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Relations between coping responses and optimism-pessimism in predicting anticipatory psychological distress in surgical breast cancer patients ☆

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Abstract

Individual differences in characteristics such as optimism, pessimism, and coping responses have been shown to contribute to variability in distress during stressful situations. However, the interrelationships among these characteristics are not well established. The purpose of this study was to investigate the interrelations among optimism, pessimism, and coping in predicting distress levels among patients scheduled for surgery related to breast cancer. Sixty surgical patients (mean age = 52; SD = 12.21) completed the Brief Cope and the Life Orientation Test as a part of a presurgery take-home packet. Distress was measured with the Profile of Mood States in the waiting area, just prior to surgery. Results revealed that optimism and pessimism were directly related to distress levels prior to surgery ($p < 0.05$). Coping responses also were related to distress ($p < 0.05$); however, these effects appeared to be largely mediated by optimism and pessimism.

Keywords

Optimism; Pessimism; Coping; Breast surgery patients

1. Introduction

Optimism and pessimism are important psychological constructs, which can predict how individuals react to stressful events. Optimism is typically defined as the degree to which an individual generally expects positive experiences in the future, while pessimism denotes the degree to which an individual generally expects negative experiences (Scheier & Carver, 1985). Existing literature has indicated that individual differences in characteristics such as optimism and pessimism contribute to variability in levels of emotional distress in stressful situations (e.g., Chang, 2001; Scheier & Carver, 1985, 1992). For example, Scheier, Matthews, and Owens (1989) found that patients' levels of optimism inversely predicted their levels of distress before surgery, above and beyond the effects of relevant medical variables.

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In addition to optimistic and pessimistic tendencies, there is also a long-standing view that the ways in which individuals cope make a difference in how strongly they react to various stressors (e.g., Carver, 1997; Folkman & Lazarus, 1988). Differences in coping responses have been associated with variability in emotional responses to a wide variety of stressful events, with some forms of coping (e.g., planful-problem solving) generally associated with less distress and other forms of coping (e.g., distancing) generally associated with higher levels of distress (Folkman & Lazarus, 1988).

Although optimism and pessimism, as well as coping responses, have been found to predict variability in psychological responses (e.g., distress) to stressful situations, less is known about their interrelations (Gilham, Shatte, & Reivich, 2001; Scheier, Carver, & Bridge, 2001).

One line of research (e.g., Billingsley, Waehler, & Hardin, 1993; Carver, Scheier, & Weintraub, 1989; Scheier, Weintraub, & Carver, 1986) has investigated the possibility that coping responses mediate the effects of optimism and pessimism on distress. Consistent with that possibility, differences in the types of coping responses typically used by “optimists” and “pessimists” have been found in a number of studies (see for review, Taylor & Aspinwall, 1996). Optimism, for example, has been found to be positively related to the use of problem-solving coping, positive reframing, and tendency to accept reality (Carver et al., 1989; Scheier et al., 1986). Optimism has also been found to be negatively related to the use of denial and the attempt to distance oneself from the problem (Scheier et al., 1986). Pessimism has been reported to be associated with the use of overt denial, substance abuse and coping responses that lessen awareness of the problem (Billingsley et al., 1993). Overall, more optimistic individuals generally seem to be active “copers” while more pessimistic individuals seem to be avoidant copers (Taylor & Aspinwall, 1996). Viewed in this way, coping can be conceptualized as a mediator of the effects of optimism and pessimism on distress levels in stressful situations.

However, support for the mediational role of coping is not universal. Recent studies have demonstrated that optimism and pessimism can have associations with outcomes that are independent of coping responses (i.e., not mediated by coping) (Lobel, Marie, & Zhu, 2002; Tomakowsky, Lumley, & Markowitz, 2001). For example, in a group of healthy women with high-risk pregnancies, Lobel et al. (2002) found that optimism had an independent association with emotional distress beyond relations potentially accounted for by coping responses. Similarly, Tomakowsky et al. (2001) found that optimism was related to better subjective health in HIV-infected men and that this relationship was not mediated by coping responses. These results challenge the idea that the impact of optimism and pessimism on various outcomes is necessarily mediated by coping responses. Indeed there is some support for the reverse possibility. Optimism and pessimism seem to be related to secondary appraisal processes (e.g., Chang, 1998) and thus might mediate the effects of coping on distress, consistent with Appraisal Theory (Lazarus, 1991).

The purpose of the present study was to investigate the interrelations among optimism, pessimism, and coping in predicting distress levels among patients scheduled for surgery related to breast cancer. In the United States of America, more than 150,000 women undergo lumpectomy and mastectomy for breast cancer each year, and hundreds of thousands more undergo similar surgical procedures (i.e., excisional biopsy) for definitive diagnosis. Research with patients awaiting breast surgery for treatment or diagnosis of breast cancer consistently support the time before surgery as a period of heightened distress (Carver, Pozo, & Harris, 1993; Montgomery, Weltz, & Seltz, 2002; Northhouse, Tocco, & West, 1997). Generally, higher levels of distress have been associated with poorer postoperative outcomes in various surgical patient samples (Scott, Clum, & Peoples, 1983; Urrutia, 1975). The presurgical period thus offers a unique opportunity to investigate the impact of relations between optimism,

pessimism, and coping in predicting distress. Few studies have investigated the relations between these individual differences variables and distress in patients scheduled for surgery, but in those that have, associations with distress have been generally supported (e.g., Epping-Jordan, Compas, & Osowiecki, 1999). However, a search of the literature revealed only one study that directly tested mediational hypotheses involving optimism, pessimism, coping, and presurgical distress in breast cancer patients. In that study, Carver et al. (1993) using a total score from the Life Orientation Test (LOT) found that several coping responses mediated the effects of optimism on presurgery distress. Specifically, they reported that acceptance and denial mediated the effects of optimism on presurgical distress among these women. However, the implications of this study are limited for at least three reasons: (1) LOT, which includes separate subscales for optimism and pessimism was treated as a unitary scale; although Carver et al., had explored the two subscale their results were not published. More recent studies have supported the view that optimism and pessimism are two distinct psychological constructs (Chang, D'Zurilla, & Maydeu-Olivares, 1994; Chang, Maydeu-Olivares, & D'Zurilla, 1997); (2) The measure of distress used was based on an abbreviated distress scale rather than on a well-established scale with demonstrated psychometric properties. Thus, the results potentially may be unreliable to the extent that there was measurement error; and (3) Coping responses were evaluated using only two or three selected items for each, and this measure of coping was not validated. Again, such an approach may have introduced additional unreliability into the results. In sum, the interesting findings in the single limited study addressing these relations in breast surgical patients (Carver et al., 1993) suggest the importance of further empirical investigation.

The present prospective study had three specific goals: (1) to examine the effects of optimism and pessimism on presurgical distress levels in women scheduled for surgery relating to breast cancer; (2) to examine the effects of specific coping responses on presurgical distress levels in this population; and (3) to investigate the mediational pathways by which optimism, pessimism, and coping as contributers to variability in patients' presurgical distress levels. That is, based on the literature, coping may account for effects of optimism and pessimism on distress, or optimism and pessimism may account for effects of coping on distress. Results of the present study might have both theoretical and practical implications. From a theoretical perspective, the results may add to the basic understanding of the interrelationships among optimism, pessimism, and coping in accounting for distress levels in stressful situations. From a practical perspective, the present study might provide insight relevant for the development of targeted interventions to reduce distress in patients awaiting surgery.

2. Method

2.1. Participants

Surgical patients scheduled for excisional breast biopsy or lumpectomy in a large metropolitan area hospital were consecutively recruited. From the surgical perspective, there is little difference between excisional biopsy and lumpectomy besides the need to take a greater surgical margin with the later (DeVita, Hellman, & Rosenberg, 1997) and therefore, these populations are typically combined into a single sample (e.g., Montgomery, David, & Goldfarb, 2003). No medications were administered until patients reached the operating room. Eligible patients were at least 18 years of age, were not currently pregnant, and had no other concurrent uncontrolled major illness. Sixty women (70% scheduled for excisional breast biopsy and 30% for lumpectomy) meeting the above criteria participated. Age ranged from 19 to 76 years (mean age = 52, SD = 12.21). 71% percentage of the sample described themselves as white, 12% as African Americans, 12% as Hispanic, 2% as Asian, and 3% as other. 55% percent of the sample were married, 72% percent had earned at least a college degree. Neither demographic (e.g.,

age, ethnicity) nor medical variables (e.g., type of surgery) predicted patients' distress (POMS-SV) (all *p*'s > .05.), and therefore they were not included in subsequent analyses.

2.2. Measures

The Life Orientation Test (LOT) (Scheier & Carver, 1985), consistent with a previous study of breast surgery patients (Carver et al., 1993), was used in the present study. The LOT is a 12-item measure (8 items and 4 filler items) assessing dispositional optimism and pessimism, defined in terms of generalized outcome expectancies. Four positively worded items measure optimism and four negatively worded items measure pessimism. The LOT has demonstrated both reliability and validity (Scheier & Carver, 1985). Although the LOT has, in the past, been treated as a unidimensional measure of dispositional optimism, with scores on the negatively worded items reversed and summed with scores on the positively worded items, recent studies have found that it has a bidimensional structure (Chang et al., 1994, 1997). In accordance with these recent empirical findings a bidimensional model was used here (optimism scale-alpha = .78; pessimism scale-alpha = .75).

The Brief Cope (B-COPE) (Carver, 1997) was used to assess a broad range of cognitive and behavioral strategies/responses that people are known to use in managing stressful situations. The B-COPE has 14 subscales (i.e., active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance abuse, behavioral disengagement, self-blame) and has demonstrated good psychometric properties while limiting patients' burden by use of only 28 items. Instructions for the B-Cope referred to the days before breast surgery. Consistent with the approach of Carver et al. (1993), patients indicated the extent to which they had used each coping response in relation to their need for breast surgery.

Profile of Mood States Short Version (POMS-SV) (Shacham, 1983) is a shortened version of the classic mood adjective checklist (McNair, Lorr, & Droppleman, 1971). It assesses six affective dimensions (i.e., tension-anxiety, depression-dejection; anger-hostility; vigor-activity; fatigue-inertia; confusion-bewilderment) and provides a total distress score (POMS-SV), which was used as the measure of distress in the present study. Strong psychometric properties of the POMS-SV have been found with breast cancer patients (DiLorenzo, Bovbjerg, & Montgomery, 1999).

2.3. Procedure

All study measures were administered individually. The LOT and B-COPE were included in a take-home questionnaire packet, which patients completed prior to the day of surgery. The POMS-SV was administered by a research assistant in the preoperative waiting area, just before surgery. All participants provided informed consent consistent with Mount Sinai School of Medicine (MSSM) IRB guidelines.

2.4. Statistical analyses

Univariate analyses indicated that the data did not violate assumptions of normality. As a prerequisite for mediation analyses, we first conducted bivariate correlational analyses. Mediational analyses were then performed according to published criteria (Baron & Kenny, 1986). Specifically, results are consistent with a mediational model if (1) the predictor is associated with both the hypothesized mediator and the relevant outcome and (2) after controlling for the effects of the mediator, the relation between predictor and outcome is reduced. Direction of mediation (e.g., whether coping mediated optimism, or optimism mediated coping) was determined by comparison of the relative changes in the parameter estimates.

3. Results

No significant differences between excisional biopsy and lumpectomy patients on optimism, pessimism, coping responses and distress (all p's > 0.05) were revealed. Therefore, these groups were combined in the analyses.

Bivariate correlations between optimism, pessimism, coping responses, and distress (POMSSV) are presented in Table 1.

We found that both optimism and pessimism correlated with distress (POMS-SV) (p's < 0.05). Higher optimism scores were associated with less distress before surgery, while higher pessimism scores were associated with greater distress before surgery.

As seen in Table 1, seven of the 14 coping responses assessed with the B-Cope were significantly related to distress (POMS-SV) (p's < 0.05) in bivariate analyses.

Scores on nine of the 14 coping responses were significantly associated with pessimism levels and two were associated with optimism level (see Table 1). Pessimism was related to planning, positive reframing, denial, self-distraction, instrumental support, active coping, religion, venting, and behavioral disengagement, and optimism was related to self-distraction and instrumental support (p's < 0.05).

For variables showing significant bivariate relations consistent with mediation of effects on distress models describing relations between optimism, pessimism, coping, and distress were evaluated (as shown in Fig. 1).

Mediational analyses were consistent with the view (see Fig. 1) that optimism and pessimism completely mediated the effects of coping responses (i.e., planning, denial, self-distraction) on distress, with the lone exception of venting. Also, pessimism partially mediated the impact of instrumental support on distress. These results indicating that the impact of coping is generally mediated by optimism and/or pessimism are not consistent with previous findings of Carver et al. (1993). In the previous study of Carver et al., the reverse was found; the impact of optimism was generally mediated by coping responses (i.e., denial, acceptance). However, we found evidence only for venting as a possible mediator of the effects of pessimism on distress.

3.1. Supplementary analyses

As the present mediational models were not consistent with those of Carver et al. (1993), we took the opportunity to reanalyze the present data in a form more consistent with the approach used by Carver et al. (1993). Specifically: (1) the LOT score was recalculated according to the unidimensional model of optimism (scores on the negatively worded items were reversed and summed with scores on the positively worded items); (2) distress was recalculated using only those 11 POMS-SV items used by Carver et al. These analyses supported mediational models that were identical to those found with our original assessment strategy. That is, optimism mediated the relations between coping responses and distress ($p < 0.05$) with the exception of venting, which maintained a direct relation with distress ($p < 0.05$).

4. Discussion

The present study found that optimism and pessimism had a significant impact on distress level in patients scheduled for surgery related to breast cancer. Specifically, individuals who tended to be more optimistic experienced less distress on the day of their surgery. Individuals who tended to be more pessimistic were found to be more distressed at that time. These bivariate results are consistent with those previously reported in the literature regarding the impact of

optimism and pessimism on presurgery distress in general (Scheier et al., 1989), and for breast cancer surgery in particular (Carver et al., 1993).

The present results showed that coping responses of greater planning, denial, self-distraction, instrumental support, humor, emotional suppression, venting, self-blame, and substance abuse were all related to greater distress prior to surgery. It is interesting to note that both coping responses thought to be generally adaptive (e.g., planning, instrumental support, venting) as well as those described as generally problematic (e.g., denial, self-distraction, self-blame) (Carver, 1997; Cramer, 2000) were associated with greater distress. These results are consistent with Lazarus (2000) assertion that it is inappropriate to make a sharp distinction between adaptive and maladaptive coping responses. According to this view, a coping response can sometimes be maladaptive and sometimes adaptive depending upon the person and specific threatening context. In the present study, the coping responses thought to be generally adaptive (i.e., planning, instrumental support, humor, venting,) were associated with greater distress, possibly because of patient focus on the upcoming surgery (e.g., planning, instrumental support) and emotion relating to surgery and potential diagnosis/prognosis. That is, the context of imminent breast surgery may be somewhat overwhelming, and these coping responses may tend to keep the issue in awareness. Additionally, further appraisals and reappraisals of the situation (Lazarus, 1991) by these women may perpetuate a vicious cycle of distress.

Consistent with the published literature (Carver et al., 1993; Epping-Jordan et al., 1999), the present study revealed that optimism and pessimism were associated with coping responses. Results indicating that optimism and pessimism were associated with opposing coping responses (e.g., venting and self-distraction) have also been previously reported in a study using the Brief COPE (Carver, 1997).

To investigate the mediational pathways by which optimism, pessimism, and coping responses may contribute to patient distress levels, relations between these variables were explored. Mediational analyses supported the conclusion that the impact of coping responses on psychological distress were in general mediated by optimism and/or pessimism. These results might be well accommodated by Appraisal Theory (Lazarus, 1991). They are consistent with previous findings (Chang, 1998) suggesting that optimism and pessimism might be viewed as components of secondary appraisal processes and therefore, function as proximal causes of distress. Specifically, in a sample of college students, Chang (1998) found that both optimism and pessimism were associated with both primary and secondary appraisal mechanisms. Although there is no clear evidence yet to describe how optimism and pessimism may be formally assimilated into Appraisal Theory (e.g., as components of the secondary appraisal step), these data suggest one possible way optimism and pessimism might mediate the impact of coping responses on distress. Future research may wish to investigate the role of optimism and pessimism specifically among the secondary appraisal components. Optimism and pessimism may have direct effects on distress or they may interact with other secondary appraisal components to influence distress. Overall, the present results indicating that optimism and pessimism mediated the effect of coping responses on distress support further investigation of these relations in the context of Appraisal Theory (Lazarus, 1991).

The present results are inconsistent with previous findings reported by Carver et al. (1993), in that the impact of optimism (measured as unitary score) on presurgery distress of patients scheduled for surgery relating to breast cancer was mediated by various coping responses (i.e., denial, acceptance) in that study. This discrepancy could be due to various methodological differences including the patient samples, as well as the fact that the instruments used in Carver et al. (1993) study were abbreviated. However, supplementary analyses in the present study examined results also using abbreviated instruments and revealed relations similar to those seen with the full scales.

The present study's results, however, were not entirely consistent regarding mediation. Venting appeared to have an independent effect on presurgery distress (increased venting was correlated with increased distress), which was not mediated by optimism or pessimism. It seems that the coping response of expression of negative feelings in this very stressful situation has a negative impact on distress (see also, Dell'Oliver, Koch, & Buckler, 2002). In the present context of breast surgery, it is possible that the administration of the POMS-SV provided an opportunity for venting, and thus, potentially inflated the correlation between venting and distress. Future studies should also investigate other appraisal components that might mediate the effect of venting on distress. For example, Ellis (1994) construct of "awfulizing" (i.e., patient believing that a situation is worse than it absolutely should be) might be one such secondary appraisal mechanism (David, Schnur, & Belloiu, 2002).

Given the support of the mediational model, it would seem appropriate for future research to address the question of how optimism and pessimism impact emotional experience (e.g., distress). One possibility is that optimism and pessimism may be direct determinants of levels of emotional experience. Aspinwall, Richter, and Hoffman (2001) suggested that the mechanism may be a self-fulfilling prophecy. For example, belief in a positive surgical experience may result in less distress. Indeed, according to Appraisal Theory (Lazarus, 1991), various appraisal components are conceptualized as direct determinants and proximal causes of emotional experiences. Consistent with this direct determinant view, optimism and pessimism might be conceptualized as generalized beliefs within a response expectancy model (Kirsch, 1990), and thus, optimism and pessimism may not be a stable trait (Lazarus, 1991). This position is consistent with the present findings indicating that specific coping mechanisms influence optimism and pessimism. Recent research has supported the view that response expectancies can directly influence distress in breast cancer surgical patients (Montgomery et al., 2002), however, more empirical research in this area is needed.

From a practical point of view our results raise awareness about the distinction between proximal and distal causes of various outcomes (e.g., psychological distress) during psychological interventions. According to our findings, coping responses might better be conceptualized as distal causes of psychological distress while optimism and pessimism should be conceptualized as proximal causes.

The present study is not without its limitations. First, though prospective with regard to the prediction of distress, the study is correlational with regard to the relations between optimism, pessimism and coping. Future studies should determine whether changes in optimism or pessimism cause changes in presurgery distress levels and whether other variables (e.g., baseline distress) could influence these relations. Second, it is unknown whether the present results would generalize beyond breast cancer surgery patients at our institution; these results should be replicated in more diverse, larger samples. Third, future investigations may wish to employ different and more frequent assessments of coping and optimism [e.g., Ways of Coping Checklist (Lazarus & Folkman, 1984)] and to explore the impact of presurgery distress on both subjective and objective postsurgical outcomes. However, this approach did not seem appropriate for this initial study given the extant state of the literature and the fact that these patients are already under considerable strain associated with surgery and cancer diagnosis. Fourth, we did not measure constructs more directly associated with Appraisal Theory to explore the interrelations among appraisal, optimism, pessimism, coping, and distress. To do so here would have been premature given the extant state of the literature, as the mediation of coping responses by optimism and pessimism had yet to be demonstrated. Based on the present findings, as well as those of Chang (1998),it would now be warranted for future research to examine more specifically the associations between optimism, pessimism and appraisal.

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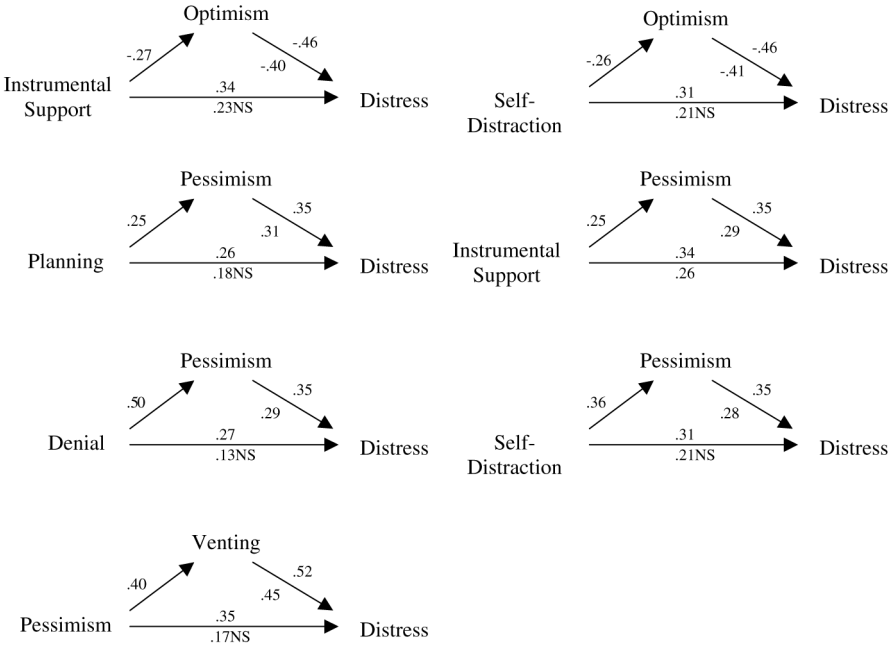

Fig. 1.

Mediational diagrams for models testing the interrelations among optimism, pessimism, coping mechanism, and distress. Mediational diagrams are presented according to the "best-fit" of the data. Values presented are standardized parameter estimates. Values above lines reflect bivariate relations; values below lines reflect multivariate relations accounting for other predictors in the regression equation. All relations are significant unless indicated otherwise (NS).

Table 1

The relevant correlations among measures of: (1) coping responses (B-COPE); (2) optimism and pessimism; and (3) psychological distress (POMS-SV)

	POMS-SV	Optimism	Pessimism
BRIEF COPE			
Venting	0.52*	-0.24	0.40*
Self-blame	0.36*	-0.17	0.10
Instrumental support	0.34*	-0.27*	0.25*
Self-distraction	0.31*	-0.26*	0.36*
Emotional suppression	0.27*	-0.14	0.10
Denial	0.27*	-0.20	0.50*
Planning	0.26*	-0.16	0.25*
Humor	0.25	-0.15	0.21
Active	0.23	-0.12	0.32*
Substance abuse	0.23	-0.21	0.17
Positive reframing	0.20	0.07	0.37*
Acceptance	-0.14	0.04	0.007
Behavioral disengagement	0.13	-0.14	0.30*
Religion	0.10	-.15	0.26*
LOT			
Pessimism	0.35*	-0.49*	
Optimism	-0.46*		

All other results are not statistically significant. $N = 60$ in all cases.

* $p < 0.05$.