How Important Is the Perception of Personal Control? Studies of Early Stage Breast Cancer Patients

Charles S. Carver
Suzanne D. Harris
Jessica M. Lehman
Lynn A. Durel
Michael H. Antoni
University of Miami

Stacie M. Spencer
University of Pittsburgh

Christina Pozo-Kaderman
Mt. Sinai Comprehensive Cancer Center

*Two models of cognitive determinants of distress under adversity were tested in the experiences of two samples of newly treated breast cancer patients (*ns *= 144 and 202). One model emphasizes the role of perceptions of personal control in subjective well-being; the other model emphasizes expectancies of the occurrence of desired outcomes. In this research, the outcome addressed was remaining free of cancer in the future. In these two samples, beliefs about control over remaining free of cancer played no role in predicting distress, although expectancy of remaining cancer free did. Discussion focuses on conceptual boundaries on the concept of control, how difficult it is to assess control separately from expectancy regarding the desired outcome, and how conceptual clarity requires such a separation.*

The psychology of stress and coping is home to a number of theories about what variables render people more or less vulnerable to adverse effects of stressful events. These theories share a good deal of conceptual ground but differ in certain respects because theorists emphasize or deemphasize various elements. An example is the role of perceptions of control. Some argue that perceptions of personal control are important in times of adversity. Others argue that the outcome anticipated (good vs. bad) often matters more than how the outcome is expected to come to pass. This article addresses this issue.

Perceptions of Personal Control

Many people believe that the sense of personal control is a key determinant of successful adjustment to stress (Bandura, 1977, 1986; Peterson & Seligman, 1984; Schulz & Heckhausen, 1996; Shapiro, Schwartz, & Astin, 1996; Taylor, 1983; Taylor & Brown, 1988; Thompson & Spacapan, 1991; Weiner, 1985; Weiner & Kukla, 1970). Indeed, the idea that people deal better with stressors when they have the perception of control is a recurring theme in the stress literature.[1]

The key role of personal control is also part of broad theories of behavior such as self-efficacy theory (Bandura, 1977, 1982, 1986). Self-efficacy is confidence of being able to execute actions that are required to deal with particular situations. Theoretical emphasis is on perceptions that a desired outcome can be attained through personal agency. Effort is undermined when people lack confidence in their ability to exercise control over their actions. As a result, persons with low efficacy expectan-

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cies often fare worse than do those with more favorable expectancies (see Bandura, 1986, for a review of the literature deriving from this theory).

Does the sense of control really confer benefits? The answer is not as simple as it appears at first glance. We will not review the extensive literature on perceived control (for broad statements, see, e.g., Aldwin, 1994; Averill, 1973; Skinner, 1996; Thompson, 1981; Thompson & Spacapan, 1991). Instead, we note several studies chosen as especially relevant to the themes of this article.

BENEFICIAL EFFECTS OF PERSONAL CONTROL

Many studies support the idea that having a sense of personal control relates to better emotional well-being. For example, Burgess, Morris, and Pettingale (1988) studied people newly diagnosed with breast cancer or lymphoma. Those with internal locus of control (the belief that they had control over important outcomes in their lives) also had less depression and anxiety and a more positive and confronting coping style than did those with an external locus of control (the belief that control over outcomes in their lives rested outside themselves). Langer and Rodin (1976) found that nursing home residents given personal control in choosing daily responsibilities and activities were happier, more active, and more mentally alert than other residents.

Laboratory findings also support this position. For example, Geer, Davison, and Gatchel (1970) shocked participants occasionally while they performed a reaction time task. Participants given a sense of control were told they could reduce the duration of the shocks from 6 to 3 seconds if they responded quickly. In the no-control condition, the shocks were simply reduced to 3 seconds. The group who felt they were exercising control displayed less anticipatory arousal (although there was no difference in reported pain levels).

Another project relevant to this theme (and to the research we report here) was conducted by Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, and Cruzen (1993). This cross-sectional study examined cancer patients. Patients with a stronger sense of control reported less distress than did those whose control perceptions were lower. Especially related to lower distress in this sample was the sense of control over symptoms and emotional reactions.

DETRIMENTAL EFFECTS OF PERSONAL CONTROL

Although personal control often relates to lower distress, this is not always so. Indeed, some have argued that situations exist in which perceptions of control are actually detrimental to well-being (Affleck, Tennen, Pfeiffer, & Fifield, 1987; Burger, 1989; Folkman, 1984; Thompson, 1981; Thompson, Cheek, & Graham, 1988). There is also evidence that supports this view.

For example, Burger, McWard, and LaTorre (1989) found that most participants who were asked to give a blood sample relinquished control over this procedure to the experimenters, who were viewed as more experienced. Apparently, this giving up of control occurred in an effort to avoid pain (an undesired outcome). A similar principle seems to underlie results reported by Miller (1979). Her participants thought they were being tested for reaction speed. Each had a partner and only one of the pair could respond on a given trial. Participants were told that they would be shocked each time they (or the partner) failed to react within a specified time. Those who believed their partners had faster reactions than they did relinquished control, presumably to avoid a painful outcome.

Some in health psychology also have been convinced that perceptions of personal control can sometimes have adverse consequences. Rodin (1986) argued that as people age and their physical problems become more severe and chronic, greater perceived control over these problems can yield more stress, worry, and self-blame. Affleck et al. (1987) found control related to poorer outcomes among patients with rheumatoid arthritis. They argued that having a sense of personal control in situations that offer few opportunities for actual control may lead to difficulties. In the same way, Eitel, Hatchett, Friend, Griffin, and Wadhwa (1995) recently found that control over treatment among patients with end-stage renal disease was associated (cross-sectionally) with poorer adjustment.

Findings such as these argue that the effects of control are not as simple and straightforward as has been widely assumed. After reviewing research on perceptions of control, Burger (1989) identified several conditions that he believed cause people to relinquish control or to experience distress under conditions of perceived control. Of special relevance at present is his conclusion that personal control is undesirable when control reduces the likelihood of attaining a desired outcome (or when it increases the likelihood of an undesired outcome).

AN ALTERNATIVE THEORETICAL VIEW

Although many theorists view the sense of personal control as critically important, not all emphasize this variable. For example, Carver and Scheier (1981, 1990, 1994, 1998) argue that anticipations of the occurrence of an outcome are what matter. They argue that people consider both external circumstances and sensed personal control in forming expectancies about outcomes. The expectancy then relates to emotional reactions and subsequent behavioral effort. Indeed, in this model, affect and confidence versus doubt about outcomes are viewed as two subjective readouts of the same psychological mechanism (Carver & Scheier, 1998, pp. 122, 172).[2] The critical element in this model is *whether* the desired outcome seems likely to occur, not *how* it is to occur.

The studies of control described here were not designed to compare these views, yet their results are generally consistent with the latter theoretical position. As a group, the studies suggest that control is desirable when having control is seen as making a desired outcome more likely but that control is undesirable when it is seen as making a desired outcome less likely (see also Law, Logan, & Baron, 1994). Presumably, there are also cases in which personal control is irrelevant—where having versus not having personal control has no bearing on the perceived likelihood of the desired outcome (see Fitzgerald, Tennen, Affleck, & Pransky, 1993).[3]

A METHODOLOGICAL PROBLEM

There is also a methodological problem that contributes to confusion about the effects of control perceptions. Although perceived control has been studied a great deal over the years, much of this work confounds the perception that an outcome *depends on what you do* (personal control) with the anticipation that a desired outcome *will occur* (for a discussion of issues in conceptualizing control, including this one, see Thompson & Spacapan, 1991). Testing the effect of perceived control apart from the effect of expected outcome requires that the qualities be kept separate (see Figure 1). This is done only rarely in research on the control construct.

Consider, for example, a study by Thompson et al. (1993) mentioned earlier, which appeared to indicate the value of perceived control. Thompson et al. combined participants' ratings of the amount of control they perceived in a given domain with their ratings of the *effectiveness* of their control efforts in that domain (i.e., perception of successful outcome). This makes it impossible to know whether it was the control perception that mattered or the perception of a successful outcome. To disentangle the functional role of control from the functional role of expecting (or experiencing) good outcomes, these qualities have to be kept separate empirically.

How can the qualities be kept separate? One strategy is to assess the mixture of control plus expectancy with one measure (e.g., a measure of mastery), assess expectancy per se with a second measure, and see whether the first measure retains predictive ability when controlling for the second (e.g., Marshall, 1991). An alternative strategy is to assess expectancy of the occurrence of an outcome with one measure and assess separately whether the outcome is perceived as being under personal control or being outside one's control (e.g., Fitzgerald et al., 1993).

		Perception of personal causal responsibility?	
		Yes	No
Expect desired outcome?	Yes	A	B
	No	C	D

Figure 1 Contrasting perceptions of control with perceptions of desired outcome.

NOTE: If perceptions of control are beneficial, then Cell A should experience less distress than Cell B and Cell C less than Cell D. If perceptions of control are beneficial when associated with good outcomes but detrimental when associated with bad outcomes, Cell A should be better off than Cell B but Cell C should be worse off than Cell D. The effect of perceived control per se cannot be evaluated, however, by comparing Cell A with Cell D, which has been the case in many studies.

The work reported here employed the latter strategy. We asked participants for their expectancies regarding an important outcome, and then we asked whether the person believed the determination of the outcome was primarily under her control or primarily outside her control.

PRESENT RESEARCH

The data reported here came from women who were undergoing a health crisis: treatment for early stage breast cancer. Breast cancer poses a threat to life and well-being. However, early stage breast cancer has a relatively good prognosis. The combination of life threat and good prognosis creates a situation of great ambiguity. No one knows the determinants of recurrence. This ambiguity provides an opportunity for patients to interpret their situation in diverse ways. That is, it leaves considerable room for generating diverse expectations regarding the outcome (remaining free of cancer in the future) and diverse perceptions of the source of control over that outcome.

Study 1 examined a period starting shortly after surgery. At that time, we measured the patient's expectancy regarding future freedom from cancer, the patient's sense of personal control over this possible outcome, and distress, both concurrent and subsequent. If the sense of personal control always promotes well-being, then control should relate to lower distress as a main effect. If personal control promotes well-being only among people who expect good outcomes, then there should be an interaction between control and expectancy such that control relates to less distress only among women expecting to remain cancer free. If the perception of personal control is irrelevant in this circumstance, then only the expectation of remaining cancer free should relate to distress levels.

STUDY 1

Method

PARTICIPANTS AND PROCEDURE

The analyses reported here made use of participants from two samples of breast cancer patients. One sample was collected by Pozo et al. (1992); analyses of data from that sample have been reported both in that article and elsewhere (Carver et al., 1993, 1994). The variables under study here, however, have not been addressed in any previous report.

Participants included 69 private patients from the University of Miami Oncology Clinic who were diagnosed with either Stage I (n = 49) or Stage II (n = 20) breast cancer.[4] Stage I and II breast cancers are early-stage cancers that have a good prognosis. All of these patients were English speakers. Exclusion criteria (typical of studies on breast cancer patients) were previous psychiatric history, a prior cancer, or a major concurrent disease. The participation rate of women contacted was approximately 85%. The women ranged in age from 33 to 72 (M = 58.23, SD = 11.23). Fifty-one were married or in an equivalent relationship, 7 were divorced, 7 widowed, and 4 single. Sixty-one of the women were White, 4 Black, and 4 Hispanic. The women had completed an average of 14.04 (SD = 2.38) years of education.

Of the starting sample, 3 failed to provide information concerning the sense of personal control over their outcomes and were omitted. The subsample contributing to the analyses reported here thus was 66 participants. Forty-six of these women underwent modified radical mastectomies, 7 had bilateral mastectomies, and 13 had lumpectomies (tumor excision). Fourteen subsequently underwent radiation therapy, 14 had chemotherapy, and 21 had tamoxifen therapy.

The second sample was 78 private patients from the University of Miami Oncology Clinic or from a private practice in South Miami (as in the first sample, several issues were being studied at once). The participation rate was comparable to that of the first sample. The patients again had either Stage I (n = 56) or Stage II (n = 21) breast cancer; all were English speakers; and none had a prior psychiatric history, a prior cancer, or a major concurrent disease. They ranged in age from 28 to 76 (M = 53.40, SD = 11.12). Most were married or in an equivalent relationship (56), 8 were divorced, 9 widowed, and 5 single. Most were non-Hispanic White (72), 1 was Black, and 5 were Hispanic. The women had an average of 14.67 years of education (SD = 2.18). Forty-two underwent modified radical mastectomies, 6 had bilateral mastectomies, and 29 had lumpectomies (tumor excision); 24 had radiation therapy, 18 had chemotherapy, and 40 had tamoxifen therapy.

In both of these samples, data collection was conducted as a series of interviews. Participants were recruited during their diagnostic office visit. After informed consent was obtained, an initial interview was conducted; a presurgery interview took place the day before surgery and a postsurgery interview took place 7 to 10 days after surgery. Expectancies for recurrence were assessed at postsurgery, along with perceptions of the source of control (personal or external) over recurrence. Also assessed at that time was distress level. Follow-up interviews were conducted 3, 6, and 12 months after surgery. Distress levels were reassessed at those times.

PSYCHOSOCIAL MEASURES

Cancer expectancy. The postsurgery interview included this question: "To what extent do you believe that you will remain free of cancer in the future?" The rating was made on a 9-point scale where 9 was labeled *absolutely sure I won't get cancer again*, 5 was labeled *I don't know*, and 1 was labeled *not at all confident—I expect to get cancer again.* We used only a single item to assess expectancy of remaining cancer free because of evidence that single-item reports are as informative as multi-item scales when the qualities being assessed are relatively intuitive to people (Burisch, 1984a, 1984b; see also Helgeson, 1992). We regarded the concept of expecting to remain free of cancer as relatively easy for participants to understand.

Personal control over recurrence. After the assessment of expectancy of recurrence, participants received the following statement:

> There are a lot of factors that influence any outcome in a person's life, and that includes whether or not a person remains free of cancer. Some of the factors are related to the person, for example, the way you take care of yourself, the kinds of foods you choose to eat, and so on. Some of the factors are outside the person, for example, having good quality health care and being in an environment that protects you from things that cause cancer. Which of these categories will be more important in determining whether you remain free from cancer in the future? [response choices being] "Mostly things that are in my personal control" or "Mostly things that are outside my personal control."

Again we used only a single item because the psychological quality we were measuring was straightforward. Given the forced-choice procedure, the sense of control over the outcome had two levels: low (coded as 1) and high (coded as 2).

Examples of possible causal forces were provided to give participants some idea of the range of variables they might take into account rather than in an attempt to be prescriptive. Given that the response options explicitly referenced variables that participants perceived as under their personal control versus variables outside their control, we believe it is reasonable to infer that (for example) a patient who felt that stress was under her control, and who believed that controlling stress would keep her free of cancer, would choose the personal-control option. The choices did not dictate what things people should and should not feel a sense of control over. They simply assessed whether (in the aggregate) patients believed that things they have control over would be more important or less important causal agents than things they believed were outside their control.

Distress. Distress was assessed in the first sample by the Profile of Mood States (POMS) (McNair, Lorr, & Droppelman, 1971). The POMS, a widely used instrument, assesses several types of moods (e.g., depression, anger, anxiety). It consists of a series of adjectives, each of which is a mood descriptor. Respondents indicate the extent to which they have had that feeling for a specified time period using response choices that range from 1 (*not at all*) to 5 (*a lot*). At postsurgery, the women were asked to indicate how they had felt since the operation. At each follow-up, they were asked to indicate how they had felt during the preceding month.

Abbreviated scales were used in an effort to minimize respondent burden because many measures other than those described here were assessed at each time. The scales relevant here are anxiety (with items tense, nervous, anxious), depression (helpless, unhappy, worthless, hopeless), and anger (angry, resentful, grouchy). These scales were all quite reliable (average α at postsurgery = .80). Preliminary analyses determined that they were also highly interrelated (average $r = .71$ at postsurgery). Thus, these three scales were averaged into an index of distress ($\alpha = .91$). Distress levels were not high during the periods assessed (consistent with the idea that this is a crisis that is being resolved adaptively by most patients), with means at various points ranging around 2.

Distress was assessed in the second sample by the Affects Balance Scales (ABS) (Derogatis, 1975). The ABS, also a widely used instrument consisting of mood-descriptive adjectives, is designed to assess several qualities of emotion, both positive and negative. Respondents indicate the extent to which they have had that feeling for a specified time period (we used the same time frames as in the other sample) using response choices that range from 1 (*never*) to 5 (*always*). The scales relevant at present are those measuring anxiety, depression, and hostility. As in the first sample, reliability analyses indicated that the anxiety, depression, and hostility scales could be combined into a measure of distress (average α across measurements = .83).

The two samples thus were assessed on the same qualities of mood using different instruments. To render the samples comparable with respect to distress indices, *z* scores were computed on distress at each time point within each sample. These *z* scores then were used as the outcome measure for the combined sample. This procedure seems quite reasonable, given that the samples were similar on all descriptive variables and had been recruited from the same sources.

Results and Discussion

Preliminary analyses tested for potentially confounding relationships between either demographic characteristics (e.g., age, marital status) or medical treatment characteristics (e.g., stage of cancer, adjuvant therapies) and the predictor variables. No such association was found; thus, no demographic or medical variable was controlled for in the analyses reported here.

Cancer expectancy self-reports tended toward the optimistic ($M = 6.31$, $SD = 1.95$), consistent with the patient's good prognosis, although the modal response was 5 (the middle of the scale). Self-reports on the perceived control variable were fairly evenly divided, with 65 reporting the belief that influences under their personal control would determine whether they remained cancer free and 79 reporting that their outcome would be determined mostly by variables outside of their control. The cancer expectancy and perceived control variables were not strongly related to one another, although those perceiving personal control tended to be more optimistic than those perceiving the outcome as outside their control ($r = .15$, $p < .07$).

The relationship between the cancer-expectancy and perceived-control variables and distress was tested by hierarchical regression analysis, in which the main effects of the two predictors were entered on the first step and the interaction on the second (variables were centered before computing the interaction to reduce multicollinearity). The final equation for presurgical distress (multiple $R = .25$) yielded one significant effect: The expectancy of remaining cancer free was inversely related to distress ($\beta = -.25$, $SE = .08$, $p < .004$). Neither control nor the interaction had an effect approaching significance (βs = .00 and –.02, *SE*s = .08 and .08).

Subsidiary analyses were conducted to confirm that this effect generalized across the two samples (it did), that the effect was indeed generally linear (an ANOVA breaking participants into as even-sized groups as could be created yielded distress means of .38 for all negative-expectancy participants, .17 for neutral participants, –.01 for those whose expectancy was 6 to 7, –.06 for those whose expectancy was 8, and –.69 for those whose expectancy was 9), and that there was no tendency toward an interaction that had been obscured in the regression analysis (there was not).

The same set of postsurgical predictor variables was then used to predict follow-up distress. At the 3-month follow-up (with an N of 126 having data at both measurement points), there again was a significant effect for postsurgical expectancy of remaining cancer free ($\beta = -.21$, $SE = .09$, $p < .02$), with neither control nor the interaction having an effect approaching significance (βs = –.01 and .15, equation multiple $R = .28$). At the 6-month follow-up ($N = 118$), no predictor approached significance. At the 12-month follow-up ($N = 114$), presurgical confidence predicted distress ($\beta = -.21$, $SE = .09$, $p < .03$), with neither control nor the interaction approaching significance (βs = –.02 and .15, equation multiple $R = .28$). Although postsurgical expectancy of remaining free of cancer was fairly consistent as a predictor of relative distress across this period of time, it did not predict changes in distress across time. That is, tests of follow-up associations in which previous associations were controlled yielded no significant effect.

STUDY 2

Study 1 found evidence that expecting to remain free of cancer related to better emotional adjustment and that this association was independent of the perceived causal agency underlying that good outcome. It might be argued, however, that assessing perceptions of personal control so soon after surgery did not allow time for the perceptions of control to stabilize. Study 2 assessed whether the pattern of associations would replicate in a sample of women who had a longer time to adjust to their diagnosis and treatment before reporting expectancies and control beliefs.

Method

PARTICIPANTS AND PROCEDURE

Participants were 202 patients from several practices in the Miami area who were diagnosed with either Stage 0 ($n = 10$), Stage I ($n = 118$), or Stage II ($n = 74$) breast cancer. All were English speakers. None had a previous psychiatric history, prior cancer, or a major concurrent disease. The women ranged in age from 27 to 87 ($M = 53.83$, $SD = 12.80$). Of the participants, 143 were married or in an equivalent relationship, 25 were divorced or separated, 22 were widowed, and 12 were single. Of the women, 139 were White, 21 Black, and 42 Hispanic. The women had an average of 14.41 ($SD = 2.80$) years of education. Sixty-seven underwent mastectomies, 8 had bilateral mastectomies, and 127 had lumpectomies (tumor excision); 128 women subsequently underwent radiation therapy, 74 had chemotherapy, and 76 had tamoxifen therapy.

These women all completed a single assessment, in most cases by questionnaire (a few opted to be interviewed). Potential participants were contacted by a letter from their physician's office, which had a description of the project (which, as in Study 1, extended substantially beyond the issue now under discussion). The letter contained a form to be returned if the woman wished to learn more. All who returned that form were contacted by phone and given a more complete description. Women still interested in participation were then sent an informed consent form and the questionnaire. Final participation of women initially contacted by mail was approximately 80%.

Because this project focused on issues different from those of the projects of Study 1, there was only one assessment for each participant. One purpose of the study was to examine for differences as a function of the amount of time since surgery (through the 1st year). For this purpose, we had selection windows at 3, 6, and 12 months postsurgery. Time since surgery varied as much as a month in either direction from the target date except for the 3-month window, for which the lower bound was only 2 weeks prior to the 3-month mark. Women in the 3-month window numbered 61, with 68 in the 6-month window, and 73 in the 12-month window.

PSYCHOSOCIAL MEASURES

Cancer expectancy and personal control over recurrence. Perceptions of the likelihood of remaining free of cancer were measured by the same item as in Study 1. Similarly, the sense of whether future freedom from cancer would be influenced more by factors within personal control or more by factors outside personal control was assessed by the same item as in Study 1.

Emotional adjustment. Emotional distress was assessed in this study by three measures. The first was the abbreviated version of the POMS used in the first sample of Study 1. A second measure of emotional adjustment was the Center for Epidemiologic Studies depression scale (CES-D) (Radloff, 1977). The CES-D is a widely used 20-item scale that measures a range of cognitive, affective, motivational, and somatic symptoms (see Myers & Weissman, 1980; Schulberg et al., 1985, for evidence on its validity). Respondents indicate the extent to which they have recently had a set of experiences (framed as "I" sentences). Options for responding range from 0 (*rarely or none of the time*) to 3 (*most or all of the time*).

Our third measure of emotional adjustment was the extent to which the woman reported a positive quality of life in her day-to-day experiences. Because our focus was on patients who have few physical symptoms, we did not assess cancer-specific aspects of quality of life but rather aspects of general quality of life. Although time constraints prevented use of the full measure of perceived quality of life of Andrews and Withey (1976), we selected from it 11 items that we felt address a reasonable range of life activities. Respondents considered each item's content and indicated how they felt about that domain of life on a scale ranging from 1 (*terrible*) to 7 (*delighted*). This measure had a high internal reliability in this sample ($\alpha = .89$).

Preliminary analysis indicated that the three measures of emotional adjustment were relatively strongly correlated with one another (interscale *r*s ranged from .62 to .75, standardized α after reversing the coding for quality of life = .87). Thus, the three measures were merged into an index of distress by standardizing responses to each measure and averaging the *z* scores.

Results and Discussion

As in Study 1, preliminary analyses tested for potentially confounding relationships between demographic or medical treatment characteristics and the predictor variables. Again, no such association emerged (including none for time elapsed since surgery). Cancer expectancy self-reports once again tended toward the optimistic ($M = 5.71$, $SD = 1.93$), although less so than in Study 1. Self-reports on the perceived-control variable again were fairly evenly divided, with 111 reporting that influences under their personal control would determine whether they remained cancer free and 91 reporting that their outcome would be determined mostly by variables outside their control. Cancer expectancy and control were virtually unrelated in this sample ($r = -.03$).

The relationship of greatest interest was once again tested by hierarchical regression analysis, in which the main effects of the two predictors were entered on the first step and the interaction on the second. As in Study 1, the final equation (multiple $R = .35$) yielded one significant effect: The expectancy of remaining cancer free related inversely to distress, $\beta = -.35$, $SE = .07$, $p < .0001$. Neither the perceived-control variable nor the interaction had an effect approaching significance (βs = .03 and .01). As in Study 1, then, expectancy of remaining free of cancer related to greater subjective well-being, and this was independent of the causal locus from which that good outcome was expected to be produced.

During the review of this article, questions were raised about the meaning of the midpoint of the expectancy scale and about the fact that the control judgment was dichotomous, whereas the expectancy rating was on a multipoint scale. In an effort to address these issues, we conducted an additional analysis in which we omitted participants whose expectancy rating was at the midpoint and dichotomized the remainder (thus rendering expectancy and control equivalent in that respect). Analysis of the full design of Study 1 in this way was precluded by the low number of pessimistic participants (starting $N = 12$), but the larger sample of Study 2 (pessimistic $N = 21$) permitted such a test. Analysis of variance yielded a strong main effect for expectancy, $F(1, 92) = 35.05$, $p < .001$, with the other terms again not approaching significance.

General Discussion

We reported here two data sets bearing on an issue that differentiates theories about how people deal with adversity. The issue is the role played by perceptions of personal *control* over outcomes versus the role of expectancies about the *occurrence* of the outcomes. We examined this issue in the context of a serious health threat: breast cancer. The studies thus examined the issue in a context that had considerable personal meaning to the research participants.

It is apparent from the pattern of the data that the situation facing patients was ambiguous, both with respect to the likelihood of remaining free of cancer in the future and with respect to perceptions about what variables would determine whether they would remain cancer free. As a result, responses made by participants varied substantially on both expectancy of recurrence and perceptions of control. Indeed, it is noteworthy that as many women reported believing that recurrence would depend mostly on things in their personal control (overall $n = 176$) as reported that recurrence would depend mostly on things outside their personal control (overall $n = 170$).

Cancer-related expectancies related to emotional distress in both studies. Women who said they expected to remain free of cancer reported less distress than those who reported being unsure or doubtful about their future. This effect was independent of the sense of personal control over whether they would remain cancer free. To put it differently, women who anticipated freedom from cancer and believed this good outcome would be determined primarily by causal forces under their control were no better off emotionally than those who anticipated freedom from cancer and believed this good outcome would be determined primarily by forces outside their control. This pattern replicates that found by Fitzgerald et al. (1993) for life satisfaction among coronary bypass patients and extends it forward in time. That is, the same pattern held in Study 1 when predicting distress levels at 3 months and 12 months (although not at 6 months) postsurgery.

LIMITATIONS

Although the findings seem clear, several limitations should be noted and appropriate caution urged. One issue is that the data are correlational. There was no experimental manipulation to induce or diminish a sense of personal control or a sense of confidence or doubt for the future. The women arrived at both types of perceptions (expectancy and control) on their own. The correlational nature of the data thus makes it hard to draw causal inferences. However, this limitation does not bear on the central theme of the analyses: the associations of distress with confidence about freedom from cancer and with agency of control over freedom from cancer.

A second limitation is that most of the associations were cross-sectional. We regard this as acceptable at this stage. Finding a cross-sectional association does not speak to causality, but the first step toward such an argument usually is to show simple associations at a given point in time.[5] That is, the absence of a cross-sectional association does not bode well for a hypothesized causal relation. On the other hand, perhaps perceived control is special in that regard. It might be argued that perceived control causes an increase in distress, then a decrease (Averill, 1973). Our prospective tests, however (Study 1), found no evidence of such a pattern.

A third limitation is one of generality: The patients under study here were predominantly White, relatively well-off financially (all were private patients), and all had early-stage cancers, thus a relatively good prognosis. These characteristics (which are typical of breast cancer samples in the literature of psycho-oncology) limit our ability to generalize from the results. We cannot be sure that the findings reported here would generalize to other cultural groups, to people with advanced cancers, or to people experiencing other stressors.

A fourth issue concerns operationalization of the predictor variables. Each was measured by a single item. We believe this strategy was reasonable for the psychological qualities assessed (see Burisch, 1984a, 1984b; Helgeson, 1992). Concern on this point also is assuaged by the fact that expectancy of recurrence (measured by a single item) did predict distress. The measures differed, however, in format: The measure of control was dichotomous, whereas expectancy was assessed on a 9-point scale. Subsidiary analyses in Study 2 found that an artificially created dichotomy of expectancy predicted distress strongly, whereas control did not. Nonetheless, the possibility that the difference in format influenced the results cannot be fully discounted.

A fifth issue is that we assessed expectancies and control perceptions only with regard to freedom from disease. Clearly this is not the only outcome that is relevant to the experiences of cancer patients. It may be that other areas of perceived control are better predictors of well-being. There is some evidence on this issue, but it is very difficult to interpret. Thompson et al. (1993) collected data regarding recurrence and also data regarding control over three other areas of life. Adjustment related only to perceived control over emotions/symptoms. Recall, however, that Thompson et al. blended perceptions of control with perceived efficacy of coping efforts, thereby rendering their finding ambiguous regarding the role of perceived control. Nonetheless, it may be that perceived control over another outcome (e.g., emotions and physical symptoms or treatment options) is more relevant to subjective well-being than is perceived control over recurrence.

Despite these cautions and limitations on generalization, the pattern of the data is clear. In the context studied here, a perception of personal control over recurrence was unrelated to subjective well-being. Recurrence is an important outcome, and more than half of the participants saw it as being mostly under their control. Although the expectation of a good outcome related to subjective well-being, beliefs about how the outcome would come to pass did not.

IS PERCEIVED CONTROL IRRELEVANT?

To be as clear as possible, we should be explicit about some things that we are *not* saying about perceived control, as well as what we *are* saying.

One thing we are not saying is that personal control never matters. There are at least two contexts in which perception of personal control is crucial. First, sometimes the goal (the desired outcome) is explicitly to do something oneself. The only way that outcome can possibly occur requires perceptions of personal control. Without perceptions of control in that situation, there will be distress. Second, situations exist in which exercising personal agency is the only way to obtain a desired outcome because no other favorable causal force is in play. In such a case, unless the person perceives and exercises control, the outcome will not occur.

Something else we are not saying is that it is bad to encourage people to feel a sense of control in their lives. After all, taking control very often is an effective way to promote good outcomes. Many people, in many life contexts, fail to attain desired outcomes precisely because they are failing to engage in acts of causal agency that are open to them. These people should be encouraged to perform such acts. Provided that the sense of control does not diminish the perceived likelihood of reaching the desired outcome, a sense of control is good.

It should be noted, however, that in the cases just described, control facilitates, and thus is conflated with, the occurrence of the desired outcome. The fact that control and expectancy are in many cases confounded often slips by unnoticed. For example, it has been noted that patients who find they cannot control the course of their disease turn their attention to other aspects of their situation, things over which they can have a sense of control, such as daily activities or emotions (e.g., Taylor, 1983; Thompson et al., 1993). This is often interpreted as showing how people engage in a continuing search for control, which is shunted in new directions when the sense of control in one domain fades. (Indeed, it might be argued that this is why control over issues other than recurrence is more relevant to well-being than control over recurrence.)

We would interpret this pattern differently. We believe that people shift their focus to other domains precisely because those are domains in which *positive outcomes* are still possible (Carver & Scheier, 1998). That is, instead of struggling with a domain of life in which desired outcomes seem doubtful (e.g., a person with a terminal cancer making that cancer go into remission), people turn their focus to domains where desired outcomes can be approached with more confidence (e.g., to continue to have enjoyable interactions with friends). Thus, in this context, the sense of control is confounded again with anticipations of good outcomes.

STRATEGIES FOR THE FUTURE

The position we are taking (as did Burger, 1989) is that when perceived control benefits people, it does so because it is fostering confidence about desired outcomes. Indeed, we might advance a similar speculation about the beneficial effects of other well-known resources in the literature of stress and well-being, resources such as social support (e.g., Cohen & Wills, 1985; Helgeson & Cohen, 1996; House, House, & Umberson, 1988; Thoits, 1986) and even socioeconomic status (Adler et al., 1994). It may well be that all these variables operate on well-being through a final common pathway: the expectation that desired outcomes will come to pass.

Evidence on this issue is sparse. The studies reported here obviously do not settle the question. They simply represent two more sets of information bearing on it. However, if this issue is to be resolved—if it is even to be *addressed*—researchers have to be more careful than they have been about separating the two qualities. As we noted earlier, despite important exceptions (e.g., Affleck et al., 1987; Fitzgerald et al., 1993), a great deal of previous writing in which the concept of control is invoked has failed to distinguish perceptions of personal control from the expectation of a good outcome (e.g., Thompson et al., 1993; see also Newsom, Knapp, & Schulz, 1996; Thompson, Collins, Newcomb, & Hunt, 1996). Indeed, this problem also extends to locus of control as a personality variable. That is, Rotter's (1966) measure of internal locus of control has been shown to confound internal control with anticipation of a good outcome (Carver, 1997).

It will not be easy to sort out the difference between control and confidence. The measurement problem in itself is daunting. It is very difficult to create operationalizations that reflect these two qualities clearly and independent of each other, and the strategy we chose to employ in this research may well not have been the best one.

Of further concern, however, is that today's research climate does not seem open to considering evidence on the question. Skinner (1996), presenting "a guide to constructs of control" (p. 558), wrote that the prototypic control construct in the psychological literature treats the self as agent, the self's actions as means, and assumes that a positive change is effected on the environment. In making this statement, she seemed to argue (a) that prevalence in the literature should be the primary criterion for judging the adequacy of a construct's definition, that is, "it is no longer the case that all definitions are created equal" (p. 558); and (b) that it is appropriate for these qualities to remain confounded in the future.

We reject the idea that a positive outcome should be incorporated in a definition of control. Indeed, our main point here is the need to separate the anticipation of positive outcomes from other conceptual elements because of the obvious—but widely ignored—fact that influences other than personal agency can promote positive outcomes. Suppose, just for the sake of argument, that what really matters in most cases is the expectation that a desired outcome will occur, independent of agency or means. If this were so, confidence rather than control would be the critical parameter. But if researchers continue to study only Cells A and D of Figure 1—if confounding of control with anticipated outcome is accepted as standard practice—then the question of which quality mattered could not even be investigated. This, we think, would be a mistake.

NOTES

1. It should perhaps be noted that the concept of personal control is not as precise and unitary as it appears on the surface. Various theorists have distinguished among several types of control, including behavioral, cognitive, decisional, informational, and retrospective control (Averill, 1973; Thompson, 1981). Treatment of this diversity is beyond the scope of this article, however.

2. Throughout this article, the word *confidence* denotes favorable expectancies and the word *doubt* denotes unfavorable expectancies. We note that it is possible to assess how certain respondents are about the accuracy of their expectancies for the future (a different sort of confidence), but that is not the focus of the conceptualization under discussion.

3. The literature of attributions and depression supplies indirect evidence on this question. In a review by Robins (1988), the locus dimension (personal vs. external causal responsibility) related far less reliably to depression than the stability and generality dimensions. The latter deal directly with the perceived likelihood of future negative outcomes, whereas locus deals with the issue of where control resides.

4. Previous reports on this sample have used differing subsets of the sample because the analyses had different focuses. Carver et al. (1993) used a subset for whom nearly complete information was available across the 1-year follow-up period because they were interested in prospective prediction of coping to distress and vice versa. Pozo et al.

(1992) omitted patients who had bilateral surgery because they were interested in differences between mastectomy and lumpectomy patients. The analyses reported here began with all patients for whom a postsurgery interview was fully completed.

5. We reiterate that the model from which we were proceeding is not one of unidirectional causal influence. Rather, affect and expectancies for outcomes are seen as two subjective readouts of the same psychological mechanism (Carver & Scheier, 1998).

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