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The Role of Social and Psychologic Resources in Caregiving of Cancer Patients

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BACKGROUND. The role of social support and personality within the cancer caregiving process has remained a relatively unexplored area. The current longitudinal study examines the main and moderating effects on caregiver experiences and caregiver's depression over time of various social and psychologic resources.

METHODS. Newly diagnosed colorectal carcinoma patients and their partners (N = 148) were included and data were obtained at three measurement points: 2 weeks prior to hospital admission and 3 months and 6 months after discharge. The initial and change scores of the caregiver's negative and positive social interactions and personality attributes (mastery, neuroticism, and extraversion) were included to assess their impact on caregiver experiences and depression over time.

RESULTS. The main effects of social and psychologic resources on caregiver experiences were found to be small to absent. With respect to caregiver depression, both initial scores and changes in neuroticism, mastery, and negative social interactions were shown to have substantial main effects over time. Moreover, daily emotional support and mastery modified the relations between caregiver experiences and caregiver depression. Caregivers with a low level of daily emotional support, as well as those with a low score on mastery and who also perceived caregiving in a more negative way were identified as more depressed over time.

CONCLUSIONS. The results of the current study demonstrate the importance of including various social and psychologic resources in studying the cancer caregiving process. It illustrates the distinctive impact of these resources on the depression of caregivers of patients with cancer, and therefore helps healthcare providers understand why some persons adapt better than others to their caregiving role.

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KEYWORDS: cancer, caregiver experiences, depression, social support, personality.

Cancer adversely affects not only the health of patients but also the health of those who provide care to them. Giving care at home to patients with cancer can be stressful, and may affect long term psychologic health.¹ Previous studies have found that patient problems (e.g., patient's depression) and care aspects (e.g., number of tasks) may influence the caregiver's psychologic health.²⁻⁵ Based on the cognitive stress theory,⁶ these variables can be conceived as contextual stressors whereas individual experiences of providing care in addition have been distinguished in caregiving models as variables influencing a caregiver's psychologic health.^{3,7,8} One central question remains concerning why some caregivers become distressed whereas others are less distressed under similar caregiving situations. The availability of certain social and psychologic resources may play a crucial role in the caregiver's decision to continue giving care at home, thus codetermining the well-being of patients.⁸⁻¹⁰ However, to our knowledge, longitudinal research examining the role of these

resources is scarce, and this type of research regarding the cancer caregiving process over time is practically absent. In the current study, the role of social support and personality characteristics on caregiver experiences and depression was examined among caregivers of patients with cancer over a period of 6 months after discharge.

A positive effect of social support generally has been acknowledged and supported by previous research.¹¹ Social support can be of particular significance for persons in a stressful situation such as the caregiving situation because it may serve to maintain, protect, and improve health.¹² Although to our knowledge the exact pathways linking social support to caregiver outcomes are not yet completely clear, two mechanisms are widely discussed in the literature: the main and the moderating effect of social support.^{9,10} Social support may have a main, beneficial effect on caregiver's depression, regardless of whether individuals are faced with stressful circumstances. Social support also could act as a moderator when it affects caregiver's depression by altering the direction and/or strength of the relation between the stressors and depression.¹³ To our knowledge to date, a leading topic in research concerning the association between social support and caregiver outcomes is determining which types of support are relevant. In general, two main distinctions are made: 1) emotional (e.g., affection, esteem, or companionship) and instrumental support (e.g., advice, practical help, or financial aid)¹¹ and 2) "problem-oriented" and "daily" support.^{14,15} Making a distinction between different types of social support may be important, because it could determine a main or moderating effect.¹⁶ In the absence of certain stressors, daily support, for example, may promote health (main effect), whereas in the presence of stressors, emotional support may be more important (moderating effect).

In addition to social resources, specific psychologic resources (e.g., personality characteristics) also may influence caregiver outcomes.^{17,18} Mastery, neuroticism, and extraversion appear to be central constructs in all trait theories of personality and have been strongly linked, both theoretically and empirically, to health outcomes such as depression, especially during stressful situations.¹⁹⁻²³ Caregivers with greater feelings of mastery and who scored low at neuroticism reported less depression than caregivers with less mastery and higher scores on neuroticism.¹⁹ In addition, extraverted caregivers are assumed to experience more positive effects in caregiving situations, although to our knowledge research findings are less consistent. As is the case with social support, the role of psychologic resources on the caregiver's depression

may be explained through main and moderating effects.

In general, resources typically are regarded as stable characteristics. However, resource stability may not always be assumed, particularly not in a caregiving situation of newly diagnosed patients with a progressive disease such as cancer. For example, with respect to social support, caregivers may become dependent mainly on their care receivers for support because caregiving responsibilities can lead to social isolation.²⁴ Social support exchange between the patient and the partner may be subject to change after diagnosis. Also, with respect to personality characteristics, to our knowledge clear evidence regarding stability is missing. The results of a study on neuroticism and extraversion among family caregivers of dementia patients suggest that stability is supported.²² In contrast, Skaff et al.²¹ reported that even a relatively stable resource such as mastery may be altered in response to conditions in people's lives. To our knowledge, only a study conducted by Goode et al.²⁵ focused specifically on the changing role of resources in caregiver's depression. This study, involving family members of dementia patients, revealed that changes in one domain of the caregiving situation (e.g., changes in patient's depression, number of tasks, or caregiving experiences) produced changes in resource variables and these changes subsequently were observed to be associated with caregiver's depression.²⁵

The current study may provide a number of advantages. To our knowledge, in oncologic studies conducted to date, research regarding social support or personality predominantly involved the patient. Although research findings indicate that resources may play a role (either by having a main effect or by moderation) in caregiver outcomes, little is known regarding their relation to caregiver's depression in the course of cancer. The majority of research concerning resources and caregiving involved family caregivers of patients with mental disorders,^{7,10,22,25} frail elderly,^{26,27} or chronically ill patients.⁹ Although to our knowledge longitudinal oncologic research regarding the effects of resources is scarce, researchers increasingly emphasize the importance of including patients in the early phases of cancer.²⁸⁻³¹ In addition, the majority of studies have focused on the role of either social support or personality, but to our knowledge these concepts rarely have been examined together. Social support and personality generally are treated as separate and unrelated issues. However, each is a resource that can be tapped to alleviate the impact of cancer caregiving on caregiver outcomes, and although social support and personality can be regarded as two distinct phenomena, they may have similar functions in

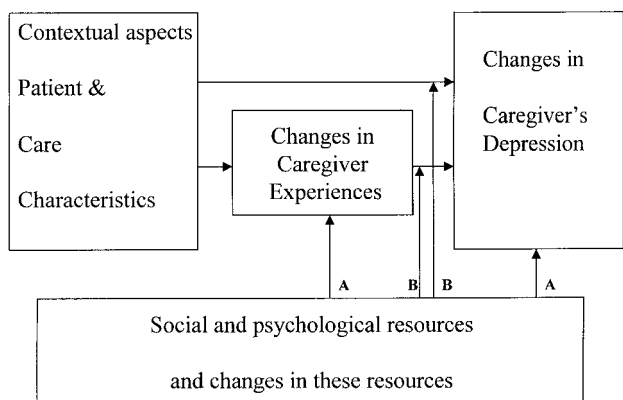


FIGURE 1. Possible mechanisms of social and psychologic resources predicting changes in caregiver outcomes. A: main effects; B: moderating effects.

the caregiving process.¹⁹ In addition, the majority of studies concerning the relation between resources and caregiver outcomes have focused on simple effect models.⁷ Several authors have pointed out that future explanatory research must assess the interactions of multiple variables.^{25,32} Finally, to our knowledge, the majority of previous studies included either social support or personality as a one-dimensional concept. To our knowledge the role of separate dimensions of social support and personality have not been investigated at one time in the caregivers of patients with cancer.

The main purpose of the current study was 2-fold: 1) to explore the main effects of social and psychologic resources on changes in caregiver experiences during a period of 6 months after discharge, and 2) to explore both the main and moderating effects of these factors on changes in caregiver's depression during a period of 6 months after discharge. Both the predictive value of initial scores and changes in scores of resources were examined. Several dimensions of social resources, such as emotional and instrumental support and "problem-oriented" and "daily" support, were included. Psychologic resources were assessed in terms of mastery, neuroticism, and extraversion. Although a number of effects on caregiver outcomes could occur over time, only main effects (path A) and moderating effects (path B) of resources on caregiver outcomes were shown graphically in Figure 1.

MATERIALS AND METHODS

Procedure and Subjects

Longitudinal data from the research project entitled: "CAregiving of Spouses of cancer PATients" (CASPA) were used. This study was conducted in cooperation with 10 hospitals in the Netherlands in the regions of Amsterdam and Groningen, and data were collected at

3 measurement points. Baseline measurement (T0) was assessed retrospectively at 2 weeks before hospital admission. The second measurement (T1) took place 3 months after baseline and the third measurement (T2) occurred again 3 months later (i.e., 6 months after baseline). Patients and partners were interviewed face-to-face by trained research assistants using structured questionnaires and also completed a self-report questionnaire.

Newly diagnosed colorectal carcinoma patients who recently underwent surgery, who had a survival prognosis of at least 6 months, and who lived with a partner were selected by surgeons of the 10 cooperating hospitals. The partner was defined as a relative by marriage or person identified by the patient as partner, and who resided in the patient's household.

Of the 238 eligible cancer patients and caregivers, informed consent was obtained from 181 at the onset of the study, a response rate of 76%. No selective response bias was found between participating patients and nonparticipants with respect to age, gender, diagnosis, and region. Longitudinal data (up to T2) were available for 148 couples (82%). Loss to follow-up occurred for the following reasons: serious illness of the patient (N = 15; 8%), refusal to be available for follow-up (N = 10; 6%), and patient's death (N = 8; 4%).

Patients who were lost to follow-up did not differ from patients who remained in the study with regard to gender, age, diagnosis, duration of symptoms, and mental health. However, the proportion of patients with a stoma was slightly higher among those lost to follow-up ($P < 0.10$) and the level of the patient's dependency also was significantly higher ($P < 0.01$). Patients lost to follow-up also reported more physical symptoms at baseline ($P < 0.05$) than patients who were followed for 6 months. Caregivers of patients who were lost to follow-up did not differ from those who remained in the study with regard to gender, age, and the baseline values of the caregiver experiences.

Measurements

Data were collected regarding the caregiver's contextual aspects (i.e., defined as the level of patient's depression and the number of care tasks), social and psychologic resources, and caregiver experiences and caregiver's depression.

The level of the patient's depression was measured by the 20-item Center for Epidemiologic Studies Depression Scale (CES-D). The CES-D is comprised of a 20-item self-report scale that taps the level of depressive symptoms of the patient during the week preceding hospital admission. Total scores can range from 0–60, with a higher score representing a higher

level of depressive symptoms.³³ Cronbach's α was found to be 0.97.

The number of care tasks was measured for four different types of tasks (i.e., personal tasks and household, organizational tasks, and disease-related tasks). Personal tasks referred to assisting the patient with activities of daily living (11 items), and included assistance with eating, dressing, bathing, and getting in and out of bed. Household chores (seven items) included cooking, laundry, shopping, and housework. Organizational tasks (five items) focused on providing assistance with large expenses, transportation, and providing odd jobs. Disease-related tasks (six items) referred to wound and stoma care, decision-making, and achieving and exchanging information. For each type of task, performance was dichotomized (0 = did not perform specific task; 1 = did perform specific task). With regard to the total number of each type of tasks, a sum score was computed, ranging from 0–4. Cronbach's α was found to be 0.68.

Caregiver's social support was measured by the Social Support List of Interactions (SSL-I) of Van Sonderen.¹⁴ The caregiver was asked to report on the frequency with which specific positive and negative interactions occurred. Positive interaction was comprised of six types of support, which were assessed by the following subscales: Daily Emotional Support (four items [e.g., "cuddle/hug you"]), Problem-Oriented Emotional Support (eight items [e.g., "help you to clarify your problems"]), Esteem Support (six items [e.g., "give you a compliment"]), Instrumental Support (seven items [e.g., "provide you with help in special circumstances, such as illness, moving home, or taking care of the children"]), Social Companionship (five items [e.g., "invite you to a party or to dinner"]), and Informative support (four items [e.g., "let you know what they expect from you"]). One subscale assessed Negative Social Interactions (seven items [e.g., "make disapproving remarks towards you," "blame you for things," and "treat you unjustly"]). The psychometric quality of the subscales was supported in a former study.¹⁴ In the current study, Chronbach's α ranged from 0.63–0.90.

Caregiver's personality characteristics included three indices: mastery, extraversion, and neuroticism. Mastery was measured by the Pearlin Mastery Scale and concerned the extent to which one regards one's life as being under one's own control, in contrast to being ruled by fate.¹⁷ This measurement was comprised of two factors,³⁴ mastery-fatalism (5 items; Chronbach's α = 0.88) and mastery control (2 items; Chronbach's α = 0.55). Sample items include "I have little control over the things that happen to me" (mastery-fatalism) and "I can do just about anything I

really set my mind to do" (mastery-control). All items could be answered on a scale ranging from 1 (strongly agree) to 5 (strongly disagree). The mean scores of both factors were computed, with higher scores indicating greater feelings of mastery. Because internal consistency of mastery control was doubtful, this subscale was excluded from further analyses. Extraversion and neuroticism were measured by two subscales of the Dutch version of the Eysenck Personality Questionnaire (EPQ).^{35,36} The typical extravert is sociable, likes parties, has many friends, and needs to have people to talk to, whereas the typical introvert is a quiet, retiring sort of person who tends to be reserved and distant except to intimate friends. With regard to neuroticism, a person with a high score is likely to be anxious, moody, and frequently depressed.³⁷ Both the extraversion and neuroticism scales included 12 items and their total scores could range from 0–12, with a higher score indicating a greater amount of the attribute. Chronbach's α was found to be 0.89 and 0.85, respectively.

Caregiver experiences were measured by two subscales of the Caregiver Reaction Assessment Scale (CRA) by Given et al.,³⁸ including a negative and a positive dimension. These subscales were selected for the current study on the basis of previous research.³⁹ The subscale "disrupted schedule" (five items) measured the extent to which caregiving interrupted the usual activities of the caregiver (e.g., "My activities are centered around the care for my partner," and "I have to stop in the middle of my work or activities to provide care."). The subscale "caregiver's care-derived self-esteem" (seven items) attempted to measure the extent to which caregiving contributed to individual self-esteem. Examples of this subscale include "Caring for my partner is important to me," and "Caring for my partner makes me feel good."

Respondents were asked to rate the perceived impact of caregiving on each of the items on a five-point Likert-scale. For both subscales, a total score was computed reflecting the mean item-score, with a theoretic range of 1.00–5.00. A higher score represented a greater amount of the attribute. The subscales of the CRA were shown to be reliable (Chronbach's α coefficients ranged from 0.73–0.84), valid, and responsive over time.^{38,40}

Caregiver's depression was measured by the CES-D and Chronbach α was found to be 0.90.

Analyses

First, descriptive statistics were computed for all variables, and associations between patient and care characteristics, social support, personality, and caregiver experiences and caregiver's depression at the initial

measurement point were examined using partial correlation coefficients ($P < 0.01$). Because gender, age, and income all were shown to be related to caregiver outcomes, adjustment was made with respect to these three variables when calculating the partial correlation coefficients.

Second, hierarchical multiple regression analyses were performed to test the main effects of social and psychological resources on caregiver experiences and depression, respectively. To examine the effects on these outcomes 6 months after discharge, baseline scores were used as initial predictors (Step 1). Because we also were interested in how changes in resource variables affect caregiver outcomes, two types of scores were included in the equations: the initial level and the change score of the resource variables (Step 2). Changes were defined as the differences between T0 and T2. Positive values of these change factors stand for an increase in the referring aspect over time, whereas negative values refer to a decrease over time. Only significant factors were presented in the tables. To test the main effects of social and psychological resources on changes in caregiver experience, the regression models were comprised of two sets of variables: 1) initial caregiver experiences and the initial patient's depression and number of care tasks, and 2) initial scores and change scores of either social or psychological resources. Because social and psychological resources were considered to be separate constructs, these concepts were examined in separate models. To test the main effects on caregiver's depression, initial caregiver's depression and caregiver experiences were added to the first set of variables in the regression models.

Third, to test moderator effects of social and psychological resources on caregiver's depression, interaction terms (i.e., social support or personality characteristics combined with contextual characteristics [i.e., initial scores on patient's depression and number of tasks, and caregiver experiences]) were added separately to the regression equations. To minimize multicollinearity that could be introduced in a regression equation by an interaction term, the interaction terms were centered (i.e., deviation scores from the mean were used instead of raw scores).⁴¹ Only the significant interactions were reported.

RESULTS

Sample Characteristics

The final sample of patients and caregivers for whom complete data were available for all 3 waves was comprised of 148 dyads. The majority of patients (96 patients; 65%) were diagnosed with colon carcinoma whereas 52 patients (35%) were diagnosed with rectal

TABLE 1
Description of the Variables Under Study (N = 148): Mean and SD at Baseline (T0) and 6 Months after Hospital Discharge (T2)

	T0		T2	
	M	SD	M	SD
Contextual characteristics				
Patient's depression	13.06	10.50	8.71	8.40
No. of tasks	2.41	0.90	2.20	0.71
Social and psychological resources				
Daily Emotional Support	9.72	2.66	8.93	2.59
Problem-Oriented Emotional Support	18.04	5.16	15.16	4.64
Esteem Support	13.34	3.43	12.49	3.47
Instrumental Support	11.59	2.86	10.97	2.72
Social Companionship	11.22	2.94	10.82	2.75
Informative Support	6.91	2.05	6.49	2.04
Negative Social Interactions	8.34	2.16	8.26	2.28
Mastery-Fatalism (reversed score)	18.14	4.42	18.25	4.05
Extraversion	6.78	3.34	6.68	3.36
Neuroticism	3.96	3.61	3.99	3.63
Caregiver's experiences				
Disrupted schedule	2.42	0.83	1.98	0.73
Care-derived self-esteem	4.21	0.41	4.13	0.43
Caregiver's depression	13.79	9.37	9.04	8.34

SD: standard deviation; M: mean.

carcinoma. Thirty-three percent of all patients had a stroma. The mean duration of symptoms was 12.5 months (standard deviation [SD] = 43.3 years). The caregiver group was comprised of 54 men and 94 women ranging in age from 25–89 years (mean age, 63 years; SD = 11 years). Thirty-eight percent ($n = 26$) of the caregivers reported a low income (i.e., $\leq 40,000$ Hfl), 51% ($N = 34$) reported a middle income (40,000–60,000 Hfl), and 28% ($n = 28$) reported a high income ($\geq 60,000$ Hfl). For 22% ($n = 31$) income was unknown. For 31% of the sample ($n = 21$) the income was not known. Thirty caregivers (20%) had achieved an educational level of low primary school, 85 caregivers (57%) had lower secondary schooling or intermediate vocational schooling, and 33 (23%) had higher vocational schooling or university. The majority of couples (89%) had children, and 18% of all couples lived with their children at home. Table 1 provides a description of all the variables under study at baseline and 6 months after baseline.

Partial Correlations among Major Study Variables at Baseline

Table 2 presents the partial correlation coefficients ($P < 0.01$) adjusted for gender, age, and income between the major study variables at baseline (T0). With respect to initial scores on caregiver experiences, daily

TABLE 2
Partial Correlations between Initial Patient's Depression, Number of Care Tasks, Social Support, Personality Characteristics, Caregiver Experiences (i.e., Disrupted Schedule and Care-Derived Self-Esteem), and Caregiver's Depression (N = 148)^a

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Patient's depression														
2 No. of care tasks	0.03													
3 DES	-0.05	0.12												
4 PES	-0.07	0.01	0.69 ^b											
5 ES	-0.04	0.05	0.56 ^b	0.55 ^b										
6 ISS	-0.03	0.05	0.53 ^b	0.56 ^b	0.45 ^b									
7 SC	-0.16	0.02	0.63 ^b	0.54 ^b	0.59 ^b	0.54 ^b								
8 Inf	0.08	-0.04	0.37 ^b	0.49 ^b	0.46 ^b	0.49 ^b	0.36 ^b							
9 NSI	0.14	0.02	-0.16	-0.03	-0.05	-0.03	-0.20 ^c	0.15 ^c						
10 Mas F	-0.09	0.03	0.31 ^b	0.03	0.26 ^d	0.07	0.21 ^c	0.13	-0.37 ^b					
11 Extraversion	-0.03	0.06	0.32 ^b	0.25 ^d	0.37 ^b	0.08	0.41 ^b	0.10	-0.12	0.17				
12 Neuroticism	0.08	0.01	-0.34 ^b	0.06	-0.13	-0.09	-0.26 ^d	0.09	0.36 ^b	-0.55 ^b	-0.18 ^c			
13 Disrupted schedule	0.13	0.27 ^b	0.06	0.08	0.13	0.18 ^c	-0.11	0.05	0.01	-0.03	0.13	-0.01		
14 Care-derived self-esteem	-0.08	0.02	0.24 ^d	0.13	0.05	0.11	0.15	-0.08	-0.14	0.12	0.10	-0.18 ^c	-0.07	
15 Depression	0.22 ^d	0.05	-0.14	0.23 ^d	0.02	0.11	-0.14	0.13	0.24 ^d	-0.44 ^b	-0.04	0.56 ^b	0.13	-0.01

DES: Daily Emotional Support; PES: Problem Oriented Emotional Support; ES: Esteem Support; ISS: Instrumental Support; SC: Social Companionship; Inf: Informative Support; NSI: Negative Social Interactions; Mas F: Mastery-Fatalism (reversed score).

^a Correlations adjusted for gender, age, and income.

^b $P < 0.001$.

^c $P < 0.05$.

^d $P < 0.01$.

emotional support was found to be correlated positively with increased levels of care-derived self-esteem (correlation coefficient [r] = 0.24). Initial caregiver's depression was correlated strongly with mastery and neuroticism in the expected directions (with partial correlations ranging from -0.44 to 0.56). Higher scores on problem-oriented emotional support and negative social interactions were found to correlate to a lesser extent with caregiver's depression (i.e., 0.23 and 0.24, respectively). In addition, all personality characteristics were observed to be correlated significantly with social support variables, in particular with daily emotional support, social companionship, and negative interactions.

Main Effects of Social Resources on Caregiver Experiences and Depression

Table 3 shows the results of the regression analyses, presenting the significant main effects of (changes in) social support on caregiver experiences and caregiver's depression, respectively. With respect to negative caregiver experiences, only initial perceived impact on disrupted schedule contributed significantly to variances in caregiver's schedule 6 months after discharge ($\beta = 0.19$) and no additional significant main effect of social support was observed. With respect to positive caregiver experiences, the initial scores on care-derived self-esteem ($\beta = 0.57$) and changes in informa-

tive support ($\beta = 0.10$) were shown to be correlated positively with the caregiver's care-derived self-esteem 6 months after discharge.

Results from the analyses predicting caregiver's depression over time revealed that initial depression together with patient's depression, number of tasks, and caregiver experiences accounted for approximately 39% of the variances in caregiver's depression 6 months after discharge. Negative interactions and changes in this type of interaction were associated with more depression over time and contributed an additional 11% to the variances in caregiver's depression ($\beta = 0.44$ and 0.28, respectively). Emotional support, in terms of social companionship, contributed slightly but significantly to caregiver's depression over time ($\beta = -0.17$).

Main Effects of Psychologic Resources on Caregiver Outcomes

Table 4 presents the significant main effects of initial scores and change scores for caregiver's personality characteristics based on their experiences and level of depression 6 months after discharge. No main effects of any of the personality characteristics were observed on changes in negative caregiver experiences. For positive caregiver experiences, less mastery over time was observed to be related significantly to decreasing levels of care-derived self-esteem over time ($\beta = -0.21$).

TABLE 3
The Main Effects of Initial Scores of and Changes in Social Support on Caregiver Outcomes (i.e., Caregiver Experiences and Depression) over a 6-Month Period after Discharge (N = 148)^a

Care situation and social support	Caregiver outcomes at T2			
	Disrupted schedule	Care-derived self-esteem	Caregiver's depression	
Step 1 (T0)				
Initial caregiver outcome	0.19 ^b	0.57 ^c	0.49 ^c	0.58 ^c
Patient's depression	-0.01	0.01	0.10	0.10
No. of care tasks	0.07	-0.05	-0.11	-0.09
Disrupted schedule			-0.07	-0.04
Care-derived self-esteem			-0.23 ^c	-0.24 ^c
Adjusted R ²	0.05	0.33	0.39	0.39
Step 2a (T0-T2)				
Informative support		0.04		
Δ Informative support		0.10 ^d		
Change in R ²		0.01		
Step 2a (T0-T2)				
Informative support		0.04		
Δ Informative support		0.10 ^d		
Change in R ²		0.01		
Step 2b (T0-T2)				
Negative interactions			0.44 ^c	
Δ Negative interactions			0.28 ^c	
Change in R ²			0.13	
Step 2c (T0-T2)				
Social companionship				-0.17 ^b
Δ Social companionship				-0.10 ^d
Change in R ²				0.02
Total explained variance	5%	34%	52%	41%

R²: adjusted variance.

^a Hierarchical regression analyses with final adjusted β weights and adjusted variances.

^b $P < 0.05$.

^c $P < 0.001$.

^d $P < 0.10$.

Approximately 39% of the variances in caregiver's depression 6 months after discharge were accounted for by the initial stressors. The personality variables (mastery, neuroticism, and extraversion) and the changes in these variables accounted for an additional 11%, 22%, and 5%, respectively, of the variances in caregiver depression over time. Lower initial scores on mastery and extraversion and higher initial scores on neuroticism predicted a higher caregiver's depression over time. In addition, changes in mastery and neuroticism over time were observed to predict caregiver's depression over time in the expected direction.

Moderating Effects of Social and Psychologic Resources on Caregiver's Depression

One moderating effect on caregiver's depression was found for social support (i.e., with regard to daily emotional support and negative caregiver experiences).

TABLE 4
The Main Effects of Initial Scores of and Changes in Personality Characteristics on Caregiver Outcomes (i.e., Caregiver Experiences and Caregiver's Depression) over a 6-Month Period after Discharge (N = 148)^a

Care situation and partner's personality characteristics	Caregiver outcomes at T2			
	Care-derived self-esteem	Caregiver's depression		
Step 1(T0)				
Initial caregiver outcome	0.60 ^b	0.41 ^b	0.24 ^b	0.58 ^b
Patient's depression	0.02	-0.06	0.02	-0.08
No. of care tasks	-0.03	-0.08	-0.10	-0.09
Disrupted schedule		-0.06	-0.02	-0.03
Care-derived self-esteem		-0.20 ^c	-0.10	-0.23 ^c
Adjusted R ²	0.31	0.39	0.39	0.39
Step 2a (T0-T2)				
Mastery ^d	-0.08	-0.45 ^b		
Δ Mastery ^d	-0.21 ^e	-0.21 ^c		
Change in R ²	0.03	0.11		
Step 2b (T0-T2)				
Neuroticism			0.60 ^b	
Δ Neuroticism			0.29 ^b	
Change in R ²			0.22	
Step 2c (T0-T2)				
Extraversion				-0.23 ^c
Δ Extraversion				-0.10
Change in R ²				0.05
Total explained variance	34%	50%	61%	44%

R²: adjusted variance.

^a Hierarchical regression analyses with final adjusted β weights and adjusted variances.

^b $P < 0.001$.

^c $P < 0.01$.

^d Mastery-Fatalism (reversed score).

^e $P < 0.05$.

Caregivers who perceived less impact with regard to a disrupted schedule and who reported a high amount of daily support were observed to report a lower level of depression at baseline and continued to do so 6 months after discharge.

With respect to caregiver's depression and personality characteristics, three significant moderating effects of mastery were observed. Caregivers with a high mastery for whom the patients reported a high initial score on depression showed a lower level of depression over time; in particular, those caregivers with a high mastery who derived the most self-esteem from caregiving reported the lowest levels of depression. In addition, caregivers with a high mastery who perceived little disruption in their daily schedule reported the lowest levels of depression over time. Moderating effects were observed to play a role within the caregiving process, especially with regard to positive aspects of social support and mastery.

DISCUSSION

The results of the current study provided evidence of the favorable influences of both social and psychologic resources on caregiver experiences and levels of depression in partners of cancer patients. Because the current study included multidimensional aspects of the resources and caregiver experiences, we were able to distinguish between the main and moderating effects and between the different levels of significance of the various resources on the specific caregiver outcomes. With respect to changes in caregiver experiences over 6 months after discharge, the effects of both social and psychologic resources were small to absent. With respect to caregiver's depression, negative social interactions, mastery, and neuroticism, together with their changes over time, were found to contribute substantially to variations in caregiver's depression in the expected directions.

One of the major strengths of the current study is its longitudinal design. The findings suggest that social and psychologic resources change in response to the different caregiving situation after the hospitalization of patients with cancer. Moreover, changes in personality characteristics were found to predict caregiver's depression. For example, we found that caregivers with a decreasing level of mastery and an increase in neuroticism over time also experienced more depression over time. In addition, the data demonstrated an initial positive correlation between problem-oriented emotional support and caregiver's depression at baseline. Although cross-sectional studies have reported comparable results,^{9,42} a positive relation is contrary to what might have been expected. Because more supportive interactions over time were observed to be predictive of a low depression score, especially among those caregivers who least perceived caregiving to be burdensome, the initial observed correlation could be due to a causality problem.

Another advantage of the current study is the inclusion of various types of social and psychologic resources together. In keeping with former research regarding the effect of social support on caregiver's psychologic health,^{25,43} the data in the current study revealed that in a population of partners caring for patients with cancer, social support also is beneficial for caregivers and mitigates the relation between stressors (in this case, patient's depression and negative caregiver experiences) and caregiver's depression to a limited degree. However, only specific types of social support demonstrated these main and moderating effects. In particular, less negative interactions were predictive of a favorable caregiver outcome in the long term, regardless of the amount of stressful

events (i.e., a main effect). Daily emotional support was found to act as a moderator of the relation between negative caregiver experiences and caregiver's depression. These results only add to the various and inconsistent findings with regard to the role of social support in psychologic health.^{19,44} Several authors stress the importance of studying negative support.⁴⁵⁻⁴⁷ For example, well-intended support may fail to such a degree that it actually increases (psychologic health) problems. Although the value of examining the perception of social support, rather than the frequency of interactions, has been acknowledged in several former studies,^{48,49} to our knowledge only few caregiving studies concerning the role of negative social interactions have been conducted. In a study of spouses of mastectomy patients, men were found to be deeply engaged emotionally but hid it, playing a protective, reassuring, minimizing role. They assumed this to be the most supportive behavior, but their wives interpreted it as rejecting and insensitive.⁵⁰ These findings, as well as those of the current study, reveal that not only is it important to distinguish between specific types of support but, and perhaps even more important, also to distinguish between negative and positive interactions. Because support may not always be beneficial to the caregiver's well-being, the complexity of supportive relationships in the context of caregiving stress may need further study.

Compared with social resources, psychologic resources appear to account for a larger part of the variances in caregiver outcomes. Caregiver's depression was strongly predicted by neuroticism, and to a lesser extent by mastery and extraversion, independent of caregiver experiences. Although these variables showed significant main effects, mastery also interacted with caregiver experiences in predicting depression (i.e., those caregivers with a low sense of mastery, who perceived caregiving more negatively and less positively, reported a higher rate of depression). Caregivers with low scores on mastery and extraversion and a high score on neuroticism were at greater risk for developing depression. Moreover, those caregivers who scored low on mastery and who perceived caregiving more negatively or less positively reported especially high levels of depression.

Our data also revealed strong relations between personality characteristics and social support. This finding is not surprising because extraverted individuals with a high mastery and a low neurotic personality profile may be more inclined to consider the amount of support provided as sufficient. These persons also may be more self-supporting, in the sense that they locate the sources of their strength within themselves and therefore may need less support than

their counterparts. Additional regression analyses revealed that personality characteristics also determined social support, and that social support, even when accounted for by personality, nevertheless reduced caregiver's depression significantly. This finding is in concordance with other studies.^{51,52}

Although the current study incorporated a number of strengths, including a longitudinal design and the use of various measures of independent and dependent variables, it is necessary to mention some of its limitations. Although moderating effects were observed, the number and relevance of these effects were small. Although studies involving family caregivers of demented elderly patients reported that caregiver's depression was moderated by (changes in) resources,^{25,53} other studies examining the moderating effects of resources on the associations between stressors and caregiver's psychologic health outcomes reported the opposite.^{10,44,54} The few and weak moderating effects of social and psychologic resources on cancer caregiver outcomes that were found may be explained in several ways. First, the number of caregivers who participated in the current study may have been too limited to demonstrate more significant effects. Second, resources may act as moderators only in specific subgroups of caregivers that may have been underrepresented in this study. For example, support and personality may be a moderator only for caregivers providing care to highly depressed or highly dependent patients with cancer. Researchers have indicated that the strength of the moderating effects is dependent on the severity of symptoms, disability, or the particular disease.^{9,55} Third, the selection of potential stressors and outcomes in the current study may have been too limited. No data were presented regarding the effects of other indicators of patient's health on caregiver outcome (e.g., the patient's dependency and needs and the duration of caregiving prior to hospitalization). Another point of interest is the generalizability of this study; we restricted the current study to partners as caregivers who provided care to patients with newly diagnosed colorectal carcinoma patients and the timeframe of study period was limited to 6 months after discharge. It may be expected that the role of social and psychologic resources is different in parental or sibling caregivers who provide long-term care to patients with (recurrent) cancer or other disorders.

Implications and Recommendations

Interest in the role of social and psychologic resources in a stressful situation, such as the caregiver situation, continues to grow, in part because of the assumption that interventions may influence caregiver outcomes. The results of the current study revealed that various aspects of social and psychologic

resources are subject to change and are predictive of caregiver outcomes after hospital discharge of cancer patients. It is important to note that the personality characteristics of the caregiver are related to social support. Intervention programs could be targeted more easily to obtaining and maintaining supportive interactions than to changing the caregiver's personality characteristics. However, the results of the current study suggest that both social support and caregiver personality characteristics are amenable to change, and therefore both are worthwhile targets for intervention. Health care practitioners dealing with informal caregivers at home should provide skills to obtain and maintain feelings of mastery and positive interactions, without neglecting attention to negative interactions. We also advise researchers who are studying the cancer caregiving process to include various aspects of social and psychologic resources in their models. More research can be conducted to investigate the role of resources in caregiving in general, and with respect to different types of caregivers and different diseases over a longer period of time to identify ways to maintain and maximize the health of informal caregivers. Clearly, more research is needed regarding the role that these factors play in influencing how caregivers maximize their own health as well as the health of their partners.

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