experimental wards (i.e., 80%–100% of staff) provides strong evidence for the acceptance of the Take Care! program by the participants. Moreover, the evaluation of the method and content of the training program, which was included in the T2 questionnaire, showed that participants were of the opinion that the Take Care! training was of high quality, addressing topical issues in their working situation and making them a team's shared responsibility. We feel that the participatory (project) approach that is described in this article may be suitable not only for stress management interventions but also for other types of collective engagement and/or problem solving within organizations. Of course, its usefulness is not restricted to hospitals or other types of health care institutions but can be extended to all different kinds of organizations in which people perform some kind of teamwork and are willing to take collective responsibility to optimize their working situation. Moreover, the framework also can be used to address problems other than (mental) health-related problems.

Finally, besides being of use for interventions at the macro level (i.e., team and work group), this approach also may work at the micro level (i.e., for individual workers with stress complaints). The framework that is used in the present study can assist indi-

vidual workers, too, in structuring their thoughts and feelings and in making personal plans to come to grips with major job stressors. Some empirical evidence for this claim has already been provided by Salmela-Aro, Nataanen, & Nurmi (2004). They showed that two types of psychotherapeutic interventions were able to cause major changes in participants' so-called work-related personal projects (i.e., changes in project-related emotions and action tendencies and in project-related progress). In turn, over time, a reduction in negative emotions related to these personal projects was found to be related to a decrease in burnout levels. We consider these results as indicative of the usefulness of our approach at different organizational levels.

Future research should address the effects of our promising approach to burnout intervention on nonperceptual individual and organizational outcomes, such as objective health indicators, registered absenteeism, and turnover. Theoretically speaking, various job characteristics are known to have differential and specific relationships with aspects of well-being. The results of this study underline that, to be effective, interventions should target those job characteristics that are theoretically known to be related to the specific outcome variable (i.e., aspect of well-being) at hand. In addition, future studies should take a more detailed look at the psychological processes through which the Take Care! program affects workers' burnout levels (cf. Maslach & Leiter, 1999). Next, researchers could study the effects of structural, psychological, and process factors (derived from the literature on work group innovation; e.g., Anderson, 1992) and of more general contextual and sociocognitive factors (derived from the group dynamics and organizational change literature) on the implementation of Take Care! (cf. Nytrø, Saksvik, Mikkelsen, Bohle & Quinlan, 2000; Saksvik, Nytrø, Dahl-Jørgensen, & Mikkelsen, 2002). Factors that may be of interest are organizational climate, culture and identity, group composition, employee voice and empowerment, procedural fairness, trust, and the definition of roles and responsibilities. The ultimate challenge is trying to integrate our methodological approach to burnout intervention into a theoretical framework on the development and course of burnout.

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