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ORIGINAL ARTICLE

Caregiving Motivation Predicts Long-Term Spirituality and Quality of Life of the Caregivers

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Abstract
Background Studies have shown that caregivers report impaired quality of life (QOL). This study investigated how caregiving motives predict long-term spirituality and QOL among cancer caregivers and the role of gender in these associations.
Method Caregiving motives of family members (n=369) were measured 2 years after their relative's cancer diagnosis (T1), and both spirituality and QOL (mental and physical health) were measured at 5 years postdiagnosis (T2).
Results Structural equation modeling was used to test spirituality dimensions as potential mediators of links from caregiving motives to QOL. Among male caregivers, autonomous caregiving motives at T1 related to better mental health at T2, apparently because these motives led caregivers to find greater peace and meaning in life at T2.
Conclusions Findings suggest that caregivers may benefit from interventions that facilitate their ability to be autonomously motivated and find contentment in their caregiving experience, which may improve spiritual adjustment and QOL years later.

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The improvement in the 5-year survival rate for all cancers from 50 % (1974–1976) to 66 % (2004 – 2010) reflects various trends, including advances in medicine and better practices in early detection [1, 2]. These trends are expected to continue for decades [1]. This means that family members will increasingly serve as cancer caregivers. Although a growing body of research has identified psychosocial factors predicting the quality of life (QOL) of cancer survivors in terms of mental and physical health after the early phases of survivorship [3], similar knowledge for family caregivers of cancer survivors remains limited [4]. However, accumulating evidence, focused mainly around the time of diagnosis and treatment of cancer patients, suggests that the experience of caregiving for the relative with cancer has an adverse impact on the family caregivers' mental health [4, 5] and physical health [6, 7]. Unknown, however, is whether this experience would have similar influences over the longer term.

The extent to which family caregivers have better QOL years after their relative's cancer diagnosis depends on a variety of social and personality factors. One factor is the motivation for caregiving. Family members become cancer caregivers without much advance notice. Although family members are involved in cancer care for a relatively short duration and sporadically, depending on the patients' care needs, providing care to family member with cancer can be stressful and difficult [8]. People can have many reasons for undertaking any stressful task [9, 10]. This is especially true when the behavior is rooted in undesirable events, such as the occurrence of cancer in the family.

According to self-determination theory (SDT), the reasons for acting can be ordered along a continuum ranging from controlled to autonomous [11]. The most controlled is an

external motive, in which a behavior is engaged in because of external forces such as rewards or punishments. For example, someone might provide care to avoid disapproval from his or her social group. When the motive has begun to be internalized but the behavior depends on implicit self-approval for compliance and self-derogation for non-compliance, the motive is *introjected*. This is the second most controlled motive for acting. Caregiving in response to introjected values would be acting in order to feel like a worthy person or to avoid guilt or shame.

The next step on the continuum of autonomy is an *identified motive*. In this case, a member of a group or society fully accepts, and thus volitionally engages in, behaviors that are valued by that collective. With respect to caregiving, this would mean that the value of caring for an ill relative is held by one's community, and one personally believes that the value is worthy in its own right. In the most autonomous form of motivation, the person integrates this societal value with other aspects of the self. This *integrated motive* involves loving and respecting the care recipient as well as acknowledging that caregiving provides meaning and purpose in life. In health-related behaviors, identified and integrated motives are often undistinguishable [12].

The beneficial effects of autonomous (identified and integrated) motives on people's well-being have been found in a variety of settings, including education, close relationships, political attitudes, religious behavior, health care, and engaging in duties such as voting and paying taxes (for review, see [13]). With regard to cancer caregiving, autonomous reasons for caregiving have been related to lower levels of depressive symptoms, whereas introjected reasons for caregiving (among males) related to greater levels of depressive symptoms [14].

Gender differences in these effects may be attributable in part to caregiving behavior's being constrained by gender role expectations [15]. In many cultures, women are expected to be the family caregivers [16, 17]; thus, women's caregiving behaviors might be more bounded by social rules rather than individual differences in caregiving motives. On the other hand, when men are involved in caregiving, which is often not expected, there may be more room for diverse reasons for the behavior, which in turn may relate differently to QOL outcomes.

Another element that may shed light on how caregiving motives influence caregivers' long-term QOL is the degree to which autonomous motives foster spirituality. Spirituality refers to a sense of peace, wholeness, or harmony with a higher power and a sense of meaning and purpose in life [18]. Autonomous motives—endorsing the value of caregiving at a personal and societal level as well as reflecting love and respect for the care recipient—should be more likely to foster a sense of meaning and purpose in life. Thus, spirituality may be a mechanism by which differing motives for caregiving link to QOL outcomes.

The extent to which individuals find meaning and peace has been shown to relate to better mental health [19–23] and physical health [24, 25] among cancer survivors and family caregivers. The other aspect of spirituality, however, the sense of harmony with a higher power (faith) has been associated with QOL outcomes less consistently [26].

This study investigated the extent to which caregiving motives earlier in the relative's cancer experience predict caregivers' longer-term spirituality and QOL. It was hypothesized that autonomous reasons for caregiving would be related to greater likelihood of finding peace and meaning years later, which in turn would be related as a mediator to better mental and physical health (QOL). It was also hypothesized that effects of autonomous caregiving motives on QOL outcomes would be more prominent among male than female caregivers, as the caregiver role is likely less readily endorsed among men.

Method

Participants

The National Quality of Life Survey for Caregivers was designed to longitudinally assess the impact of cancer on the QOL of family members and close friends who were caring for cancer survivors [27]. The survivors were identified using multiple state cancer registries as diagnosed with one of the ten most common cancers [28]. Caregivers were nominated by the survivor during the baseline survey as "adult family or family-like individuals who provided consistent help during your cancer experience" [27].

A total of 896 caregivers completed the baseline survey that contained study variables. At that time (T1), survivors were 2.2 years (SD=0.6 years) postdiagnosis. Follow-up data collection [29] was at 5 years postdiagnosis (T2), and a total of 416 caregivers whose care recipients were alive completed the follow-up survey. Of those, a total of 369 caregivers provided complete data for the study variables at both T1 and T2. Family caregivers who provided complete information did not differ from those with incomplete data (ps>0.17), with three exceptions. Caregivers with complete data scored lower on faith (p=0.08) but higher on external reasons for caregiving (p=0.06) and had care recipients whose cancer was less severe (p<0.001) than caregivers with incomplete data.

Procedure

This study was conducted in compliance with the regulations of the Emory University Institutional Review Board. At each assessment, a packet containing an introductory letter, survey, self-addressed stamped envelope, and a $10 gift card as an incentive was mailed to the sample of nominated family

caregivers. Returning the completed survey served as evidence of informed consent to participate. Two cycles of mailing and telephone follow-up calls were made during an 8-week data collection period corresponding to each time point.

Measures

Earlier Caregiving Motives Individual differences in motives for providing care to the relative with cancer were measured at T1 using the nine-item reasons for providing care (RPC) [14], reflecting three types of caregiving motives when they were providing the care. A four-item autonomous motive subscale assessed integrated reasons (e.g., "because it was important to me personally to do so") and identified reasons (e.g., "because it was something I deeply valued doing") for caregiving. A two-item introjected motive subscale assessed introjected reasons (e.g., "because I would feel guilty or ashamed of myself if I did not provide care for him/her"). A three-item external motive subscale assessed external reasons (e.g., "because my family and friends expected me to do so"). Responses used a seven-point Likert-style response format for extent of agreement (1=*strongly disagree*, 7=*strongly agree*). Subscale scores were created by averaging the relevant items; these scores were used in the analyses. Each subscale score had acceptable internal consistency in our sample (autonomous α=0.84, introjected α=0.84, and external α=0.58).

Long-Term Spiritual Adjustment The degree to which caregivers reported finding peace, meaning, and faith, elements of spiritual adjustment, was measured at T2 by the 12-item Functional Assessment of Chronic Illness Therapy—Spiritual Well-Being Scale (FACIT-Sp) [30, 31]. Participants rated how much they agreed with each statement during the past 4 weeks, using a five-point Likert-style response format (0=*not at all*, 4=*very much*). This scale includes three subcomponents: peace (four items, e.g., "I feel peaceful"), meaning (four items, e.g., "I feel a sense of purpose in my life"), and faith (four items, e.g., "I find comfort in my faith"). Three subcomponent scores were calculated by averaging relevant items, after reverse coding, if necessary. Higher scores reflected greater levels of peace, meaning, and faith. Three subcomponent scores had good internal consistency in our sample ($.84<\alpha s<0.88$).

Long-Term QOL Self-reported levels of mental and physical health of participants at T2 were measured using the Medical Outcomes Study 12-Item Short Form (MOS SF-12) Health Survey [32]. The mental functioning score was a composite of weighted vitality, social functioning, role-emotional, and mental health subscale scores. The physical functioning score was a composite of weighted physical functioning, role-physical, bodily pain, and general health subscale scores. Higher composite scores reflected better mental and physical health. The MOS SF-12 is a widely used QOL measure for diverse populations, and US population norms are available for it [32].

Covariates Caregivers' age, household income, subjective appraisal of caregiving stress, and patient's cancer severity were included in the analyses testing the main aim of the study as covariates, as these factors have been significantly associated with mental health [17] and physical health [33]. Subjective appraisal of caregiving stress (i.e., the extent to which caregivers had felt overwhelmed by care tasks and responsibilities) was measured by the four-item stress overload subscale of the Pearlin Stress Scale (e.g., "I was exhausted when I went to bed at night while I was providing care": responses ranging from 1=not at all to 4=completely) [34]. The mean of the items defined caregiving stress, with higher scores reflecting a greater perceived level of caregiving stress (negative subjective caregiving experience). The subscale had good internal consistency in our sample (α=0.76). Patients' cancer severity at the time of diagnosis was measured using the cancer severity index, which was created based on mortality rates calculated by cancer type and stage (localized, regional, distant) and the time since diagnosis at T1 [35]. This information was obtained from the state cancer registry. This index ranges from 0 to 1, with higher scores reflecting more severe cancer diagnosis and, therefore, greater objective caregiving strain. For example, the cancer severity index for localized prostate cancer diagnosed 2 years ago is 0, for localized lung cancer diagnosed 2 years ago is 0.40, and for distant lung cancer diagnosed 2 years ago is 0.94.

Analysis Plan

Pearson correlations among the continuous study variables and Spearman correlations with categorical variables were examined. The primary study aim was tested using structural equation modeling (SEM) with manifest variables (AMOS 21.0) [36]. The caregiving motive variables were exogenous variables; the spirituality subcomponents were treated as mediators, and mental health and physical health were endogenous variables. Caregivers' age, household income, subjective caregiving stress, and the patient's cancer severity were used as covariates.

Measurement errors between autonomous motives and introjected motives and between introjected motives and external motives were also allowed to correlate with each other, based on the simplex structure of the self-regulation continuum (i.e., adjacent types of motives are more highly correlated with each other) [11]. Measurement errors among the three subcomponents of spirituality were also allowed to correlate with each other, as they are highly correlated with each other [31]. The study model was compared with and without equality constraints between the two genders.

We found that the assumption of multivariate normality was violated in the data. Thus, we implemented the Bollen-

Stine (BS) bootstrap method [37] for correcting chi-square. Three model fit indices are reported: goodness of fit index (GFI), the confirmatory fit index (CFI), and the root-mean-squared error of approximation (RMSEA). For the GFI, values of >0.90 [38], for the CFI, values of >0.95, and for the RMSEA measure, values of <0.06 [39] reflect adequate fits of a specified model to the data. Significance level in all analyses was set at $p<0.05$. Significance at $p<0.10$ for an individual group test was interpreted due to small sample sizes but with caution and was not discussed as meaningful findings.

Results

As shown in Table 1, caregivers overall were more often female, primarily middle-aged, and relatively affluent. Caregivers were primarily spouses of the patient (73 %), followed by offspring (14 %) and sibling (6 %). Caregivers overall reported low levels of stress from caregiving, and the majority of the care recipients were diagnosed with non-severe type or stage of cancer: breast (29.5 %), prostate (21.7 %), colorectal (12.5 %), non-Hodgkin's lymphoma (8.4 %), lung (7.9 %), and other (<5.1 %) and localized (56.6 %), regional (29.0 %), and distant (8.9 %).

Caregivers also reported that they provided care primarily because they personally endorsed caregiving for relatives with cancer as important and meaningful and that they valued doing so. External reasons for caregiving were endorsed least. At around the 5-year mark (T2), caregivers displayed levels of spiritual adjustment that are comparable to those of cancer patients who were recruited during their treatment [31] and 2–10 years after the initial diagnosis [40]. Caregivers' mental and physical health at T2 was also comparable to the mean of the US general population (a normalized mean of 50) [32].

Compared with male caregivers, female caregivers were less affluent, reported greater caregiving stress, and endorsed external reasons for caregiving to a lesser degree. No gender differences were significant in other variables.

Correlations Among Study Variables by Gender

Correlations among variables are shown in Table 2. Among female caregivers (upper diagonal in Table 2), endorsement of introjected reasons for caregiving was positively correlated with external reasons for caregiving and was negatively correlated with mental health. Endorsement of external reasons for caregiving was positively correlated with physical health. The three subcomponents of spirituality were positively correlated with each other and with mental health.

Seven differences were noted between correlations among male caregivers (lower diagonal in Table 2), compared with correlations among female caregivers ($zs>2.14$, $ps<0.032$). Male caregivers' faith subcomponent of spirituality was positively correlated with the meaning component of spirituality but to a lesser degree than what was observed among female caregivers. Male caregivers' physical health was negatively

Table 1 Descriptive statistics for study variables

	Possible range	All (n=369) mean (SD) or %	Women (n=233) mean (SD) or %	Men (n=136) mean (SD) or %	t or χ^2
Demographics at T1					
Age	Actual range 19–90	Actual range 19–90	54.4 (13.1)	56.1 (11.1)	−1.25
Early caregiving experience at T1					
Caregiving duration (months) actual range	1–120	18.4 (15.3)	18.8 (16.0)	18.8 (16.0)	18.8 (16.0)
Caregiving stress	1–4	1.6 (0.6)	1.6 (0.6)	1.4 (0.5)	3.11**
Patient cancer severity	0–1	0.1 (0.2)	0.1 (0.2)	0.1 (0.2)	−0.36
Caregiving motives—autonomous	1–7	6.8 (0.6)	6.9 (0.6)	6.8 (0.7)	6.8 (0.7)
Caregiving motives—introjected	1–7	4.5 (2.4)	4.4 (2.4)	4.7 (2.3)	−1.38
Caregiving motives—external	1–7	2.8 (1.8)	2.6 (1.6)	3.2 (1.9)	−3.23***
Spiritual adjustment at T2					
Peace	0–4	3.0 (0.8)	2.9 (0.8)	3.0 (0.7)	−0.41
Meaning	0–4	2.8 (0.8)	2.8 (0.9)	2.9 (0.8)	−0.89
Faith	0–4	2.4 (1.2)	2.5 (1.2)	2.3 (1.2)	1.53
Quality of life at T2					
Mental health	0–100	50.3 (10.0)	50.1 (10.6)	50.1 (10.6)	−0.50
Physical health	0–100	49.5 (9.9)	49.5 (9.9)	48.9 (10.6)	−1.65

*$p<0.01$;***$p<0.001$

Table 2 Zero-order correlation coefficients among study variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. Autonomous	–	0.07	−0.11	0.08	0.08	0.07	0.05	−0.02	0.06	−0.02	0.02	0.09
2. Introjected	0.14	–	0.40***	−0.09	−0.10	−0.05	−0.13*	0.03	−0.11	−0.02	0.02	0.05
3. External	−0.04	0.51***	–	−0.02	−0.05	−0.04	−0.04	0.13*	−0.06	−0.07	0.01	0.01
4. Peace	0.28***	−0.02	−0.02	–	0.83***	0.43***	0.71***	−0.01	0.16*	−0.03	−0.17**	−0.21**
5. Meaning	0.25**	−0.05	−0.09	0.82***	–	0.48***	0.64***	0.03	0.11	−0.03	−0.18**	−0.23***
6. Faith	0.24**	0.03	0.08	0.29***	0.26**	–	0.33***	−0.03	0.12†	−0.17*	−0.07	−0.04
7. MCS	0.20*	−0.06	0.04	0.66***	0.61***	0.15	–	−0.10	0.12†	−0.06	−0.20**	−0.34***
8. PCS	0.08	−0.06	−0.12	0.25**	0.23**	−0.11	0.26**	–	−0.24***	0.09	−0.13*	0.11
9. Age	0.01	−0.01	0.15	0.16†	0.16†	0.10	0.11	−0.32***	–	−0.23***	−0.12†	−0.02
10. Income	−0.05	0.03	−0.05	0.08	0.07	−0.05	0.08	0.25**	−0.26**	–	0.08	0.01
11. Cg stress	−0.08	−0.03	−0.15†	−0.31***	−0.33***	−0.10	−0.27***	−0.06	−0.33***	−0.03	–	0.10
12. CSI	−0.03	−0.10	−0.08	0.02	0.06	−0.03	0.03	−0.05	−0.05	−0.19*	0.09	

N=233 for women (above diagonal); n=136 for men (below diagonal). Correlation coefficients with Income are Spearman ρs; all other correlation coefficients are Pearson rs. Autonomous, Introjected, and External are motives for providing care; Peace, Meaning, and Faith are spirituality domains. Income 1=household income >$40,000, 0=household income ≤$40,000 or did not answer

MCS mental health composite score, *PCS* physical health composite score; *Cg stress* caregiving stress, *CSI* patients' cancer severity index

†p<0.08; *p<0.05; **p<0.01; ***p<0.001

correlated with external reasons for caregiving (although this correlation was not significant) and was positively correlated with the peace component of spirituality and with mental health, whereas neither of those associations held among females.

Predicting Long-Term Spirituality and QOL from Earlier Caregiving Motives

The primary aim of the study was tested by SEM. Whether the study model applies comparably to both genders was tested by comparing a model in which genders were examined separately without constraining relations between variables to be equal (unconstrained model) versus a model in which relations between variables were constrained to be equal between genders (constrained model). Two measurement error terms among covariates (between age and caregiving stress; between age and income) were allowed to correlate with each other to improve the model fit.

The fit of the unconstrained model was acceptable: multivariate kurtosis=67.31, p<0.001; $\chi^2_{(60)}$=99.51, BS p=0.015; GFI=0.958; CFI=0.959; and RMSEA=0.042. The constrained model fit the data at a marginal level: $\chi^2_{(108)}$= 205.24, GFI=0.921; CFI=0.898; and RMSEA=0.050. The fit of the constrained model was significantly worse than that of the unconstrained model; however, χ^2_{diff}=105.73 with degree of freedom=48, p<0.001. This indicates that the relations among variables were not comparable for the two genders and that the genders therefore should be examined separately (Table 3).

As shown in Table 3 and Fig. 1, with respect to predicting mental health, the genders differed sharply in the extent to which motives for caregiving related to spirituality. Endorsing autonomous motives for caregiving at T1 predicted higher levels of all aspects of spirituality at T2—but only among men. Caregiving motives were unrelated to spirituality among women. With regard to predicting mental health at T2 from caregiving motives, external reasons for caregiving was related to better mental health, which was not expected, although this association was only marginally significant among male caregivers.

With regard to spirituality as a correlate of mental health, peace was strongly related to better mental health among both men and women. Meaning was also related to better mental health, but only among men. Faith was not significantly related to mental health among either men or woman. Among men, the relation between autonomous reasons for caregiving and mental health was fully mediated by peace (Sobel test for indirect effect=2.67, p= 0.007) and partially mediated by meaning (Sobel test for indirect effect=1.71, p=0.088).

With respect to physical health, as one would expect, age as a covariate was related to poorer health among both men and

Table 3 Standardized regression coefficients from structural equation models

	Women			Men		
	Total	Direct	Indirect	Total	Direct	Indirect
Autonomous → peace	0.091	0.091	–	0.291***	0.291***	–
Autonomous → meaning	0.089	0.089	–	0.259**	0.259**	–
Autonomous → faith	0.070	0.070	–	0.251**	0.251**	–
Autonomous → MCS	0.091	0.027	0.064	0.223*	0.044	0.179†
Autonomous → PCS	0.006	0.003	0.003	0.089	0.041	0.047
Introjected → peace	−0.113	−0.113	–	−0.071	−0.071	–
Introjected → meaning	−0.108	−0.108	–	−0.059	−0.059	–
Introjected → faith	−0.046	−0.046	–	−0.068	−0.068	–
Introjected → MCS	−0.151	−0.073	−0.078	−0.154	−0.111	−0.042
Introjected → PCS	−0.057	−0.053	−0.004	−0.053	−0.043	−0.010
External → peace	0.040	0.040	–	0.030	0.030	–
External → meaning	0.002	0.002	–	−0.044	−0.044	–
External → faith	−0.013	−0.013	–	0.129	0.129	–
External → MCS	0.037	0.015	0.022	0.125	0.130†	−0.005
External → PCS	0.147*	0.150*	−0.003	−0.051	−0.032	−0.019
Peace → MCS	0.562***	0.562***	–	0.472***	0.472***	–
Peace → PCS	−0.081	−0.081	–	0.240†	0.240†	–
Meaning → MCS	0.119	0.119	–	0.228*	0.228*	–
Meaning → PCS	0.128	0.128	–	0.086	0.086	–
Faith → MCS	0.029	0.029	–	−0.068	−0.068	–
Faith → PCS	−0.017	−0.017	–	−0.178*	−0.178*	–
Age → MCS	−0.005	−0.005	–	−0.033	−0.033	–
Age → PCS	−0.236***	−0.236***	–	−0.351***	−0.351***	–
Income → MCS	0.001	0.001	–	0.006	0.006	–
Income → PCS	0.084	0.084	–	0.114	0.114	–
Caregiving stress → MCS	−0.071	−0.071	–	−0.051	−0.051	–
Caregiving stress → PCS	−0.178**	−0.178**	–	−0.091	−0.091	–
CSI → MCS	−0.199***	−0.199***	–	0.015	0.015	–
CSI → PCS	0.129*	0.129*	–	−0.049	−0.049	–

N=369; Gender 1=female, 0=male; Income 1=household income >$40,000, 0=household income ≤$40,000 or did not answer. Autonomous, Introjected, and External are motives for providing care; Peace, Meaning, and Faith are spirituality domains

Cg stress caregiving stress, *CSI* patients' cancer severity index, *MCS* mental health composite score, *PCS* physical health composite score

†$p<0.08$; *$p<0.05$; **$p<0.01$; ***$p<0.001$

women. None of the psychological variables related to physical health among women, but two relationships (one marginal) appeared among men: Greater peace was (marginally) associated with better physical health, and greater faith was associated with poorer health among men. Males' poorer physical health at T2 was indirectly predicted by greater endorsement of autonomous reasons for caregiving at T1, partially mediated by greater faith at T2 (Sobel test for indirect effect=−1.79, $p=0.073$). Among women, physical health at T2 was related to the demands of prior caregiving. Specifically, caregiving stress at T1 predicted poorer physical health at T2, as did having had a patient with more severe cancer at T1 (the latter also related to poorer mental health at T2).

Testing an Alternative Model

Because both spirituality and QOL (mental and physical health) were measured simultaneously at T2, an alternative model testing QOL as a mediator from caregiving motives to spirituality was also considered. This alternative model was tested using SEM with manifest variables. The caregiving motive variables remained exogenous variables, mental health and physical health were treated as mediators, and the spirituality subcomponents were endogenous variables. The same covariates of the study model were included, and the same measurement errors of the study model among caregiving variables and among the three

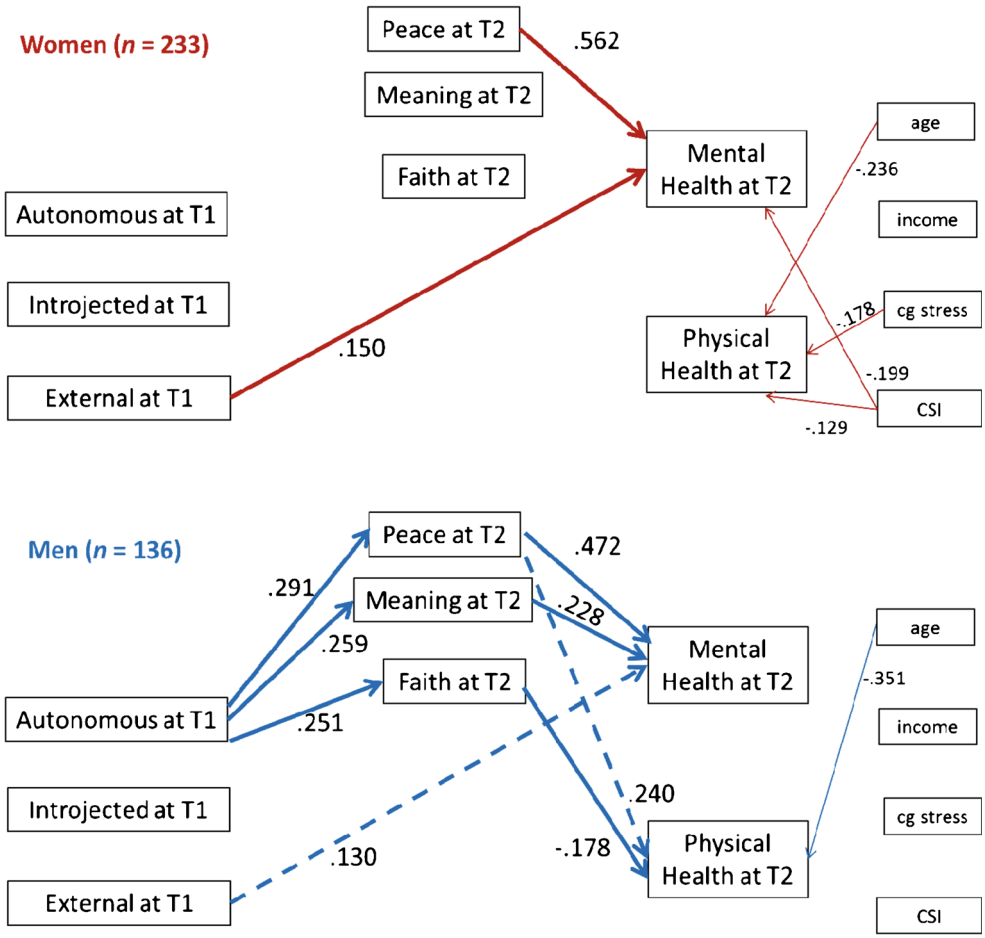

Fig. 1 Earlier caregiving motives predicting long-term spirituality and quality of life

subcomponents of spirituality were allowed to correlate with each other.

The fit of this alternative model without equality constraints between the two genders was significantly worse than that of the study model reported above: $\chi^2_{diff}=44.65$ with degree of freedom=8, $p<0.001$. This indicates that the alternative model (where mental and physical health was treated as mediators of the relation between caregiving motives and spirituality) did not fit the data as well as the study model (where spirituality was treated as a mediator of the relation between caregiving motives and mental and physical health) did. Therefore, this alternative was not pursued further.

Discussion

The primary goal of this study was to investigate the extent to which motives to provide care to a loved one with cancer predict long-term spirituality and QOL outcomes. Our findings indicate that autonomous reasons for caregiving relate to better long-term mental health among male caregivers. The peace component of spirituality was a psychological pathway of that link, which partially supported our hypothesis. Among women, however, autonomous motives did not predict either spirituality or mental health. Although this lack of association is, in some ways, disappointing, it is in line with our hypotheses, which were based on the higher normative expectations for caregiving among women than among men.

Long-Term Effects of Earlier Caregiving Motives

Men who were providing care to a relative with cancer because they personally believe in the value of caring for the relative and because they acknowledge that caregiving provides meaning and purpose in their lives—that is, were autonomously motivated—had better mental health 3 years later. This finding is consistent with existing studies in a variety of settings and study populations [13], confirming the beneficial effects of autonomous motives on people's well-being. Our finding also expands current knowledge by providing evidence for the lasting impact of autonomous motivation.

Somewhat surprisingly, endorsement of caregiving motivations for external reasons (engaging in caregiving because of external forces such as rewards or punishments) was also related to better mental health 3 years later among both male

(marginally) and female caregivers. This is a bit perplexing. Perhaps, caring for a relative with cancer because one's family and friends expect it (external motives) fulfills a need to meeting social expectation, although not necessarily leading the person to personal growth and finding meaning in life. Fulfilling such an expectation helps foster better adjustment years later. It should be noted that these associations emerged when all other study variables were considered in the structural equation model but were not apparent in zero-order correlational analyses. These associations thus could represent suppression effects. It is also noteworthy that the external caregiving motives subscale had also low internal consistency. Future studies should replicate this finding with a more refined measure for external motives for caregiving.

Spirituality Linking Caregiving Motives and QOL

A novel finding of this study is uncovering spirituality as a psychological pathway of the beneficial effects of autonomous caregiving motives among male caregivers. Providing care for autonomous reasons was related to greater likelihood of having a sense of peace 3 years later, which also related to better mental health. The peace component of spirituality was the strongest predictor of better mental health, among both male and female caregivers. Among only male caregivers, peace was also, although only marginally, related to better physical health. It appears that engagement in caregiving behaviors for self-determined reasons promotes the ability to accept what has happened and to face challenges that caregiving might impose with a sense of peace. Meaning, another component of spirituality made an independent contribution to mental health among male caregivers, despite its high degree of collinearity with peace (correlations were above 0.8 for each gender). The beneficial effects of finding meaning and peace in adversity have been reported many times [20, 41], and our finding adds to the literature the significant role of peace and, to a lesser degree, meaning in bridging between autonomous caregiving motives and better mental health. The important role of the ability to find a sense of peace, wholeness, or harmony with a higher power needs to be acknowledged and incorporated in psychosocial programs designed to improve cancer caregivers' mental health.

Among male caregivers, there also was a link from greater faith to poorer physical health. Although autonomous caregiving motive was related to all three components of spirituality to a comparable degree, the long-term manifestations in QOL outcomes thus diverged. Why do peace and meaning aspects of spirituality relate to better mental health, whereas faith relates to poorer physical health? One possibility is that association is better interpreted in the other direction: that being in worse physical health led to a greater reliance on faith, although our data did not strongly support this possibility in a supplementary analysis. As faith has been associated with QOL outcomes less consistently than peace and meaning in past research, further study is warranted before relying confidently on any interpretation of this result.

Gender Effects of Caregiving Motives on Spirituality and QOL

Another novel finding pertained to gender differences in the links of caregiving motives to long-term spiritual adjustment and QOL. As we hypothesized, based on gender role expectations, self-determined motivation for caregiving played a larger role among men, who are often not expected to be in the caregiver role. The mean levels of all the main study variables, with the exception of external motives, were comparable between genders in our sample. Why then were the associations between earlier autonomous motives for caregiving and spiritual and QOL outcomes 3 years later significant only among male caregivers? Why was the beneficial effect of autonomous motives for caregiving not found among female caregivers?

We can only speculate. As the society has become more egalitarian, more men have taken on the caregiver role [42]. Thus, the relative unfamiliarity of the caregiver role for men may have been diminished and men are more likely to freely choose caregiving behaviors than before. For men, caregiving may provide an opportunity for personal growth, which may also result in a better QOL years after their caregiving experience. On the other hand, a similar amount of autonomous caregiving motives seems to have little impact on women who are typically familiar with the caregiver role. It will be important to investigate other factors that influence women's QOL in the context of providing informal cancer care.

Limitations, Future Directions, and Conclusions

An important limitation of the study is that all variables are self-reported. As always, it is uncertain to what extent that influenced outcomes. It may be particularly fruitful to investigate relatively objective physical health indicators, such as biophysiological markers, morbidity, and mortality. In addition, the internal consistency of the measure for external motives for caregiving was at the lower end of the conventionally acceptable range. Thus, findings related to external motives should be interpreted with caution. As the majority of our caregivers began their caregiver role about 2 years prior to completing the T1 survey, information about caregiving motivation at the very start of caregiving was not available. It would be valuable to examine in future studies the role of potential changes in caregiving motives during the (typically relatively brief) caregiving period. Another limitation is that the sample was of relatively high education and income, and primarily Caucasian, and that the male subsample was much smaller than the female subsample. Although the sample is relatively large and collected nationwide, it will also be

important to replicate these findings with ethnic minorities and individuals of lower socioeconomic status. It is also noteworthy that our sample consisted of only one caregiver per survivor, which provides a limited picture of possibly complex family caregiving. Other variables, such as presence of additional informal and paid help, caregiving duration, and specific types of care provided, need to be investigated in future studies. Associations among study variables may change across different trajectory of the patients' illness; thus, examination of longer-term changes in study outcomes and identifying significant predictors of the changes will be fruitful. Another important question unaddressed here is how autonomous caregiving motives can be fostered.

Despite these limitations, the findings make significant contributions to research on long-term adjustment of family caregivers of individuals with cancer. The finding that having a greater sense of autonomy was associated with having greater spirituality and better mental health 3 years later is fully consistent with SDT. This finding thus provides additional support for the usefulness of that theory in an applied context such as this. Findings also suggest that identifying male caregivers who lack autonomous motives for caregiving while they are engaging in such behavior is important for preventing potential poor spiritual adjustment and mental health years later. Caregivers may benefit from interventions that facilitate their ability to personally endorse their situation and find content in their caregiving experience, which may enhance their spiritual adjustment and QOL as they move forward.

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Authors' Statement of Conflict of Interest and Ethnical Adherence Drs. Kim and Carver and Ms. Cannady declare that they have no conflict of interest. All procedures, including the informed consent process, were conducted in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000.

References

1. de Moor JS, Mariotto AB, Parry C, et al. Cancer survivors in the United States: Prevalence across the survivorship trajectory and implications for care. *Cancer Epidemiol Biomark Prev*. 2013; 22: 561-570.
2. Howlader N, Noone AM, Krapcho M, et al. (eds). SEER Cancer Statistics Review, 1975–2011, National Cancer Institute. Bethesda, MD, http://seer.cancer.gov/csr/1975_2011/, based on November 2013 SEER data submission, posted to the SEER web site, April 2014.
3. Bloom JR, Petersen DM, Kang SH. Multi-dimensional quality of life among long-term (5+ years) adult cancer survivors. *Psycho-Oncology*. 2007; 16: 691-706.
4. Kim Y, Given BA. Quality of life of family caregivers of cancer survivors across the trajectory of the illness. *Cancer*. 2008; 112(11 suppl): 2556-2568.
5. Hagedoorn M, Sanderman R, Bolk HN, Tuinstra J, Coyne JC. Distress in couples coping with cancer: A meta-analysis and critical review of role and gender effects. *Psychol Bull*. 2008; 134: 1-30.
6. Bevans M, Sternberg EM. Caregiving burden, stress, and health effects among family caregivers of adult cancer patients. *JAMA*. 2012; 307: 398-403.
7. Ji J, Zöller B, Sundquist K, Sundquist J. Increased risks of coronary heart disease and stroke among spousal caregivers of cancer patients. *Circulation*. 2012; 125: 1742-1747.
8. Kim Y, Schulz R. Family caregivers' strains: Comparative analysis of cancer caregiving with dementia, diabetes, and frail elderly caregiving. *J Aging Health*. 2008; 20: 483-503.
9. Deci EL, Ryan RM. *Intrinsic motivation and self determination in human behavior*. New York: Plenum Publishing Co.; 1985.
10. Ryan RM, Deci EL. An Overview of self-determination theory: An organismic-dialectical perspective. In EL Deci, RM Ryan (eds). *Handbook of self-determination research* (pp. 3–33). 2002. Rochester, NY: University of Rochester Press.
11. Ryan RM, Connell JP. Perceived locus of causality and internalization: examining reasons for acting in two domains. *J Pers Soc Psychol*. 1989; 57: 749-761.
12. Williams GC. Improving patients' health through supporting the autonomy of patients and providers. In EL Deci, RM Ryan (eds). *Handbook of self-determination research* (pp. 233–254). 2002. Rochester, NY: University of Rochester Press.
13. Ryan RM, Deci EL. Multiple identities within a single self: A self-determination theory perspective on internalization within contexts and cultures. In MR Leary JP Tangney (Eds.), *Handbook of self & identify* (pp. 253–274). 2011. New York: The Guilford Press.
14. Kim Y, Carver CS, Deci EL, Kasser T. Adult attachment and psychological well-being in cancer caregivers: The mediational role of spouses' motives for caregiving. *Health Psychol*. 2008; 27: S144-S154.
15. Brody EM. *Women in the middle: Their parent care years*. New York: Springer; 1990.
16. Feeney BC, Collins NL. Motivations for caregiving in adult intimate relationships: Influences on caregiving behavior and relationship functioning. *Personal Soc Psychol Bull*. 2003; 29: 950-968.
17. Pinquart M, Sörensen S. Gender differences in caregiver stressors, social resources, and health: An updated meta-analysis. *J Gerontol Psychol Sci Soc Sci*. 2006; 61: 33-45.
18. Paloutzian R, Ellison C. Loneliness, spiritual well-being, and the quality of life. In L Peplau & D Perlman (Eds.), *Loneliness: A Source Book of Current Theory, Research, and Therapy* (pp. 224–237). 1982. New York: Wiley.
19. Delgado-Guay MO, Parsons HA, Hui D, Cruz MG, Thorney S, Bruera E. Spirituality, religiosity, and spiritual pain among caregivers of patients with advanced cancer. *Am J Hosp Palliat Med*. 2013; 30: 455-461.
20. Kim Y, Schulz R, Carver CS. Benefit finding in the cancer caregiving experience. *Psychosom Med*. 2007; 69: 283-291.
21. Oman D. Compassionate love: Accomplishments and challenges in an emerging scientific/spiritual research field. *Ment Health Rel Cult*. 2011; 14: 945-981.
22. Sand L, Olsson M, Strang P. What are motives of family members who take responsibility in palliative cancer care? *Mortal Promot Interdiscip Study Death Dying*. 2010; 15: 64-80.

23. Sears SR, Stanton AL, Danoff-Burg S. The yellow brick road and the emerald city: benefit finding, positive reappraisal coping and post-traumatic growth in women with early-stage breast cancer. *Health Psychol*. 2003; 22: 487-497.
24. Kim Y, Carver CS, Spillers RL, Crammer C, Zhou ES. Individual and dyadic relations between spiritual well-being and quality of life among cancer survivors and their spousal caregivers. *Psycho-Oncology*. 2011; 20: 762-770.
25. Oman D, Thoresen CE. Do religion and spirituality influence health. In RF Paloutzian & CL Park (Eds.). *Handbook of the psychology of religion and spirituality* (pp. 435–459). 2005. New York: The Guilford Press.
26. Ryan RM, Rigby S, King K. Two types of religious internalization and their relations to religious orientations and mental health. *J Pers Soc Psychol*. 1993; 65: 586-596.
27. Kim Y, Spillers RL. Quality of life of family caregivers at 2 years after a relative's cancer diagnosis. *Psycho-Oncology*. 2010; 19: 431-440.
28. Smith T, Stein KD, Mehta CC, et al. The rationale, design, and implementation of the American Cancer Society's Studies of Cancer Survivors. *Cancer*. 2007; 109: 1-12.
29. Kim Y, Spillers RL, Hall DL. Quality of life of family caregivers 5 years after a relative's cancer diagnosis: Follow-up of the National Quality of Life Survey for Caregivers. *Psycho-Oncology*. 2012; 21: 273-281.
30. Brady MJ, Peterman AH, Fitchett G, Mo M, Cella D. A case for including spirituality in quality of life measurement in oncology. *Psycho-Oncology*. 1999; 8: 417-428.
31. Peterman AH, Fitchett G, Brady MJ, Hernandez L, Cella D. Measuring spiritual well-being in people with cancer: the functional assessment of chronic illness therapy-Spiritual Well-being Scale (FACIT-Sp). *Ann Behav Med*. 2002; 24: 49-58.
32. Ware JE, Kosinski M, Keller S. A 12-item short-form health survey: Construct of scales and preliminary tests of reliability and validity. *Med Care*. 1996; 34: 220-233.
33. Pinquart M, Sörensen S. Correlates of physical health of informal caregivers: A meta-analysis. *J Gerontol Psychol Sci Soc Sci*. 2007; 62: 126-137.
34. Pearlin LI, Mullan JT, Semple SJ, Skaff MM. Caregiving and the stress process: an overview of concepts and their measures. *The Gerontologist*. 1990; 30: 583-594.
35. Howlader N, Noone AM, Krapcho M, et al. (eds). SEER Cancer Statistics Review, 1975–2009 (Vintage 2009 Populations), National Cancer Institute. Bethesda, MD, http://seer.cancer.gov/csr/1975_2009_pops09/, based on November 2011 SEER data submission, posted to the SEER web site, April 2012.
36. AMOS 21.0. *SPSS Amos Users' Guide, Version 21.0*. 2012. IBM.
37. Bollen KA, Stine RA. Bootstrapping goodness-of-fit measures in structural equation models. In K.A.Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 111–135). 1993. Newbury Park, CA: Sage.
38. Jöreskog KG, Sörbom D. *LISREL VI User's Guide*. (3rd ed.) 1984. Mooresville, IL: Scientific Software.
39. Hu L, Bentler PM. Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Struct Equ Model*. 1999; 6: 1-55.
40. Murphy PE, Canada AL, Fitchett G, et al. An examination of the 3-factor model and structural invariance across racial/ethnic groups for the FACIT-Sp: A report from the American Cancer Society's Study of Cancer Survivors-II (SCS-II). *Psycho-Oncology*. 2010; 19: 264-272.
41. Tedeschi RG, Calhoun LG. The posttraumatic growth inventory: Measuring the positive legacy of trauma. *J Trauma Stress*. 1996; 9: 455-471.
42. National Alliance for Caregiving, American Association of Retired Persons. *Caregiving in the U.S*. 2009. Washington, DC.