

COPING AMONG OLDER-ADULT, LONG-TERM CANCER SURVIVORS

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SUMMARY

This research focuses on the coping behavior of older adult, long-term cancer survivors. Specifically, it identifies the personal (including race and gender) and illness/treatment characteristics of survivors that are significantly associated with the use of specific coping styles: planning, acceptance, venting, denial and seeking social support. It also examines the mediating role that these forms of coping play in terms of psychological distress: anxiety, depression and cancer-related worries. Multivariate analysis of data from a random sample of 321 long-term survivors in a major cancer center tumor registry is used to address the above issues. The most prominent forms of coping used by long-term survivors were planning and acceptance; least used were venting and denial. Increased age was associated with lower use of all forms of coping, but cancer type was not. Denial as a form of coping was associated with higher anxiety, depression and cancer-related worries. While race was not found to be a significant predictor of coping style, it was a significant predictor of three dimensions of psychological distress, anxiety, depression and cancer-related worries, with African Americans exhibiting lower levels of distress than Whites. The relevance of these findings for health and social service practitioners is discussed. Copyright © 2005 John Wiley & Sons, Ltd.

KEY WORDS: cancer worries; distress; depression; anxiety; fears of recurrence

INTRODUCTION

With the advances in diagnosis and treatment of cancer over the past several decades, a majority of those who have cancer will become long-term (five or more years) survivors (Aziz, 2002). Research documents that cancer survivors continue to experience diminished quality of life (QOL) from physiological sequelae, psychological distress and social life disruption, even decades after diagnosis and initial treatment (Henderson, 1997; see also Bloom, 2002 for a review). While long-term survivors do not typically face most of the stressors associated with diagnosis and treatment, they continue to face the uncertainties that survivorship brings, and many also continue to have cancer/treatment related symptoms. These

chronic stressors may continue to generate coping responses, which in turn may affect the mental health of long-term survivors.

Therefore, the purpose of this research is to examine coping among older adult, long-term survivors of cancer by addressing the following questions: *What are the coping strategies typically employed by long-term survivors? Is the use of specific coping strategies related to survivors' personal characteristics and/or their cancer/treatment experiences? And, how are these coping strategies related to psychological distress?* More specifically, we examine the role that different coping strategies such as planning, acceptance, venting, denial and seeking social support play in predicting psychosocial outcomes including anxiety, depression and cancer-related health worries. This is accomplished by analyzing data from in-person interviews with 321 older adults (over age 60) who have survived breast, colorectal or prostate cancer for five or more years.

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Cancer and aging

Cancer has special significance for the health of older adults because of the increased likelihood of its occurrence in an older adult population. Over half of all cancers occur in individuals over 65 years of age. The incidence rate for all sites triples in the age group 60–79 year age group, compared to individuals age 40–59 (American Cancer Society, 2002). Furthermore, the incidence of the most common forms of cancers (lung, colorectal, breast and prostate) increases dramatically after age 60. The five-year survival rate for all cancers is 59%, with an estimated 8 million survivors in the US (Greenlee *et al.*, 2001). The proportion of the population aged 65 and older who are cancer survivors is already substantial and estimated at 16% (Hewitt *et al.*, 2003).

Cancer survivorship as a chronic stressor

Until recently, research has paid relatively little empirical attention to cancer as a chronic stressor that affects QOL over the life course. Instead, most research has, and continues to, focus on the immediate and short-term effects of cancer, primarily at diagnosis, during treatment or during the first year after treatment (Stanton *et al.*, 2002). Bloom (2002) indicates that one reason for the relatively little attention given to the QOL of long-term cancer survivors is due to the recency of improvement in cancer survival rates. With the establishment of The Office of Cancer Survivorship at the National Cancer Institute, focus has extended to the ‘chronic’ phase of cancer survivorship, which are those individuals who are many years past diagnosis and treatment. Research documents that cancer survivors continue to experience diminished QOL from physiological sequelae, psychological distress, and social life disruption (Henderson, 1997; Bloom, 2002). Thus, for many survivors, the stressors associated with cancer persist long after treatment has ended, even when survival is virtually assured. The lack of attention to long-term survivorship is also apparent in the research on coping with cancer. Much of what we know about coping with cancer is from research in the ‘acute’ stage of survivorship, rather than the ‘chronic’ stage of survivorship.

The chronic stressors that persist among long-term survivors may be qualitatively different than those faced by patients in treatment or during the

period immediately following the completion of treatment. During treatment, concerns focus on the noxious effects of treatment and the possibility of invasive procedures. After the completion of treatment, any of a number of long-term effects of the cancer or treatment such as pain, fatigue, swelling or incontinence may persist and other late effects may occur. During treatment and the years immediately following, concerns about survival may predominate. Years later, concerns about recurrence are likely to be most prominent, along with the distress associated with continued monitoring and testing. With the passage of time, worries about recurrence may be reduced to some degree while other cancer-related worries may take their place, such as concerns about another cancer, possibly resulting from the carcinogenic effects of radiation or chemotherapy. These concerns may be compounded by perceptions that whatever predisposition they may have toward cancer that ‘caused’ the initial cancer may also produce another. Further, survivors may recognize that the possibility of another cancer increases as they age.

Also, with increasing age, older adults are likely to experience a broad range of illness symptoms that could be perceived as a serious threat, especially if they are similar to cancer symptoms previously experienced. Benyamini *et al.* (2003) found that cancer survivors were more likely than those with no history of cancer to contact their physician to examine ambiguous symptoms. For the breast cancer survivor, enlarged lymph nodes may signify a recurrence, a new cancer or a simple infection. For colorectal survivors, digestive problems or abdominal discomfort may have ominous meaning, or be the result of a simple dietary problem. Most prostate survivors recognize the potential for their cancer to spread regionally, thus making problems with urination or elimination potentially threatening. Thus, for long-term survivors, the need to cope with continuing cancer related fears/worries/concerns may replace stressors that the survivors previously experienced related to diagnosis, treatment and their initial prognosis.

LITERATURE ON COPING, AND COPING WITH CANCER

In psychology, the literature on coping has a long and complex history over the past 50 years.

Lazarus and Folkman (1984) note that in earlier 'traditional' formulations of coping, based in cognitive or psychoanalytic ego psychology, it was viewed as a trait or 'style' that disposed individuals to react to stressors in specific ways. More recent formulations view coping as a process that involves 'constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person (Lazarus and Folkman, 1984; p. 141)'. This approach is clearly relevant to coping with cancer, which is a disease that poses changing demands on the individual throughout the disease-recovery process. While most research to date focuses on coping during the 'acute' phase (i.e. diagnosis and treatment) of cancer, such findings can inform our research on coping with cancer in the 'chronic', survivorship phase. A review of selected research on coping with serious illness, specifically cancer, from the last ten years of the major journals in health psychology and psycho-oncology can be organized into several themes: the dimensions of coping used that are employed by survivors, the predictors of the use of specific coping dimensions and the relationship between coping and psychological well-being or distress among survivors.

Dimensions of coping

A review of the research on coping in general, and coping with cancer specifically demonstrates that the conceptualization and measurement of coping has varied widely from study to study. As Moorey *et al.* (2003; p. 338) note it, 'is a deceptively simple concept which is in fact highly complex.' This complexity is reflected in the variety of measures used and the varied factor structures that have been identified. Unfortunately, the variety of measures used and the psychometric complexity has made it difficult to make comparisons across studies and answer the question: 'how do cancer patients and survivors cope?' The section that follows reviews a selection of this research to attempt to answer this question.

One prominent approach to coping that is widely used in health psychology, but which is not cancer specific, is the Ways of Coping Scale (WOC) developed by Lazarus and Folkman (1984). Using this approach, Dunkel-Schetter *et al.* (1992) identified five patterns of coping among cancer patients: distancing, seeking or

using social support, focusing on the positive, cognitive escape-avoidance and behavioral escape-avoidance. They found that the most prominent form of coping among cancer patients was distancing. Seeking support, positive focus and cognitive escape-avoidance were the next most used coping strategies, which were used about equally, while behavioral escape-avoidance was the least used strategy.

Another approach to measuring coping that is not cancer specific is the Coping Response Index (CRI) based on the work of Moos (1988). McCaul *et al.* (1999) examined coping and adjustment to breast cancer in women soon after diagnosis using this conceptualization. They identified three patterns of coping: active cognitive coping, active behavioral coping and avoidant coping. The most utilized coping strategy at both baseline and follow-up was active behavioral coping, followed by active cognitive coping. The coping strategy used least was avoidance coping. A recent study by Hack and Degner (2004), one of the few that examined coping over an extended period of time, also utilized the CRI. They found among their sample of breast cancer survivors that at the three year follow-up about equal numbers of survivors fell into the low avoidance cluster and the high avoidance cluster, with those in the high avoidance cluster having significantly higher levels of anxiety.

One prominent approach to coping that has been applied to both general health threats and cancer specifically, was developed by Miller and her colleagues (see Miller *et al.*, 2001 for a review). This approach focuses on 'monitoring' and 'blunting' as the two ends of a continuum measured by the MBSS (Miller *et al.*, 1988), which are employed by individuals facing a health threat. Monitoring as a form of coping is when the individual is likely to seek information and scan for threat relevant information as a way of responding to that threat. In contrast, those who employ blunting are more likely to avoid or ignore information relevant to that health threat.

Summarizing their own and others research (see Miller *et al.*, 1996), they indicate that the 'distinctive characteristics of high monitors are not visible when stress is low or absent: They become most apparent when the 'heat is on' (Miller *et al.*, 1996; p. 216).' They further note that whether monitoring is a beneficial approach to coping depends on the context and type of information provided. High monitors are more likely to have intrusive ideation, which is

correlated with denial and disengagement when compared to low monitors (Miller *et al.*, 1996). In an earlier study (Miller *et al.*, 1988), they found that high monitors demand more tests, information and counseling, but desire a less active role in their care. However, they also note that high monitors are more likely to adhere to screening or follow-up testing; this may reduce distress as it increases confidence that will enable the individual to detect disease at the earliest possible stage.

Ong *et al.* (1999) used the Threatening Medical Situation Inventory (TMSI) (see van Zuuren *et al.*, 1996) to measure 'monitoring' and 'cognitive avoidance/blunting' based on Miller's conceptualization. They found comparable levels of both styles being employed by cancer patients with a monitoring coping style being associated with a preference for more detailed information from their physician, asking more questions and greater participation in decision making. In contrast, they found that a blunting coping style was associated with a preference for less participation.

Another prominent way of conceptualizing coping in health psychology that is *not* cancer specific, but widely used in psycho-oncology is based on the work of Carver and colleagues (Carver *et al.*, 1989, 1993). In their formulation, coping is viewed as having 12 dimensions including planning, acceptance, denial, use of social support, positive reframing, active coping, suppression of competing activities, restraint, religion, behavioral disengagement, use of humor and self distraction. In a study of breast cancer patients/survivors in the first year post-diagnosis, they found that acceptance, positive reframing and the use of religion were the most common coping responses while denial and behavioral disengagement were the least common reactions reported.

Among the conceptualization and measurement approaches that are *cancer specific*, those based on the work of Watson *et al.* (1988) are most prominent. Nordin and Glimelius (1998) used the Mental Adjustment to Cancer (MAC) scale developed by Watson, which includes coping dimensions such as 'fighting spirit', 'anxious preoccupation', 'hopelessness/helplessness' and 'avoidance' to study the adaptation to gastrointestinal cancers. They examined coping at diagnosis through the first year and found that the most prominent coping strategy employed was 'fighting spirit'.

Another cancer specific approach to coping was developed by Moorey *et al.* (2003), the Cancer Coping Questionnaire (CCQ). It is based on Adjuvant Psychological Therapy. They found that lower CCQ scores correlated with more psychological morbidity and poorer adjustment to cancer.

Looking across the literature reviewed, it is difficult to identify universal themes in coping with cancer due to the diverse conceptualizations and measures used. However, some patterns are discernable. Cancer survivors often actively respond to their illness using cognitive and behavioral coping, fighting spirit and seeking social support as coping strategies. Less prominent are acceptance, distancing and cognitive escape-avoidance as coping responses to cancer. From the above research it is clear that coping in general, and coping with cancer specifically is a very complex and multidimensional process, one that may be linked to the stage of illness that the survivor is in at the time of the research. This is an important consideration bearing on our research since none of the reviewed literature examines the chronic phase of survivorship and the stressors experienced by long-term survivors.

Predictors of the use of specific coping strategies

A significant portion of the research on coping with cancer focuses on the factors that predict the type of coping strategies employed by patients/survivors. In a group of cancer patients that ranged from newly diagnosed to those who had survived 'several years', Dunkel-Schetter *et al.* (1992) found that the degree of stress appraisal was positively associated with seeking and using social support, and both cognitive and behavioral escape-avoidance. They found that being a breast cancer survivor was associated with seeking and using social support and that time since diagnosis was positively associated with behavioral escape-avoidance coping.

Schnoll *et al.* (1998) examined differences in coping styles among breast cancer patients based on disease stage. They found that Stage II patients reported higher levels of fighting spirit and lower levels of hopelessness/helplessness, anxious preoccupation and fatalism when compared to Stage IV patients. They also found that Stage II patients reported higher levels of positive attitude and vigilant participation. Moreover, they found that

disease stage moderated the relationship between coping style and distress, suggesting that it is essential to consider disease stage when assessing the role that coping plays.

Research has shown that coping styles may vary based on whether an individual has an optimistic or pessimistic life orientation (Scheier *et al.*, 1986). Recent research by Schou *et al.* (2004) with cancer survivors demonstrates that dispositional optimism is significantly positively correlated with 'fighting spirit' and negatively associated with 'helplessness/hopelessness' dimensions in the MAC. This suggests that it is important to examine and control for the effects of this personal/dispositional characteristic in the analysis of coping and distress.

Because our research looks at coping among older adult survivors, the gerontological literature on coping is instructive. Aldwin *et al.* (1996) using data from the Normative Aging Study that employed the WOC scales found that the use of all types of coping decrease with advancing age from early mid-life through the 'old-old' (85+). Significant declines were noted for instrumental action, social support, cognitive reframing and interpersonal hostile coping. They suggest that part of the decline seen among the oldest adults is that they may have a more 'matter of fact' approach to physical limitations. They also indicate that the oldest adults are more likely to accept things that are beyond their control.

Coping's relationship to psychological distress

Another aspect of the research on coping with cancer focuses on the relationship between specific coping domains and a range of psycho-social outcomes such as anxiety, depression and/or cancer worries. Ong *et al.* (1999) did not find differences in psychological distress to be related to the use of either monitoring or blunting coping styles, nor did they find these specific coping styles to be correlated with other QOL outcomes such as role or social functioning.

Other research has found a variety of patterns of association between specific coping styles and forms of distress. Schnoll *et al.* (1998) found that survivors who reported higher levels of fighting spirit and lower levels of hopelessness/helplessness, anxious preoccupation and fatalism also reported lower levels of anxiety and depression and better

overall QOL. In a longitudinal study of the relationship between coping styles and psychological distress, Hack and Degner (2004) found that acceptance/resignation at baseline (six months or less after diagnosis) was associated with depression and anxiety three years later.

Moorey and colleagues (2003) looked at three different samples of cancer patients/survivors using their Cancer Coping Questionnaire (CCQ). The CCQ is positively correlated with the fighting spirit and negatively correlated with hopelessness/helplessness and anxious preoccupation subscales in the MAC. Their overall finding was that the degree of coping, as measured in the CCQ, was significantly negatively associated with depression but not with anxiety.

In a study of recently diagnosed, early stage breast cancer patients, McCaul *et al.* (1999) found that avoidance coping, but not behavioral or cognitive coping was significantly associated with distress at baseline. Specifically, avoidant coping was significantly associated with both depression and anxiety. Longitudinally, (baseline-four months later) avoidant coping was associated with depression, but not anxiety.

Nordin and Glimelius (1998) examined the relationship between coping using the MAC and depression and anxiety among gastrointestinal cancer patients during the period from diagnosis until one year later. They note that the coping strategies used and emotional well being were remarkably stable over this period of time. They suggest that the MAC may well be a measure of 'trait' coping rather than 'state' coping. They did find a significant correlation between hopelessness/helplessness and depression and also between anxious preoccupation and anxiety. However, they suggested that this may be attributed to similarities in the content of the respective scales, which was supported by the results of factor analysis. In a later analysis Nordin *et al.* (1999) suggest that the MAC should not be used as a measure of general coping since it contains components of mental adjustment to a specific threat (cancer diagnosis) and both coping and the outcome are included in that concept.

Mullens *et al.* (2004) examined the relationship between coping, psychological distress, cancer worries and perceived risk of recurrence and general anxiety. They found that individuals who exhibited greater levels of these forms of distress were more likely to cope by making positive health behavior changes. This research is significant as it

is one of the few studies that views distress as generating coping behaviors, rather than looking at coping as mediating the stressor/distress relationship.

Finally, Carver *et al.* (1993), using the model of coping we used in our research, found that acceptance and the use of humor predicted lower distress while denial and disengagement predicted greater distress among breast cancer patients/survivors during the first year of the illness experience. Their research further explored the role that optimism, a dispositional or trait-like characteristic, plays in the coping–distress relationship. They found that optimism is positively associated with active coping and planning early in the course of the illness and acceptance throughout most of the illness experience. Further, they found that optimism is negatively associated with distress throughout the one year period they studied. Their findings on the relationship between optimism and distress are replicated by Schou *et al.* (2004) who indicate that dispositional optimism is related to anxiety and depression. Cancer patients with higher levels of optimism have lower levels of both anxiety and depression. This is further evidence to suggest that it is important to consider the role of personal dispositional characteristics such as optimism when examining the relationship between coping and psychological distress.

In the gerontological literature, a study of older adults with Parkinson's disease found that the use of distancing was related to poorer mental health outcomes (Frazier, 2000). Knight *et al.* (2000) studied the coping responses of older adults who were caregivers. They found that emotion-focused coping was related to higher levels of emotional distress, while active coping is associated with lower levels of emotional distress. As with most other studies of coping and distress, the study was cross-sectional and thus cannot definitively address the issue of causality in the coping–distress relationship. However, these findings are consistent with research on coping in general and coping with cancer that finds emotion focused coping or venting, denial and distance to be linked to poorer mental health outcomes.

A limitation of the research reviewed above on the relationship between coping and psychological distress is that for the most part it examines this relationship almost exclusively among newly diagnosed cancer patients, those in treatment or in the first year or years of the illness experience. One

exception is the research by Bloom *et al.* (2004) which looks at five-year survivors. That research has a somewhat different approach to coping, focusing on 'palliative' coping (Schain, 1979) which measures the use of alcohol, smoking or drugs as a means to increase energy or calm down. This form of coping was not found to be correlated with emotional well-being. Another exception is the previously cited research by Mullens and colleagues that looks at survivors up to 14 years post treatment (2004). They found that short-term survivors, compared to long-term survivors, exhibited higher levels of worry about recurrence, but also higher levels of one specific health protective behavior, exercise.

Another limitation with the research on coping with cancer is that it is typically based on coping scales that are cancer specific such as the MAC. This creates the dilemma suggested by Nordin *et al.* (1999) of confounding coping with the distress outcome. Finally, there is very limited research on the role that personal characteristics of the survivor, the nature of their cancer/treatment experience (e.g. types of cancer, the nature of treatment, continuing symptoms or side effects) or the role of other health factors (e.g. physical disability, co-morbidities) play in how survivors cope in the aftermath of cancer. This research will include these measures in our analysis of coping and the relationship between coping and distress.

Research questions

Therefore, given the limitations noted above, we suggest that the following questions remain largely un-addressed:

1. *What are the coping strategies employed by long-term, older adult survivors?*
2. *Are the personal characteristics and/or the cancer/treatment experiences associated with the types of coping strategies that long-term survivors use?*
3. *Are specific coping strategies that are used by long-term survivors related to forms of psychological distress such as anxiety and depression and cancer specific outcomes such as cancer-related worries?*

Our analysis is guided by the general stress and coping paradigm as developed by Pearlin and colleagues (see Pearlin *et al.*, 1981; Pearlin, 1989). In that formulation, distress (i.e. anxiety, depression or worry) can be viewed as the result of

specific chronic and acute stressors. Pearlin and colleagues identify social characteristics of individuals such as race, gender and age as chronic stressors. As such, these need to be considered as potential stressors and important covariates in the cancer/distress relationship. The illness/treatment characteristics of the survivor are also potential stressors that may persist into the chronic phase of survivorship. These include cancer type, stage at diagnosis, number of years since diagnosis, total number of treatments, treatment type and number of symptoms during treatment. More recent or current stressors represent acute stressors in the model. These include factors such as the number of current symptoms attributed to cancer or its treatment and non-cancer stressors such as comorbid health conditions and functional difficulties.

Models of stress such as Pearlin's, and Lazarus and Folkman's (1984) include coping as an important factor in understanding the stressor–distress relationship. In the general stress and coping model, the types of stressors experienced are viewed as predicting the degree to which specific types of coping are utilized. These are the direct effects of stress on coping. Coping can also be viewed as mediating or moderating the stressor/distress relationship. Finally, coping can be viewed as having direct effects on psychological distress. The analysis presented examines the degree to which both acute and chronic stressors reported by long-term cancer survivors predict the use of specific coping strategies and how these in turn predict the distress that survivors continue to experience.

METHODS

Data source

The data are derived from an ongoing longitudinal project funded by the National Cancer Institute that will ultimately collect six waves of data over a ten year period (1998–2008). The sample was selected from the cancer tumor registry of the Ireland Cancer Center (ICC) at University Hospitals Health System (UHHS) in Cleveland, OH using a stratified random sample design. Because the ICC is geographically located in the center of a large metropolitan area, its tumor registry provided a unique opportunity to include

a substantial sample of African American cancer survivors. By over-sampling, African Americans constitute nearly 40% of the final sample. The sample was further stratified by gender and cancer type with the three most survivable types of cancer among older adults: breast, colorectal and prostate included. Lung cancer was excluded because of the generally poor survival rates that limited the number of long-term survivors in the registry. The results reported here are derived from the analysis of data obtained from the initial in-person interviews with 321 older adult (over 60 years of age) long-term survivors (5–34 years post-diagnosis) of breast, prostate and colorectal cancer.

Sample eligibility/acquisition

The sample acquisition for the study began in March 1999. Based on the study's inclusion criteria, the tumor registry selected only persons who: (1) were 60 years of age or older, (2) had been treated for breast, colorectal or prostate cancer, (3) were five years or more from diagnosis and (4) were African American or Caucasian. The resulting sampling frame consisted of 2129 cancer survivors, including 255, (12%) who were African Americans. The study randomly selected from among these individuals to fill the study cells related to race, gender and cancer type as discussed above. The study also mandated that individuals in the tumor registry who became eligible during sample accrual (having reached age 60 or the five year period from active treatment) would be included. These two groups, those randomly selected and those achieving eligibility during sample accrual, were comprised of 799 survivors. Of these, 46 (6%) were ineligible because they reported not meeting one or more of the study's four eligibility criteria.

Of the remaining 753 persons, the study was unable to contact 118 (16%), 273 (36%) refused to participate and 362 (48%) agreed to participate. Of the 362 individuals initially agreeing to participate, 41 (11%) did not complete interviews (the study was unable to contact 11 individuals, two died before interviewer contact, four were physically or cognitively unable to do the interview and 24 refused when the interviewer arrived). The remaining 321 (89%) completed the initial wave one interview upon which the current research is based.

Interviewing procedures

The project hired interviewers who were experienced in talking with and obtaining information from older adults with health problems. They participated in a six-hour training session with the project's co-principal investigator/project director. Three training modules covered general interviewing techniques, procedures specific to potential risks when interviewing older adults and question-by-question review of the project's structured survey instrument. Manuals containing these protocols were distributed to interviewers and were updated as the study progressed.

After the study was reviewed by an ICC research review committee and approval obtained from the University Hospitals' IRB, letters were sent to prospective respondents from the cancer center's director. Letters included mailback cards indicating willingness to be contacted by the research project. Names and contact information of interested individuals were passed to research staff that called, explained the project and obtained verbal consent. Names and contact information of those verbally consenting were forwarded to the interviewing staff. Before beginning the face-to-face interviews, all respondents read and signed written informed consents. Interviews took, on average, two hours to complete and were conducted in respondents' homes.

Sample characteristics

The personal and cancer-related characteristics of the sample are provided in Tables 1 and 2. With regard to gender, 59% of the sample is female. Our design strategy of over-sampling African Americans resulted in 38% of the sample being from this racial group. With regard to cancer type, the proportion of the total sample with breast cancer was slightly over 41%, prostate cancer survivors comprised approximately 29% of the sample and colorectal survivors comprised nearly 30%. The mean age of the survivors was 72.1 years, and the mean age at diagnosis was 61.9. The average period of time since diagnosis was 10.4 years.

With regard to the cancer/treatment characteristics, the tumor registry provided information on the stage of the cancer at diagnosis. Most survivors in the sample had *in situ* (6.5%) or localized cancer (56.7%) at diagnosis. However, nearly 30% had more advanced disease, either regional (27.7%) or

Table 1. Personal characteristics ($N = 321$)

	<i>N</i>	Percentage
Age ($M = 72.18, SD = 7.7$)		
<60	5	1.6
60–64	45	14.0
65–74	145	45.2
75+	126	39.3
Gender		
Female	190	59.2
Male	131	40.8
Race		
Black/African-American	121	37.7
White/Caucasian	200	62.3
Marital status		
Married	179	55.8
Widowed	83	25.8
Divorced	34	10.6
Separated	2	0.6
Never Married	22	6.9
Unknown	1	0.3
Education ($M = 13.58, SD = 3.5$)		
0–11 years	59	18.4
12 years	74	23.1
13–16 years	124	38.6
17+ years	62	19.3
Unknown	2	0.6

distal (1.9%). The average number of types of treatment received was 1.6. The majority of the sample (43.9%) received surgery as the only type of treatment, reflecting the localized nature of the disease. The remainder of the sample received combined therapies including radiation, chemotherapy and hormone therapy. Approximately 12% received both surgery and radiation therapy and about 10% had surgery and chemotherapy. Only 5% of the sample was treated with a combination of surgery, radiation, and chemotherapy, however nearly 30% had other combined therapies.

Instrumentation and measures

The questionnaire covered a range of issues related to the illness experience, such as disease and treatment characteristics, health perceptions and psychosocial sequelae (see Deimling *et al.*,

Table 2. Cancer and health characteristics ($N = 321$)

	<i>N</i>	Percentage
Type of cancer		
Breast	133	41.4
Colorectal	96	29.9
Prostate	92	28.7
Age at diagnosis ($M = 61.9, SD = 8.9$)		
<50	33	10.3
51–60	104	32.4
61–70	126	39.3
71–80	48	15.0
80+	7	2.2
Unknown	3	0.9
Years since diagnosis ($M = 10.4, SD = 5.5$)		
3–10	197	61.4
11–15	71	22.1
16–20	31	9.7
21+	19	5.9
Unknown	3	0.9
Cancer stage at diagnosis		
<i>In situ</i>	21	6.5
Local	182	56.7
Regional	89	27.7
Distal	6	1.9
Not available	23	7.2
Symptoms attributed to current cancer or treatment ($M = 0.8, SD = 1.5$)		
0	200	62.3
1	58	18.1
2	33	10.3
3	30	9.3
Total number of treatment types ($M = 1.6, SD = 0.8$)		
0	2	0.6
1	168	52.4
2	100	31.2
3	42	13.1
4	4	1.2
Unknown	5	1.5
Treatment types		
Surgery only	141	43.9
Surgery and radiation only	39	12.1
Surgery and chemotherapy only	31	9.7
Surgery, chemotherapy, and radiation	16	5.0
Surgery, hormone, and other	45	14.0
Other combined therapies	49	14.0

2002). The findings reported here include: the personal characteristics of the survivor (age, race, gender and optimism), the cancer/treatment char-

acteristics (cancer type, stage at diagnosis, years since completion of treatment, types of treatment, symptoms during treatment, current symptoms and presence of another cancer), general health and functioning (current health conditions, functional difficulties), coping strategies (planning, acceptance, venting, denial and social support) and psychological distress (anxiety, depression and cancer-related worries) of these older adult survivors. Nearly all of the measures are widely used and have established validity and reliability. We conducted factor analysis and reliability analysis to further establish the psychometric properties of these indicators and scales. Results of these analyses are reported where applicable. The specific measures used to operationalize the variables in this analysis are detailed below.

Respondent characteristics. The age, gender and race of the respondent were based on tumor registry information and confirmed at the time of interview. Gender and race are used in the correlation and regression analyses coded as dichotomous variables (0 = male and 1 = female; 0 = Caucasian, 1 = African American, respectively).

Optimism was measured using this subscale of the Life Orientation Test (LOT) and has well established validity and reliability (Scheier and Carver, 1985). Optimism is generally viewed as a stable dispositional characteristic of the individual (Scheier *et al.*, 1986), and in this research is used as a covariate and predictor of both coping and psychosocial outcomes. This eight item index included items such as 'In uncertain times, I usually expect the best.' With responses coded on a five-point continuum ranging from 'strongly disagree' to 'strongly agree.' Factor analysis was conducted to determine whether optimism is empirically distinct from the coping dimensions and the psychosocial outcomes. Results of that analysis indicate that optimism as measured by the LOT represents a separate factor, when analyzed in the context of these other constructs (not shown, available from the authors on request). Scores on this index had a potential range of 8–40 and the scale had an alpha reliability of 0.78.

Cancer/treatment characteristics. The type of cancer and stage at diagnosis was derived from information in the tumor registry at the Ireland Cancer Center. The types of treatment received

were based on the respondents self reports of having received any of the following treatments: surgery, radiation, chemotherapy and/or hormone therapy. For correlational and regression analyses each type was coded as dichotomous variables (0 = did not receive, 1 = received). Based on this information a *total number of types of treatment* was created as were specific combinations of treatment types as described above. The mean number of treatment types was 1.6.

A list of 22 possible symptoms was used including nausea, vomiting, weakness, pain, swelling, impaired immunity, loss of balance, numbness and burns to elicit respondents' self report on the presence of these cancer/treatment effects. The list of symptoms was the basis for an index of *symptoms experienced during treatment* and *current symptoms attributed to cancer/treatment*. The average number of symptoms experienced during treatment was 1.5 with an actual range of 0–15. The mean number of current symptoms was 0.8 with an actual range of 0–13.

Health conditions and functional difficulty. A single index of co-morbid health conditions was used to assess the current health difficulties reported by the survivors. This index with well established validity specifically designed for older adults is derived from the Older American Resources Survey-OARS (George and Fillenbaum, 1985). This *Health Conditions Index* is a sum of the number of health conditions that the survivor reported from a list of 27 possible conditions. The average number of health conditions reported was 3.7 with an observed range of 0–11. As an indicator that is a simple sum of

health conditions, reliability analysis is not appropriate.

The measure of functional difficulties that was used in this research was developed by Nagi (1976). This *Functional Difficulty Index* assesses the problems survivors have with eleven specific motions or movements such as standing, lifting or carrying objects, moving limbs, stooping/bending or kneeling or buttoning a shirt. Scores on the index range from 0 to 33. Because the presence of specific functional difficulty items is not expected to be correlated with other difficulty items, alpha reliability is not appropriate. In this research, the mean was 5.2 and the actual range was 0–25.

Coping resources. *Coping resources* were measured using 15 items selected from the coping inventory developed by Carver *et al.* (1989). This index which has well established reliability and validity has been shown to have five dimensions: planning, acceptance, venting, denial and social support. An exploratory factor analysis using an oblique rotation confirmed the five distinct dimensions, each containing three items. Respondents answered the items based on the root question, 'When I'm confronted with stress...' and responded on a five point Likert scale with responses ranging from '0 = Never' to '4 = Very often'. Each dimension therefore has a potential range of 0–12. (See Table 3 for additional information.)

The *Planning* dimension included the items, 'I try to come up with a strategy about what to do.'; 'I make a plan of action.'; and 'I think hard about how I might best handle the problem.' It had an alpha reliability of 0.83. The *Acceptance* dimension included these items 'I learn to live with it.'; 'I accept that this has happened and that it can't be

Table 3. Summary of coping and psychological distress scales

	Potential range	Mean	Standard deviation	Alpha reliability
<i>Coping dimension</i>				
Planning	0–12	8.0	3.1	0.83
Acceptance	0–12	7.4	3.1	0.82
Venting	0–12	4.5	3.2	0.89
Denial	0–12	2.0	2.5	0.76
Social support	0–12	5.0	3.1	0.79
<i>Distress outcomes</i>				
Anxiety	0–36	5.0	4.9	0.86
Depression	0–80	12.5	9.2	0.87
Cancer related worries	4–20	11.2	3.4	0.84

changed.’; ‘I get used to the idea that it happened.’ Alpha reliability was 0.82. The *Venting* dimensions included the following: ‘I get upset and let my emotions out.’; ‘I let my feelings out.’; ‘I feel a lot of emotional distress and I find myself expressing those feelings a lot.’ Alpha reliability was 0.89. The *Denial* dimension included: ‘I refuse to believe that this has happened.’; ‘I pretend that it hasn’t really happened.’; ‘I act as though it hasn’t even happened’ and had an alpha of 0.76. Finally, *Social support* included the items: ‘I ask people who have had similar experiences what they did.’; ‘I talk to someone who could do something concrete about the problem.’; ‘I talk to someone about how I feel’ and had an alpha of 0.79.

Psychological distress. Two measures of general psychological distress were used, anxiety and depression. The *anxiety* measure was derived from The Profile of Mood States (POMS; McNair *et al.*, 1971). Respondents were asked the degree to which statements described how they had been feeling during the past week including the interview date. The anxiety sub-scale contains nine items such as ‘shaky,’ ‘tense,’ ‘on edge,’ and ‘panicky. Responses ranged from ‘0 = not at all’ to ‘4 = extremely,’ creating a potential range of 0–36 for this measure (see Table 3 for descriptive and psychometric information). The alpha reliability coefficient was 0.86 in this sample.

The second measure of general psychological distress was a widely used measure of *depression*, the CES-D (Radloff, 1977). This scale consists of 20 items asking respondents the frequency during the past year that they have felt depressed, happy, lonely, sad, fearful, etc. Answer categories ranged from ‘0-never/rarely’ to ‘4-all of the time, creating a potential range of from 0 to 80 on this measure.’ The scale demonstrated an alpha reliability of 0.87 in this sample.

A scale measuring *cancer-related worries* was constructed by the authors based on the work of Gotay and Muraoka (1999). This scale included four items: ‘I am sometimes concerned that symptoms I experience may indicate the recurrence of cancer.’; ‘I worry about future diagnostic tests.’; ‘I worry about my cancer coming back.’; and ‘I worry about another type of cancer.’ Responses were scored on a five point continuum from ‘1 = Strongly agree’ to ‘5 = Strongly disagree,’ creating a potential range of 4–20. Factor analysis was conducted to determine whether cancer

related worries represent a distinct measure from the other measures of general psychological distress. The results of that analysis indicated that cancer-related worries are a distinct factor from anxiety and depression (analysis not shown, available from authors upon request). The alpha for this scale in this sample was 0.84.

Analysis plan

First, descriptive analysis is presented that show the types of coping used by survivors (planning, acceptance, venting, denial and social support) with this information presented by cancer type and gender (RESEARCH QUESTION #1). Second, correlation and regression findings are reported to identify the predictors of the use of specific types of coping (RESEARCH QUESTION #2) and to also identify the relationship between the use of specific types of coping and psychological distress (RESEARCH QUESTION #3). For the regression analyses, standardized regression coefficients are reported that indicates the predictive power of each of the variables in the equation relative to the other variables included. *P*-values are provided to indicate the level of statistical significance of each coefficient and these along with the *R* and *R*² provide information on the overall fit of each regression model.

RESULTS

Types of coping utilized

In order to address *the first research question* regarding the type of coping used by long-term survivors, descriptive data is provided in Table 4. The mean scores for the total sample on specific coping measures indicates that long-term survivors in this sample most often use planning (Means ranging from 7.6 to 8.1), acceptance (Means 6.8–7.8) and social support (Means 4.2–5.2) as coping strategies. Venting and denial were the coping strategies used least (Means 4.2–5.0 and 1.8–2.2, respectively) by long-term survivors. While no significant differences were found in coping strategies by gender or cancer type, breast and prostate cancer survivors reported the highest levels of the use of venting as a coping strategy.

Table 4. Coping by gender and cancer type ($N = 321$)

Coping dimension	Breast ($N = 133$)		Colorectal				Prostate ($N = 92$)		F	p
	Mean	S.D.	Female ($N = 57$)		Male ($N = 39$)		Mean	S.D.		
			Mean	S.D.	Mean	S.D.				
Planning	8.1	3.0	7.6	3.2	7.8	3.4	8.1	3.1	0.50	0.68
Acceptance	7.4	3.1	7.8	3.1	6.8	3.3	7.5	3.1	0.68	0.57
Venting	5.0	3.4	4.2	1.8	3.7	2.9	4.3	3.2	2.40	0.07
Denial	2.0	2.6	1.8	2.2	2.2	2.8	2.0	2.4	0.27	0.84
Social support	5.4	3.2	4.9	3.2	4.2	2.5	4.8	3.1	1.70	0.17

Correlates of coping strategies

Prior to looking at the multivariate analysis, it is useful to examine *the significant bivariate associations* among the study variables (correlation matrix available upon request). The second research question asks what factors are correlated with the use of specific coping strategies. African Americans were less likely to utilize the coping strategy of social support ($r = -0.13$). Use of planning, venting and social support decreased with age ($r = -0.18, -0.18$ and -0.24). Higher levels of optimism were related with use of planning ($r = 0.21$) and social support ($r = 0.15$). Breast cancer survivors showed a tendency to use venting ($r = 0.14$). Survivors with higher numbers of current symptoms of cancer were found to be more likely to use venting ($r = 0.18$) and social support ($r = 0.12$) to cope. Those survivors who had a greater number of symptoms during treatment now are more likely to use planning ($r = 0.12$), venting ($r = 0.22$) and social support ($r = 0.18$). The *third research question* asks which coping strategies are associated with the specific distress outcomes. Survivors that used venting or denial were found to have significantly higher levels of anxiety ($r = 0.21, 0.18$), depression ($r = 0.27, 0.30$), and cancer-related health worries ($r = 0.14, 0.13$). Use of social support as a coping mechanism was significantly correlated with high anxiety levels ($r = 0.11$) as well.

Regression analyses

The first step in the multivariate analysis was to run regression equations to examine the predictors for each of the five coping strategies (RESEARCH QUESTION #2). In this analysis, the personal/social characteristics of survivors are entered into

the equation, followed by the cancer and cancer/illness characteristics of survivors. Age was a consistently significant predictor of the type of coping used by survivors. Older adults were less likely to use planning (beta = -0.16), venting (beta = -0.13), denial (beta = -0.12) and seeking social support (beta = -0.21). African Americans were less likely to use seeking social support as a coping strategy (beta = -0.13). Another personal characteristic, optimism, was associated with greater planning (beta = 0.17) and seeking social support (beta = 0.11). Among cancer characteristics, only the number of symptoms during treatment was found to be a significant predictor of any of the coping dimensions. More symptoms during treatment was a significant predictor of use of planning (beta = 0.17) and venting (beta = 0.16). All of the coefficients/effect sizes were relatively small and none of the equations explained a substantial amount of variance in the use of these coping strategies (adjusted $R^2 < 0.10$).

Table 5 provides a summary of the regression analysis of the psychosocial outcome measures used in this research: anxiety, depression and cancer-related worries (RESEARCH QUESTION #3). The predictors again include the personal/social characteristics of survivors and the cancer/illness characteristics of survivors. However, in these equations the five specific coping domains are added to identify their predictive power in understanding the distress outcomes.

Looking first at *anxiety*, two of the personal/social characteristics of survivors were significant predictors, race (beta = -0.14) and optimism (beta = -0.21), indicating that African Americans and individuals who were most optimistic displayed lower levels of anxiety. Denial as a coping strategy was a significant predictor (beta = 0.15), indicating that individuals who engaged in denial were, to a greater extent, more anxious. The

Table 5. Regression analyses of psychological distress outcomes ($N = 321$)

	Anxiety		Depression		Cancer related health worries	
	beta	<i>b</i>	beta	<i>b</i>	beta	<i>b</i>
<i>Personal characteristics</i>						
Race	-0.14*	-1.30*	-0.14*	-2.61*	-0.22***	-1.56***
Gender	0.13	1.16	0.12	2.10	-0.10	-0.66
Age	-0.06	-0.03	-0.02	-0.02	-0.05	-0.02
Optimism	-0.21***	-0.21***	-0.29***	-0.60***	-0.26***	-0.20***
<i>Cancer/treatment characteristics</i>						
Breast cancer	-0.07	-0.60	-0.03	-0.51	0.06	0.42
Prostate cancer	0.05	0.51	0.05	1.04	0.01	0.05
Cancer stage at diagnosis	-0.08	-0.55	-0.06	-0.94	-0.12	-0.62
Years since diagnosis	0.00	-0.03	0.00	-0.05	-0.07	-0.50
Total number of treatments	0.03	0.19	-0.04	-0.47	0.06	0.25
Chemotherapy	0.11	1.18	0.13	2.82	0.03	0.24
Radiation therapy	-0.06	-0.56	-0.05	-0.87	0.58	0.63
Symptoms during treatment	0.05	0.10	0.17	0.68	0.24**	0.38**
Current symptoms attributed to cancer	0.02	0.05	-0.08	-0.41	0.00	0.01
Other cancer	-0.02	-0.18	-0.02	-0.47	-0.04	-0.30
<i>Health characteristics</i>						
Health conditions scale	0.14	0.25	-0.08	-0.31	-0.02	-0.03
Functional difficulty	0.05	0.04	0.25***	0.41***	0.04	0.03
<i>Coping mechanisms</i>						
Planning	0.04	0.06	-0.06	-0.18	-0.03	-0.03
Acceptance	-0.01	-0.01	-0.05	-0.14	-0.08	-0.08
Venting	0.11	0.15	0.15*	0.43*	0.01	0.01
Denial	0.15*	0.26*	0.19***	0.78***	0.14*	0.18*
Seeking social support	-0.05	-0.07	-0.06	-0.17	-0.03	-0.03
	$R^2 = 0.16^{**}$		$R^2 = 0.32^{***}$		$R^2 = 0.24^{***}$	
	Adjusted $R^2 = 0.08^{**}$		Adjusted $R^2 = 0.24^{***}$		Adjusted $R^2 = 0.16^{***}$	

Beta: Standardized partial regression coefficient; *b*: unstandardized partial regression coefficient; R^2 : Total variance explained by all predictors. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

equation explained 16% of the variance in anxiety among long-term survivors ($p = 0.01$).

Turning to the predictors of *depression* among long-term survivors, a number of predictors were found to be significant. African American survivors were less depressed than white survivors (beta = -0.14). Optimistic survivors also displayed lower levels of depression (beta = -0.29). Among the cancer and illness characteristics, those with the greatest functional difficulty reported the highest levels of depression (beta = 0.25). With regard to coping, survivors who used venting and denial to a greater extent displayed the highest levels of depression (beta = 0.15 and 0.19, respectively). The equation with all predictors entered

explained approximately 32% of the variance in depression among these older adult, long-term survivors ($p < 0.001$).

Finally, the regression analysis of *cancer-related worries* demonstrated a number of significant predictors. Again, race was a significant predictor (beta = -0.22) as was optimism (beta = -0.26), indicating that African Americans and optimistic individuals were less likely to have worries about cancer. With regard to the cancer and illness predictors, those survivors who had the most symptoms during treatment worry the most about cancer (beta = 0.24). In terms of coping, survivors who employ denial as a coping strategy are more likely to worry about cancer (beta = 0.14). The

equation with all predictors entered explains nearly 24% of the variance in cancer worries ($p < 0.001$).

SUMMARY AND DISCUSSION

The health and psychosocial issues that cancer survivors cope with in the chronic phase are clearly different than those that confronted them at diagnosis, during treatment and during follow-up testing. The years, and for some individuals, the decades since diagnosis, have placed temporal distance between the original shock of a cancer diagnosis and treatment trauma, and their current lives. As older adults, they now cope with the comorbidities that come from aging along with the effects of cancer and its treatment. And while the latter may not represent major health problems for most survivors, cancer-related worries continue to be common.

The descriptive data on this sample of survivors addresses the first research questions, indicating that denial is not a prominent form of coping. It is not surprising that denial plays a less prominent role for long-term survivors. Given the realities of treatment, and the continuing effects of the illness or treatment that they have experienced for years, it may be all but impossible to deny the role that cancer has played in their lives. It would be logical to assume that denial or other forms of avoidance coping may be more prominent in the early phase of the illness experience and may, in fact, be adaptive, allowing the individual the opportunity to integrate the illness into their daily lives. However, our research on long-term survivors is consistent with that of Carver *et al.* (1993) who indicated that behavioral disengagement was the least used coping strategy among women in the first year of survival after breast cancer treatment.

The fact that planning and acceptance are the most common coping strategies among survivors is also not surprising. The planning that is necessary to get through the cancer experience, and adaptation to life after cancer may have enhanced this form of coping. Similarly, the powerlessness and lack of control that the cancer experience often engenders may also have promoted a stronger sense of acceptance as a coping strategy. Again this replicates Carver *et al.* (1993), who found acceptance to be one of the most often

used coping strategies along with positive reframing and the use of religion.

In reference to the second research question, the cancer-related factors, along with survivor personal characteristics as predictors, did not explain a great deal of variance in any of the dimensions of coping. However, one individual characteristic, optimism, was a consistently significant predictor of specific coping dimensions. Optimism, which is viewed as an individual dispositional or trait-like characteristic, was shown to be associated with planning and social support, and conversely those who are less optimistic are less likely to plan and seek support. This is consistent with what Schou *et al.* (2004) found, with optimism associated with a greater fighting spirit and less hopelessness/helplessness. Clinicians working with patients who take a less optimistic approach to their illness or those who are pessimistic about their prognosis may need to work with them in developing planning strategies and enlisting social support.

The most consistently significant correlates between any of the survivors' characteristics and coping was their age. The older the survivor in our sample, the less likely they are to use planning, denial, venting or seeking social support. This replicates the findings of Aldwin *et al.* (1996) in the gerontological literature that found that in a normative population the use of all coping strategies decline with increasing age. The fact that older adults are less likely to use denial or venting may be seen as an encouraging finding. However, the fact that they are less likely to plan or seek social support suggests that clinicians working with older survivors may want to address these issues with older adults.

In terms of cancer characteristics, the number of symptoms the survivor experienced during treatment was predictive of greater use of planning and venting as a coping strategy now. Extensiveness of symptoms may be a surrogate for the intensity or complexity of the illness. Survivors who had the most intense or complex illness experience may have developed planning skills in dealing with the disease that continue into the chronic phase of survivorship. Venting as an emotional response may also have been a response to the higher levels of symptoms experienced. An alternative interpretation is that individuals who cope using a more emotional response may also perceive higher levels of symptoms.

With reference to the role that survivor characteristics and specific coping strategies play in our

understanding of distress outcomes (anxiety, depression and cancer-related worries) the regression analyses explain somewhat greater variance. With regard to anxiety, African Americans display less anxiety than Whites. This is a reflection of the overall pattern we have reported previously in our analysis of racial differences and distress (Deimling *et al.*, 2002) in which African American survivors experience fewer psychosocial sequelae than Whites. However, it is possible that this or other cultural groups express their distress differently and that the distress measures used in this study do not capture the nature of their distress.

Addressing our third research question, the role of coping and distress, denial is associated with greater anxiety and also greater depression. This suggests that individuals who continue to use this coping strategy into the chronic survivorship phase are at risk for poorer mental health. These findings are consistent with results reported by Carver *et al.* (1993), who found that denial was a significant predictor of psychological distress. Venting was also found to be a significant, albeit, relatively weak predictor of depression. The most powerful predictor of depression is the functional difficulties experienced by the survivor, and this relationship remains significant when the effects of coping are controlled. Clinicians need to be alert to the role that functional needs play, whether related to cancer or co-morbidities, in the QOL of long-term survivors.

The outcome measure most closely linked to the cancer experience in this research is cancer-related worries. Descriptive data on the items that comprise this index indicates that between 26 and 44 percent of survivors continue to worry about recurrence, diagnostic tests or another cancer (not shown, available on request). Being African American is associated with having fewer cancer worries. Again, it is possible that this does not top the concerns of this group and the paucity of research on minority survivorship makes it difficult to compare our findings. Clearly, there is a need for studies that address cultural differences in survivorship.

Holding all of the other factors in the equation constant, the number of symptoms during treatment remains a significant predictor of cancer worries. It is important for health care providers and clinicians working with long-term survivors to recognize that cancer continues to be a very real part of their health concerns, even when these survivors do not express high levels of general

anxiety or depression. In terms of coping, survivors who used denial as a coping strategy also worried more about cancer. This suggests that denial does not successfully allow the survivor to put cancer in their past; rather these worries continue to intrude into their daily lives.

Looking across the outcome measures, neither planning nor acceptance was found to significantly predict any of the three psychosocial outcomes. Our findings with regard to the predictive power of acceptance as a coping strategy fails to replicate the work of Carver and colleagues (1993) who found that acceptance predicted lower levels of distress among women during the first year after treatment for breast cancer. This may be because during treatment, when the individual has so little control over events, acceptance may play a role in lowering distress. However, after many years of survivorship, acceptance may be far less relevant.

Another pattern observed across the outcome measures is the relatively important role that optimism plays as a predictor of lower levels of anxiety, depression and cancer-related worry. This replicates the research of Schou *et al.* (2004) and Carver *et al.* (1993) who found that optimism is inversely correlated to distress. To the degree that optimism acts as a trait, it suggests that a substantial portion of the psychosocial QOL after cancer is linked to this dispositional trait-like characteristic. As a dispositional characteristic, it may not be responsive to intervention. However, some portion of an individual's outlook on life is likely to have been shaped by life experiences, including surviving cancer. To the degree that clinicians can help survivors focus on the optimistic and hopeful aspects of life after cancer, these individuals may experience fewer psycho-social problems such as anxiety, depression and worry. Our prior research (Deimling *et al.*, 1997) has shown that individuals who adopt the survivor identity early in the course of illness demonstrate less distress years after treatment. Those individuals who take a less optimistic approach to their illness or who have difficulty identifying as a survivor may benefit most from referral to mental health professionals.

Limitations

In interpreting the regression findings, an important caveat must be made with regard to

causal ordering. This research being cross-sectional in nature is not intended to address the causal ordering of the relationships between coping and psychological distress. Of course, the selection of coping as a predictor of the distress outcomes does imply causal ordering. This implied causal ordering is consistent with the general stress paradigm and the perspective that coping style is an enduring quality that allows the individual to respond to stressors and may mediate distress outcomes. However, in the absence of prospective longitudinal data it is not possible to definitively sort out the causal ordering of these factors. It is important to consider, that in many cases, causal ordering is reciprocal, that is, survivors who experience higher levels of distress outcomes such as anxiety, depression and cancer-related worries may respond by developing coping responses such as venting and denial. We look forward to examining these issues in the future as our longitudinal data become available.

Issues of causal ordering notwithstanding, the data presented in this research provides a relatively comprehensive look at the factors associated with the use of specific coping strategies and how these in turn are related to important distress outcomes. It provides a basis for future longitudinal analysis of the complexities of coping among long-term survivors.

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