

A Randomized Clinical Trial of Group-Based Cognitive–Behavioral Stress Management in Localized Prostate Cancer: Development of Stress Management Skills Improves Quality of Life and Benefit Finding

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ABSTRACT

Background: Recent literature has indicated that a significant percentage of oncology patients describe finding some benefit (e.g., improved personal growth, sense of meaning, and enhanced interpersonal relationships) in the cancer experience. However, few studies have investigated the role of group-based psychosocial interventions in improving benefit finding (BF), and virtually none have investigated these constructs in men. **Purpose:** This study examined whether a cognitive–behavioral stress management (CBSM) intervention improves BF and quality of life (QoL) in men recovering from treatment for localized prostate cancer. **Methods:** Participants in this study were 191 men (M age = 65.1) treated with radiation or radical prostatectomy for clinically localized (i.e., Stage I or II) prostate cancer. Participants were primarily non-Hispanic White (40%) or Hispanic (41%), followed by Black (18%) and other ethnicity (1%), were an average of 65.1 years old ($SD = 7.7$), and earned an average of \$47,800 annually ($SD = \$41,000$). Participants were randomized to either a 10-week group-based cognitive–behavioral stress management intervention or a half-day educational seminar as a control condition. All participants provided demo-

graphic information and completed the Positive Contributions Scale–Cancer to assess BF, the Functional Assessment of Cancer Therapy to measure quality of life, and a measure of perceived stress management skills. Structural equation modeling was utilized for all analyses. **Results:** Results indicated that the CBSM condition led to increases in BF and QoL and that these changes were mediated by the development of stress management skills. **Conclusions:** Results support the use of group-based cognitive–behavioral interventions in promoting QoL and BF in this population.

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INTRODUCTION

Prostate Cancer

Prostate Carcinoma (PC) is the most common form of non–skin cancer in American men, affecting one in six men during their lifetime and resulting in 29,000 deaths annually (1). Although risk factors for PC are not clearly understood, the disease is related to aging, as more than 70% of all cases occur in men over 65 (1). Treatment modalities for localized PC include radiotherapy, surgical insertion of radioactive pellets (brachytherapy), radical removal of the prostate gland (radical prostatectomy), and watchful waiting. Selection of treatment for localized disease varies by age, with younger men typically undergoing radical prostatectomy (30%–40% of localized cases), whereas older men with a greater risk of comorbidities com-

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monly receive radiotherapy (about 25%–30%) or forgo treatment for watchful waiting (25%–30%) (2–6).

Most PC malignancies grow slowly, and with appropriate treatment the vast majority of men with PC will survive for more than 10 years (84% [1]). However, for the majority of patients, treatment is associated with significant decrements in urinary and bowel function (e.g., 7–9). In addition, because many of the nerve fibers involved in the erectile response surround the prostate, as many as 85% of men treated for localized PC suffer from some degree of lasting erectile dysfunction (10).

Treatment-related decrements in these domains are associated with poorer quality of life (e.g., SF-36 mental health, role-limitations due to emotional problems and vitality [11,12]) and decreased sexual intimacy and perceived cancer control (13). Regarding sexual dysfunction, 61% of the men in one study (10) reported moderate or extreme distress relating to their dysfunction. Diagnosis and treatment for PC impacts partner emotional well-being (14) and is generally considered to be a challenging experience for both patients and their partners (15–17). Reflecting these challenges, research has indicated that the majority (65%) of PC patients describe some need for psychological intervention (18) and that as many as 30% report a moderate or high level of need (19).

Benefit Finding and Cancer

Given that the diagnosis and treatment of cancer can be a stressful experience, it is not surprising that much research in psychooncology has focused on negative adjustment and distress (e.g., 20–22). However, recent work has begun to examine the possibility that for some patients, the experience of cancer may result in positive psychological outcomes. Various labels “posttraumatic growth,” “benefit finding” (BF), and “meaning making,” these include an enhanced sense of purpose, greater closeness to friends and family, an improved sense of self-efficacy, and changes in life priorities in response to a traumatic or negative life event (e.g., 23–27). Although this phenomenon has only recently been investigated in cancer populations, research on women recovering from breast cancer has shown that the majority (83%) ascribe at least one benefit to the cancer experience (28), and these benefits are related to positive psychological adjustment (29). In support of these findings, a recent longitudinal study of 96 patients with early stage breast cancer (30) demonstrated that BF measured within 1 year of surgery was associated with lower levels of distress and depression measured 4 to 7 years later, after controlling for baseline distress and depression. BF has also been related to relevant physiological outcomes in breast cancer populations (31,32).

Development of Benefit Finding

It has been suggested that the perception of benefit occurs not as a direct result of a stressful event such as cancer, but in the process of cognitive restructuring and processing that follows (32). In this model, a stressful or traumatic event serves as a challenge to preexisting positive schemata regarding the self, world, and others. Following such a challenge, a process of cognitive restructuring must take place to alter these positive sche-

mata and incorporate the reality of the negative event (33,34). Further, this processing is influenced by both individual (e.g., personality) and interpersonal factors. Social support and the ability to disclose to others are believed to lead to the formation of a cohesive narrative (33), and thereby to increased BF. Consistent with this conceptualization, women recovering from breast cancer who reported more prior discussion of their cancer experience also reported more BF (27).

Benefit Finding and Group Intervention

Group-based psychosocial interventions may impact BF for a variety of reasons. First, it has been suggested that individuals who are able to share their cancer experience with empathetic others may be more likely to begin cognitive restructuring and a search for meaning (35,36). Second, interventions that emphasize cognitive coping skills such as reframing and irrational thought replacement may accelerate the processing of difficult material (26). Finally, interventions that include affect regulation, anxiety reduction, and stress management exercises such as muscle relaxation, guided imagery, and deep breathing may decrease vigilance and equip participants with tools to manage the range of affect provoked by the processing of traumatic material. In support of these observations, one cognitive-behavioral group-based program for women with breast cancer (cognitive-behavioral stress management or CBSM) has been shown to increase BF relative to controls (25) during and after the period of adjuvant therapy.

A growing body of research also supports the idea that group psychosocial interventions can improve many aspects of QoL in cancer survivors (37–41). However, the link between BF and positive outcomes such as quality of life (QoL) and negative affect is equivocal at best. For example, Tomich and Helgeson (23,29) found that BF at baseline was associated with negative affect 4 months later, and that this relationship was stronger in patients treated for later stage disease. Similarly, Mohr et al. (42) reported that although BF was associated cross-sectionally with positive reappraisal and social support in multiple sclerosis patients, it also correlated positively with anxiety and anger. In other studies of medical populations, BF has shown no significant relation to positive outcomes such as QoL (e.g., 24,27,43–45). Consequently, researchers have concluded that BF and QoL elements such as distress exist on separate dimensions and are not necessarily associated (33), such that it is theoretically tenable to be both distressed and high in BF. Another explanation for these disparate findings is that BF and QoL are positive associated but that sample differences in demographic variables such as ethnicity, education, socioeconomic status (SES), and disease severity may obscure this relationship (23,46).

THIS STUDY

We previously reported that a CBSM intervention improved QoL in a preliminary sample of 92 men treated for Stage I and II PC, and that these improvements were mediated through the development of stress management and relaxation skills (i.e., perceived stress management skills, or PSMS) (47). In this

study, we expand on our previous work by (a) studying a larger sample of men treated for localized PC, (b) examining the associations between BF and QoL over time, (c) testing the effects of group-based CBSM intervention on both QoL and BF, and (d) determining whether improvements in both constructs were related to intervention associated improvements in PSMS. Specifically, we hypothesized that BF and QoL would be positively associated throughout the study period, that CBSM would improve BF and QoL, and that intervention effects on improved BF and QoL would be mediated through greater increases in PSMS. We utilized a structural equation modeling approach to test these hypotheses simultaneously in an integrated model.

METHOD

Participants

Participants were a convenience sample of 191 men who had undergone radical prostatectomy (86) or radiation therapy (105) (i.e., external beam or brachytherapy) for localized (i.e., Stage I or II) prostate cancer (see Table 1). Participants were recruited for the study (between the years 2000 and 2004) through a combination of methods including urologist referral, access to the Florida Cancer Data System (FCDS), a cancer registry maintained by the Florida Department of Health, and distribution of study flyers to men identified via the FCDS. The FCDS complies with all HIPAA requirements. Participants in this study were primarily non-Hispanic White (40%) or Hispanic (41%), followed by Black (18%) and other ethnicity (1%). Participants were an average of 65.1 years old ($SD = 7.7$, range = 47–84), were primarily married or partnered (84%), had an average of 14 years of formal education ($SD = 3.5$), and earned an average of \$47,800 annually ($SD = \$41,000$). The average time since treatment was 10.1 months ($SD = 4.6$), and the average time since diagnosis was 15.2 months ($SD = 6.5$).

Procedure

Following initial contact, participants were introduced to the study and asked to complete an inclusion–exclusion screen via telephone. Participants were included if they were older than 45 years of age, had no prior history of cancer, and had received treatment within the last 18 months. If participants met these initial criteria, they were scheduled for a follow-up screening in a face-to-face interview. This screening assessed for other inclusion criteria including reading level (≥ 9 th grade), the absence of cognitive impairment, and the absence of active psychiatric symptoms including panic attacks, posttraumatic stress disorder, suicidal ideation, psychosis, or substance dependence in the past 3 months. Cognitive function was assessed using the Folstein Mini-Mental Status Examination (> 23 [48]), and active psychiatric symptoms were assessed using the Structured Clinical Interview for the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; research edition [49]). Those meeting these criteria were provided with an opportunity to ask questions about the study and signed an Institutional Review Board–approved informed consent form.

Following screening and informed consent procedures, participants were scheduled for a baseline psychosocial and physi-

cal health assessment. Participants were then randomly assigned to either the experimental 10-week group or the control half-day seminar, conducted approximately 5 weeks after the start of the group. One of three randomization procedures were employed by the project manager, based on the size of the recruited cohort, and were designed to ensure that the intervention group consisted of at least 4 to 6 participants. In cohorts consisting of greater than 12 participants, we conducted a 1:1 (1 experimental to 1 control) randomization procedure. A 2:1 (2 experimental to 1 control) randomization was conducted in cohorts consisting of 6 to 12 participants. Finally, in cohorts consisting of fewer than 6 participants, all participants were randomly assigned to either the experimental or control condition by flipping a coin.

All participants, regardless of condition, were reassessed within 2 to 3 weeks of completion of the 10-week intervention (approximately 7–8 weeks after the half-day seminar) to ensure parallel time periods between baseline and postintervention assessments. Assessors and data entry staff were blind to participant group assignment. Although group assignment was never overtly discussed with participants, several of them indicated that they knew whether they were experimental or control participants based on their assignment (i.e., 10 weeks or half-day). An intention-to-treat model was utilized for all analyses. In accordance with CONSORT guidelines, participant flow is outlined in Figure 1. Briefly, of 559 potential patients contacted, 267 met study criteria and agreed to participate. Of these, 233 were assigned to the experimental ($n = 133$) and control ($n = 100$) conditions. At the postintervention follow-up, 191 had complete data. No study-related adverse events were reported in either condition.

Experimental condition. The 10-week *Cognitive–Behavioral Stress Management (CBSM) Intervention for Prostate Cancer* (unpublished intervention manual [50]) was a modified version of a protocol originally designed by Antoni and colleagues (51,52). This intervention is described elsewhere (e.g., 47). Briefly, CBSM groups were composed of 4 to 8 participants and met once each week for 2 hr over a period of 10 weeks. Each weekly module included 90 min of CBSM didactic instruction and discussion, and 30 min of relaxation training. The intervention was generally designed to provide participants with skills to manage day-to-day stressors as well as manage PC-associated physical and emotional challenges, including sexual dysfunction, spousal or partner relations, engagement of the medical system, and so forth, by providing individuals with effective coping and stress-management techniques as well as with practical information regarding prostate cancer treatment and recovery. Participants were encouraged to engage one another in discussion regarding their experience with cancer, and weekly between-session homework and relaxation exercises were assigned to elaborate on session material. The relaxation component varied weekly, and included training in deep-breathing, guided imagery, progressive muscle relaxation, and transcendental and mindfulness meditation. All CBSM groups were led by master's level clinical health psychology students or doctoral-level, licensed clinical psychologists trained in the CBSM protocol.

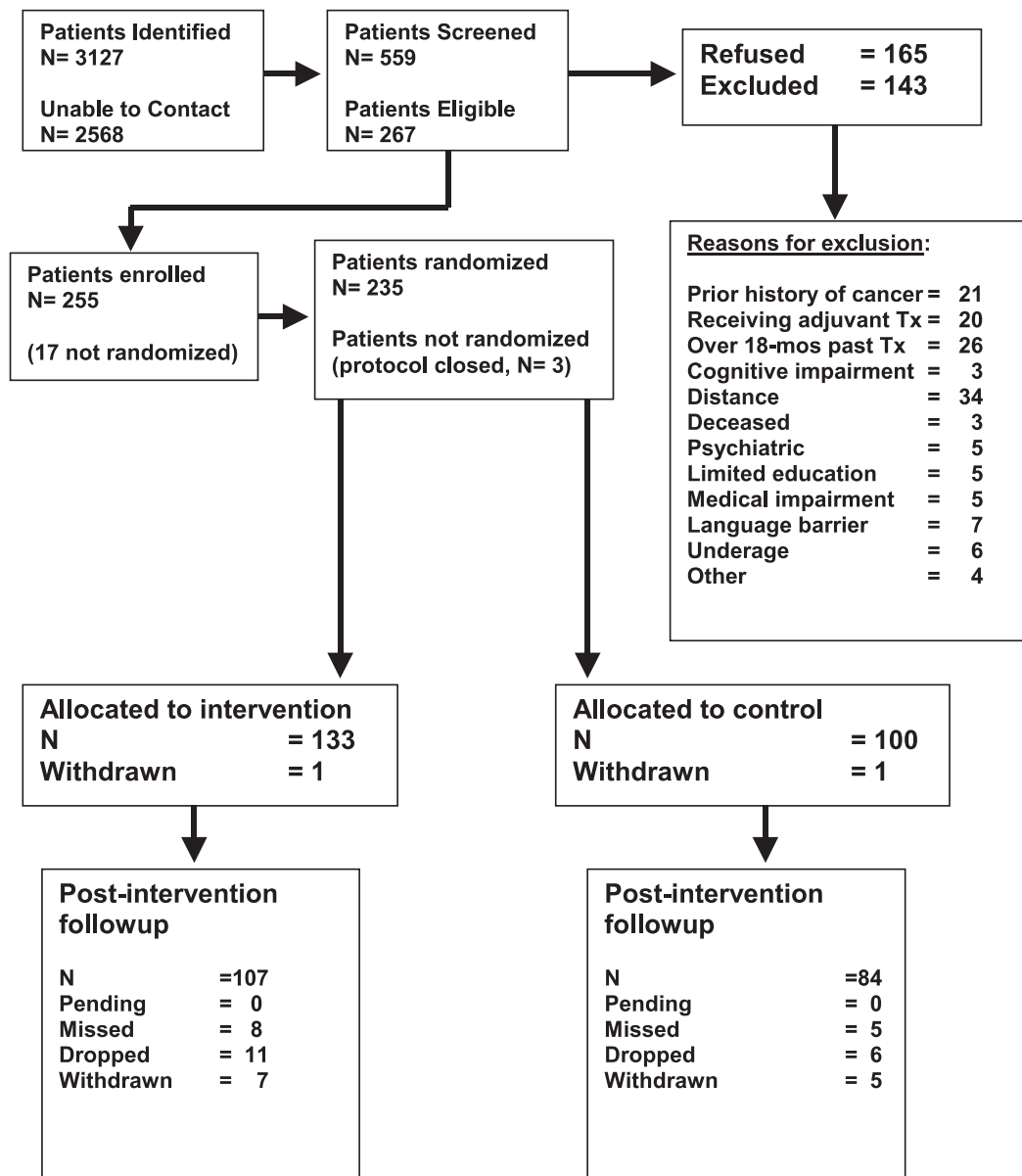


FIGURE 1 Participant flow. Pending: participant follow-up analyses not yet conducted at time of analysis. Missed: participant did not attend scheduled follow-up. Dropped: participant chose to remove himself from the study. Withdrawn: participant removed from study because he no longer met eligibility criteria.

Half-day seminar condition. Participants assigned to the control condition met once for 4 hr and received basic educational materials on the stress management techniques presented in the 10-week intervention. Groups consisted of 4 to 8 participants and were co-led by master's level clinical health psychology students or doctoral-level, licensed clinical psychologists trained in the CBSM protocol.

Measures

Health and sociodemographic measures. Age, marital status, ethnicity, years of formal education, household income, employment status, time since diagnosis, and time since treatment were assessed by interview. Number of comorbid medical conditions (e.g., diabetes, coronary heart disease, arthritis) was as-

essed using the Charlson Comorbidities Index (53). This index is created by multiplying disease types by a weight reflecting their severity, as described in Charlson et al. (53).

Perceived stress management skill. Perceived stress management skill was assessed using the Measure of Current Status (54). The Measure of Current Status provides an assessment of perceived ability to respond to the challenges and demands of everyday life or perceived stress management skill (PSMS). The measure asks participants to rate on a 5-point response scale how well they can perform each of 17 items (i.e., "I cannot do this at all" to "I can do this extremely well"). Items are based on the components of most cognitive behavioral stress management interventions (e.g., awareness of tension, cognitive refram-

ing, use of social support, and adaptive anger expression). Examples include the following: "I can easily recognize situations that make me feel stressed or upset," "I can easily stop and reexamine my thoughts to gain a new perspective," "I am able to use muscle relaxation techniques to reduce any tension I experience," and "I can ask people in my life for support or assistance whenever I need it." Although it was intended to differentiate among stress management skills, in this sample the measure was essentially unifactorial with a high degree of internal consistency (Pre-intervention Cronbach's $\alpha = .91$; Postintervention Cronbach's $\alpha = .93$). PSMS has been previously shown by our group to be associated with greater optimism and positive mood (55) and to mediate intervention effects on quality of life (47). Therefore, for this study, we used the total PSMS score as an index of PSMS.

Quality of life. The Functional Assessment of Cancer Therapy-General Module (FACT-G) was used to assess QoL (56). This 27-item instrument (version 4) assesses well-being across four broad domains (i.e., physical, social and family, emotional, and functional). The instructions asked participants to indicate to what degree each statement has been "true" during the past 7 days. The 5-point response scale ranges from 1 (*not at all*) to 5 (*very much*). The FACT-G has been used extensively to assess posttreatment QoL in PC patients and has demonstrated robust reliability and validity (57–59). In this study, the FACT-G demonstrated adequate psychometric properties (Preintervention Cronbach's $\alpha = .87$; Postintervention Cronbach's $\alpha = .89$).

Benefit finding. BF was assessed using a 29-item scale derived from the Positive Contributions Scale (PCS) (60) and modified for use in cancer populations (e.g., 23,26,31,61). The PCS-Cancer (PCS-C) asks participants to indicate their agreement with items describing positive impacts of cancer diagnosis and treatment. Response anchors range from 1 (*not at all*) to 5 (*extremely*), with a possible total score range from 29 to 145. PCS-C statements include a range of perceived benefits, including "(having cancer has) led me to be more accepting of things;

(having cancer has) brought my family closer together; (having cancer has) has helped me become more focused on priorities, with a deeper sense of purpose in life." Versions of this scale have been used in samples of breast cancer patients undergoing treatment (23,26). In this sample, the PSC-C demonstrated excellent internal consistency as a total score (Pre-intervention Cronbach's $\alpha = .96$; Postintervention Cronbach's $\alpha = .97$).

Statistical Analysis

To control for demographic and disease-related confounds, we evaluated relationships among all baseline demographics (e.g., age, education, income, ethnicity, marital status, etc.), disease-related measures (e.g., type of treatment, time since diagnosis, and time since treatment), and postintervention QoL and BF. Continuous and categorical baseline variables were tested using bivariate correlations and one-way analysis of variance, respectively. Income was inversely correlated with postintervention BF ($r = -.30, p < .001$) and positively correlated with postintervention QoL ($r = .24, p < .01$). Education was found to be inversely correlated with postintervention BF ($r = -.32, p < .05$), and ethnicity was found to have a main effect on postintervention QoL, $F(2, 189) = 4.5, p < .05$, and on BF, $F(2, 189) = 12.6, p < .001$. To minimize the effect of these potential confounds, we controlled for income, education, and ethnicity in all subsequent analyses by creating residualized BF and QoL scores.

To examine whether treatment condition affected the BF and QoL outcomes by modifying stress management skills, we conducted structural equation modeling (SEM) with a path model based on Bentler and Week's approach (62) using EQS version 6.0 (63). The maximum likelihood method was used to estimate parameter values and provide test statistics.

We proposed a model (Figure 2) in which the effects of treatment condition on postintervention BF and QoL (represented by paths with broken lines) were mediated through change in PSMS (represented by solid lines). In other words, we proposed to examine whether treatment condition was related to the change in PSMS, which in turn was responsible for the improvements in the BF and QoL outcomes. Finally, we hypothe-

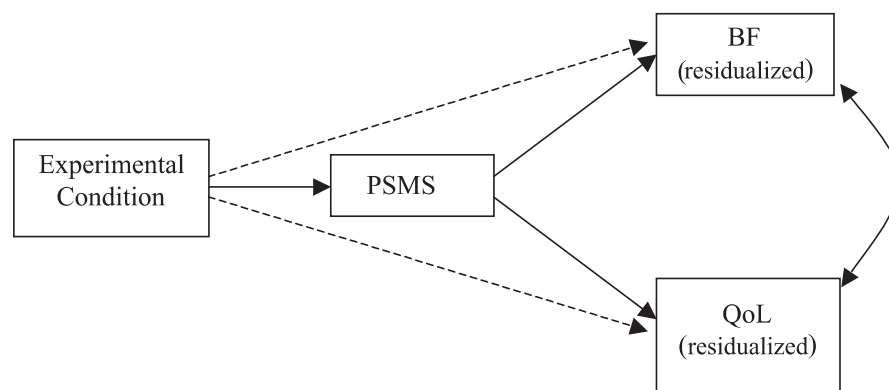


FIGURE 2 Conceptual model depicting hypothesized pathway through which group assignment (i.e., experimental condition; cognitive-behavioral stress management [CBSM] vs. half-day seminar) impacts perceived stress management skills (PSMS), benefit finding (BF), and quality of life (QoL). Broken lines represent direct effects of group assignment on BF and QoL, which are hypothesized to be mediated by PSMS development. The curved line represents an association between the residual variances of QoL and BF.

sized that the residuals of BF and QoL would be correlated, reflecting the association between these two measures.

Goodness of fit of the proposed model was evaluated in three ways. First, a chi-square test was used to examine the congruency between proposed model and observed data. Second, model fit indexes (comparative fit index [CFI] and root mean square error of approximation [RMSEA]) were computed to assess the model performance. Finally, the standardized residual matrix was inspected for large deviation from zero, which would be indicative of the lack of fit between the model and empirical data (e.g., 64). All path coefficients were tested for significance at .05 level for two-tailed tests. Finally, a Lagrange multiplier test was conducted to detect any significant but omitted paths in the model.

RESULTS

Randomization of Participants

As described earlier, participants were successfully assigned to either the experimental or control condition by way of one of three randomization procedures (based on the size of the recruited cohort). As a result, 105 experimental condition and 86 control condition participants were included in the analyses. There were no significant differences across treatment conditions in any sociodemographic or treatment-related measures (see Table 1).

Control Variables

Consistent with previous research (e.g., 23), we found that Blacks ($M = 99.0$) and Hispanics ($M = 103.8$) reported higher

pre-intervention BF than did non-Hispanic Whites ($M = 78.0$, $p < .01$), and that these differences did not diminish when controlling for income or education, [i.e., in an analysis of covariance, $F(3, 187) = 13.3$, $p < .001$]. Similar effects were found for BF postintervention, with African Americans ($M = 105.1$) and Hispanics ($M = 101.8$) reporting significantly higher levels of BF than non-Hispanic Whites ($M = 83.0$, $ps < .001$). As noted previously, number of years of formal education was negatively associated with postintervention BF ($r = -.32$, $p < .05$), as was income ($r = -.30$, $p < .001$).

Regarding QoL, Hispanic participants reported significantly lower pre-intervention and postintervention levels (pre- $M = 81.72$, post- $M = 84.3$) than did non-Hispanic Whites (pre- $M = 90.3$, post- $M = 90.7$), all $ps < .05$. African American participants scored between Hispanic and non-Hispanic White groups (pre- $M = 88.4$, post- $M = 88.4$) and did not differ significantly from either group (all $ps > .10$).

Effects of CBSM on BF, QoL, and PSMS

To demonstrate significant direct effects of CBSM on BF and QoL, we first performed linear regression analyses on postintervention levels of these outcome variables. For purposes of these analyses, the experimental condition variable was dummy coded (0 for the control condition and 1 for the CBSM condition). Results indicated that CBSM was a significant predictor of postintervention QoL (F for $\Delta R^2 = 4.32$, $p < .05$), post-intervention PSMS (F for $\Delta R^2 = 11.02$, $p < .01$), and BF (F for $\Delta R^2 = 5.52$, $p < .05$), after controlling for income, ethnicity, years of education, and baseline values. Post hoc analyses revealed that participants in the experimental condition experienced significant preintervention to postintervention increases in BF ($t = 2.65$, $p < .01$), PSMS ($t = 3.35$, $p < .01$) and QoL ($t = 2.65$, $p < .01$). Participants in the control condition did not change significantly on any outcome measure (all $ps > .40$).

Because the assumption that PSMS was a mediator of intervention effects was critical to our conceptualization, we ran a preliminary SEM model that included direct paths between condition and QoL and BF. The results demonstrated that with PSMS as a mediator in the model, the direct paths between CBSM treatment and QoL (coefficient = .09, $p > .05$) and between CBSM and BF (coefficient = 0.11, $p > .05$) were not significant, supporting our decision not to include them in the final model.

Final Model

The Final model (Figure 3) demonstrated adequate fit with the data. Model fit indexes were within accepted ranges, $\chi^2(2) = 3.52$, $p > .10$ (CFI = .97, RMSEA = .06). All elements in the residual matrix were small and near zero, with average absolute standardized residuals = 0.02, and all indexes suggested that the model was supported by data. The Lagrange multipliers test did not indicate any significant paths that were absent in the model. Standardized path coefficients are presented in Figure 3. All paths in Figure 3 were significant at the .01 level.

The results indicated that individuals assigned to the CBSM group demonstrated an increase in PSMS (standardized path co-

TABLE 1
Baseline Demographic and Disease-Related Variables
by Treatment Condition

Demographic Variable ^a	Control	Intervention
Age (<i>M</i> , <i>SD</i>)	64.87 (7.64)	65.30 (7.77)
Ethnicity (<i>n</i>)		
African American/Black	10	12
White (non-Hispanic)	34	44
Hispanic	34	44
Other	8	5
Education (<i>M</i> , <i>SD</i> years)	14.13 (3.24)	13.45 (3.65)
Income (<i>M</i> , <i>SD</i> \$ in thousands)	51.60 (46.20)	44.97 (36.30)
Marital status (<i>n</i>)		
Single, never married	2	10
Married or equivalent relationship	70	78
Separated, divorced, or widowed	14	17
Type of treatment (<i>n</i>)		
Radiation	46	59
Surgery	40	46
Time since diagnosis (<i>M</i> , <i>SD</i> months)	15.24 (5.69)	15.20 (7.08)
Time since prostate treatment (<i>M</i> , <i>SD</i> months)	10.49 (4.44)	9.99 (4.79)

^aBaseline intervention versus control analyses were conducted by *T* test for continuous variables and chi-square for categorical variables; no significant treatment differences emerged for any of the demographic variables.

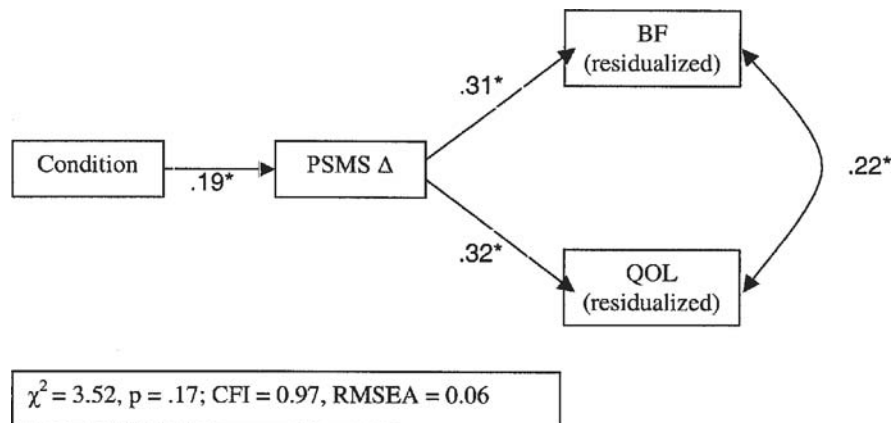


FIGURE 3 Final path model depicting the direct effect of cognitive-behavioral stress management experimental condition on perceived stress management skills (PSMS), and direct effects of PSMS on benefit finding (BF) and quality of life (QoL) after controlling for baseline income, years of education, ethnicity, and baseline levels of study variables. The curved line represents an association between the residual variances of QoL and BF.

efficient = .19, $p < .01$). Further, the increase in PSMS contributed to postintervention increases in QoL (coefficient = .32, $p < .01$) and BF (coefficient = .31, $p < .01$), while controlling for baseline QoL or BF, income, education, and ethnic group membership. In other words, the increase in PSMS mediated the effects of CBSM on postintervention QoL and BF, suggesting that the development of skills in handling stress was a potential mechanism by which CBSM contributed to better outcomes. As an estimate of effect size, total effects (in this model, the sum of indirect effects) were calculated at 0.06 for both QoL and BF.

Baseline QoL was not related to baseline BF, and baseline BF did not significantly predict postintervention QoL (all $ps > .10$). However, postintervention BF and QoL were positively associated ($r = .20, p < .05$), as was the change in BF and QoL from baseline to postintervention (coefficient = .24, $p < .05$). In addition, postintervention QoL was positively related to BF ($\beta = .22$).

DISCUSSION

To our knowledge, this is the first study that simultaneously tested psychosocial intervention effects on BF and QoL in a group of prostate cancer survivors. Consistent with our work in breast cancer (26), we found that a 10-week, CBSM group-based intervention led to significantly greater improvements in BF relative to controls. We were also able to replicate our previous finding showing that our CBSM intervention showed modest improvements in QoL (47) using a larger and more ethnically diverse sample, and a more sophisticated statistical approach. Furthermore, we report that improvements in BF and QoL were both mediated by the development of stress-management skills (i.e., PSMS). Finally, we found that levels of BF and QoL were positively associated, although the cross-sectional nature of this relationship precludes causal inference.

In models of BF presented by Tedeschi and Calhoun (33,36) and others (e.g., 65,66), BF occurs when an individual is faced with a discrepancy between preexisting schemata and the reality of the negative event. Previous positive assumptions re-

garding the world as predictable, benevolent, and controllable are no longer completely viable, and a process of cognitive restructuring must take place to reduce this discrepancy and integrate the event into a cohesive narrative. BF is seen as a positive outcome of this process.

In this model, an event must be inconsistent with previously established schemata to have the potential to generate BF. PC, its treatment, and treatment-associated side effects including sexual dysfunction and illness-associated spousal or partner disruption may meet these criteria in several regards. First, the diagnosis of cancer itself is an unexpected event, affecting schema of controllability, predictability, and benevolence (29). Second, the extant literature describes low pretreatment rates of sexual dysfunction in men with localized PC (e.g., 67) among studies that compare rates of sexual dysfunction following active treatment (e.g., radiotherapy) versus watchful waiting (68). Collectively, these studies emphasize the fact that the vast majority of men actively treated for PC experience significant decrements in sexual functioning (10). Particularly for older men, this lack of function may challenge preexisting schema relating sexual performance to masculinity. In this sample, 78% of participants indicated that they had no, poor, or very poor ability to have an erection. However, 75% indicated agreement with the statement, "It's important to me to fulfill my sexual role as a man," and 43% indicated agreement with the more extreme statement, "I feel good about myself only if I think I'm performing well sexually." Clearly, a discrepancy existed between the reality (i.e., impotence) and a preexisting schema emphasizing the importance of sexual function for a large percentage of our participants. Similarly, decrements in urinary and bowel function may be at odds with schemata involving independence. For instance, one participant in our group indicated that wearing protective diapers in the months postsurgery made him feel "like one of those old guys sitting in a nursing home. It's unfair, I'm only 60."

Because PC may represent a challenge to preexisting schemata, it is plausible to accept based on Tedeschi and Calhoun's (33) model that cognitive processing and restructuring will fol-

low. This cognitive restructuring would require not only a supportive social environment but also tools to manage the affect generated during the struggle to integrate the reality of cancer. In addition, the development of PSMS may contribute to greater perceived self-efficacy in handling both general and cancer-related stressors, which may also lead to better outcomes (e.g., 69,70). Consistent with this line of reasoning, our data indicated that the development of stress management and relaxation skills during the study period mediated the relationship between CBSM group assignment and improvements in BF.

Clearly, the relationship between BF and QoL is a complicated one, and this complexity was reflected in our data. Baseline QoL was not related to baseline BF, and baseline BF did not significantly predict postintervention QoL. However, postintervention BF and QoL were positively associated, as was the change in BF and QoL from baseline to postintervention. These findings relating BF and QoL are consistent with some published reports (e.g., 24,29) but inconsistent with others (e.g., 27,43). One major difference between this sample and (to our knowledge) all other samples in the BF and cancer literature is the fact that our participants were largely older men. Given data suggesting that men reported lower BF after stressful events than do women (36,71), it is possible that a reported change in BF is more meaningful for them, and is associated with greater improvement in QoL.

This study was also unique in other several ways. Our geographic location allowed us to obtain an ethnically and demographically diverse sample of cancer survivors. This diversity allowed us to confirm data (23,46) suggesting that BF is influenced by ethnic group and SES. Our findings are promising in that an ethnic and socioeconomically diverse group of older men treated for PC can be engaged in a structured psychosocial group intervention and obtain significant improvements in QoL and BF via enhancement of stress management skills. Also, the vast majority of BF and psychosocial group intervention research in cancer has focused on women, particularly those recovering from breast cancer. Our sample allowed us to extend previously described BF relationships in a sample of older men treated for PC that has been generally neglected in the psychosocial literature.

Regarding limitations, the fact that all of the participants in the study were treated for early (Stage I or II) cancer meant that we were unable to test the relationship between severity of disease and BF, described elsewhere (23,46). Also, our limited age range, although predicated by the nature of PC, precluded us from testing hypotheses relating BF to age. Future studies should include younger comparison groups or individuals with more advanced prostate cancer to further evaluate these constructs. Additionally, our study was conducted over a relatively short time frame. Although other research has suggested that intervention-induced changes in BF are maintained 9 months later (26), we were unable to test this possibility in our population. Finally, although the relationships between experimental condition and outcome variables were statistically significant, the actual mean changes in QoL and BF were relatively modest (see

TABLE 2
Descriptive Statistics of Outcome Variables
by Experimental Condition

Variable and Condition	Time	M	SD
Quality of life ^a			
Experimental (CBSM)	Pre	86.22	14.29
	Post	88.66	13.67
Control	Pre	86.75	14.10
	Post	86.35	13.81
Benefit finding ^b			
Experimental (CBSM)	Pre	94.14	26.47
	Post	99.05	27.72
Control	Pre	90.52	28.17
	Post	89.56	29.00
Perceived stress management skills ^c			
Experimental (CBSM)	Pre	63.61	11.13
	Post	66.92	9.24
Control	Pre	62.51	12.25
	Post	61.77	12.60

Note. CBSM = cognitive-behavioral stress management.

^aPossible range = 27–135. ^bPossible range = 29–145. ^cPossible range = 17–85.

Table 2). Estimated effect sizes were in the small range for both variables. This finding potentially reflects the high levels of baseline functioning in this sample. The clinical relevance of minor changes in QoL over time and BF has not been determined and requires further study. Future research should also address disease-specific QoL in this population.

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