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The relationship of modes of control and desire for control to psychosocial adjustment in women with breast cancer was examined. Fifty-eight women with stage I or stage II breast cancer were surveyed shortly after their diagnosis and again 4 and 8 months later. The authors hypothesized that a control profile in which individuals use a positive yielding (ie, accepting) mode of control in conjunction with an assertive mode results in better adjustment than relying exclusively or primarily on an assertive mode. Results lend preliminary support to this hypothesis. At 8-month follow-up, those women who had a high desire for control and were low in positive yielding control showed the poorest adjustment, whereas those high in desire and the positive yielding mode showed the best psychosocial adjustment. The findings suggest that balanced use of active and yielding control efforts may lead to optimal psychosocial adjustment and quality of life in the face of life-threatening illnesses.

Index Terms: breast cancer, psychosocial adjustment, quality of life, sense of control

Breast cancer is the most common type of cancer among American women. Nearly 200,000 new cases are diagnosed every year in the United States, and the lifetime risk of developing breast cancer is 1 in 8.12

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The diagnosis of breast cancer can cause feelings of helplessness and loss of control that have been found to be related to anxiety, depression, and poor prognosis among cancer patients.5-7 Some individuals, however, are able to maintain a sense of well-being in the face of a diagnosis of breast cancer. This well-being seems to be related to a positive sense of control that is based on their reactions to the diagnoses7 as well as to the differential use of specific coping strategies over time.8-10 Taylor11 noted that control was important in adjustment to breast cancer, whether that sense of control came from personal agency or from a belief that one’s physicians or treatments could control the disease. In addition, Eil and colleagues12 found that personal sense of control was the only psychosocial factor significantly related to adaptation at 6-month follow-up.

We have argued elsewhere13,14 that the relationship between control and health outcomes may not be a simple, linear one: that is, “control is good and the more one has the
better.” Research suggests that Western psychology’s understanding of control as active and instrumental has many culture-bound features and is not always helpful or desirable.\textsuperscript{12-16} This decisive, instrumental mode of control—the so-called fighting spirit attitude referred to in cancer research focusing on control—is contrasted with a negative, yielding mode—a timid, passive, helpless, resigned, and avoidant coping style.\textsuperscript{1,21-24} This bias toward active control is reflected in most psychological control assessment inventories and coping questionnaires that do not distinguish between what we refer to as positive yielding (acceptance) and negative yielding (resignation or passivity).\textsuperscript{13}

The emphasis on gaining active control, particularly in the face of situations and illnesses that may be beyond one’s ability to control, can lead to feelings of undue personal responsibility, blame, and guilt.\textsuperscript{25-29} Furthermore, research also suggests that a greater sense of or belief in one’s ability to control and an excessive desire for control may sometimes actually suppress, rather than enhance, immune function\textsuperscript{29} and may heighten rather than attenuate cardiovascular reactivity and risk.\textsuperscript{30-32} Such studies point to the importance of considering the potential negative health consequences of desiring and gaining control.

The Shapiro Control Inventory (SCI),\textsuperscript{33} which builds on the work of previous control researchers, was developed to operationalize the following components of control identified in the literature: sense of control in both general and specific domains, agency or source of control (ie, from self/other), and desire for control. In addition, the SCI extends previous research to include measurement of the following four distinct modes or characteristic ways of gaining a sense of control:

- **Positive assertive**: active instrumental control, in which one attempts to alter oneself or the environment
- **Positive yielding**: acceptance, in which one is able to let go of active control efforts and accept the situation or oneself without resignation or helplessness
- **Negative assertive**: overcontrol, in which one uses active control efforts excessively or inappropriately
- **Negative yielding**: passivity, in which one is fatalistic or feels helpless and fails to use active control efforts when they can or should be used

The SCI has been validated over the course of 2 decades on numerous clinical and normative populations.\textsuperscript{13,33} We used it in our current study to explore the dynamic role that control-related coping can play on quality-of-life outcomes in patients with breast cancer.

We sought to test the following hypotheses, using the SCI: (a) although use of a positive assertive mode of control is important for coping effectively with breast cancer, the ability to use both the positive assertive and yielding/accepting modes (what we term “optimal control”)\textsuperscript{13} will result in better psychosocial adjustment to the disease; (b) theoretical and clinical work suggests that desire for control, an important component of healthy psychological function, can become excessive and maladaptive, particularly when not balanced by a willingness to let go of active control efforts when appropriate (ie, positive yielding).\textsuperscript{13} Therefore, we hypothesized that when desire for control is not balanced by the yielding mode of control, patients will also show evidence of poorer adjustment to the disease.

**METHOD**

**Participants**

Sixty-four women diagnosed with first-time breast cancer were invited to participate in a consecutive series study; 62 (96.8%) agreed to participate, and 58 (91%) provided complete data. Participants were relatively affluent and the majority had in situ malignancies (see Table 1). Five participants refused to list their income. Rather than drop these patients from the analysis, we used the sample’s mean economic level (ie, $62,200) for their income in our analyses.

**Procedures and Data Collection**

We recruited participants from three private cancer centers in Orange County, California. We explained the study procedures and obtained their informed consent for participation in the project. The research associate (AMB) scheduled individual appointments at each participant’s convenience and administered the measures at that time. She remained present to answer any questions and to collect the completed questionnaires. We collected data from all participants within 6 weeks of diagnosis, again 4 months after the initial diagnosis, and, finally, 8 months after diagnosis to explore the impact of control soon after diagnosis, during active treatment, and immediately following treatment.

**Measures**

We operationalized psychosocial adjustment as functional living, self-reported depressive symptoms, and anxiety symptoms. We used the Functional Living Index—Cancer (FLIC) to assess functional living. The FLIC is a 22-item Likert-type scale that measures endorsement of four factors associated with functional status: (a) physical well-being (eg, “How much nausea have you had in the past 2 weeks?”); (b) psychological state (eg, “Rate how often you feel discouraged about your life”); (c) family situation (eg, “Rate how willing you were to see and spend time with
TABLE 1
Sociodemographic Data of Sample of Breast Cancer Patients, at Baseline (N = 58)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y)</td>
<td>53.5</td>
</tr>
<tr>
<td>M</td>
<td>11.3</td>
</tr>
<tr>
<td>SD</td>
<td>31−81</td>
</tr>
<tr>
<td>Income ($)</td>
<td>35,000−50,000</td>
</tr>
<tr>
<td>Median</td>
<td>15,000−100,000</td>
</tr>
<tr>
<td>Marital status (%)</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>55.1</td>
</tr>
<tr>
<td>Divorced</td>
<td>22.4</td>
</tr>
<tr>
<td>Single</td>
<td>8.6</td>
</tr>
<tr>
<td>Widowed</td>
<td>12.1</td>
</tr>
<tr>
<td>Other</td>
<td>1.7</td>
</tr>
<tr>
<td>Education (y)</td>
<td>14.2</td>
</tr>
<tr>
<td>M</td>
<td>2.0</td>
</tr>
<tr>
<td>SD</td>
<td>8−18</td>
</tr>
<tr>
<td>Ethnicity (%)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>93.5</td>
</tr>
<tr>
<td>Hispanic</td>
<td>3.2</td>
</tr>
<tr>
<td>Asian</td>
<td>3.2</td>
</tr>
<tr>
<td>Stage of diagnosis (%)</td>
<td></td>
</tr>
<tr>
<td>In situ, local</td>
<td>71.4</td>
</tr>
<tr>
<td>Regional, lymph node</td>
<td>28.6</td>
</tr>
<tr>
<td>Type surgery (%)</td>
<td></td>
</tr>
<tr>
<td>Lumpectomy</td>
<td>37.9</td>
</tr>
<tr>
<td>Mastectomy (single or double)</td>
<td>62.1</td>
</tr>
</tbody>
</table>

TABLE 2
Sample Items and Reliability of Control Subscales Used in Study of Breast Cancer Patients

<table>
<thead>
<tr>
<th>Subscale/sample item</th>
<th>Test−retest reliability†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Assertive</td>
<td></td>
</tr>
<tr>
<td>Decisive‡</td>
<td>.84</td>
</tr>
<tr>
<td>Assertive</td>
<td></td>
</tr>
<tr>
<td>Confident</td>
<td></td>
</tr>
<tr>
<td>Positive Yielding</td>
<td></td>
</tr>
<tr>
<td>Accepting</td>
<td>.74</td>
</tr>
<tr>
<td>Calm</td>
<td></td>
</tr>
<tr>
<td>Letting go</td>
<td></td>
</tr>
<tr>
<td>Negative Assertive</td>
<td></td>
</tr>
<tr>
<td>Defensive</td>
<td>.73</td>
</tr>
<tr>
<td>Rigid</td>
<td></td>
</tr>
<tr>
<td>Impatient</td>
<td></td>
</tr>
<tr>
<td>Negative Yielding</td>
<td></td>
</tr>
<tr>
<td>Indecisive</td>
<td>.57</td>
</tr>
<tr>
<td>Manufactured</td>
<td></td>
</tr>
<tr>
<td>Dependent</td>
<td></td>
</tr>
</tbody>
</table>

| Desire for Control                |                          |
| "I have a strong desire to be in control" | .74 |
| "It is important for me to be in control of myself" | |

† Averaged across three time points in the present study (ie, Time 1−Time 2; Time 2−Time 3; Time 1–Time 3).
‡ On mode scales, respondents were asked how well the word described them on a 4-point scale (from not at all well to extremely well).

those closest to you in the past 2 weeks"); and (d) social situation (eg, “Rate your satisfaction with your work and your jobs around the house in the past month”). Higher scores on the FLIC indicate better status. Face, construct, and concurrent validity have been demonstrated in previously published research.35,36

We used the Center for Epidemiologic Studies-Depression scale (CES-D) to measure depressive symptoms. The CES-D is a standardized 20-item questionnaire that assesses the frequency and severity of depressive symptoms over the past week.37−39 Scores range from 0 to 60, with higher scores indicating more depressive symptoms.

To measure anxiety, we used the Hopkins Symptom Check List,40 a subscale of the SCL-90. This 10-item measure evaluates the severity of anxiety symptoms over the past week; scores range from 0 to 40, with higher scores indicating more anxiety symptoms.

We used the 187-item Shapiro Control Inventory (SCI), which contains 9 subscales (see Shapiro33 for details), to measure control. For the present study, we examined only the 5 subscales that were most germane to the theory we were testing regarding the importance of a balance between active−assertive and yielding strategies for gaining a sense of control. The 5 subscales included the four modes of control (positive assertive, negative assertive, positive yielding, negative yielding) and desire for control. Many studies have shown that the internal reliability of these subscales range from .70 to .89; test-retest reliability ranges from .67 to .93.33,41,42 Research has also demonstrated the SCI’s discriminant, divergent, incremental, and construct validity.43−46

The 5 control subscales, sample items from each subscale, and test-retest reliability coefficients from the present study sample are shown in Table 2. Although the control subscales we examined in our study show some degree of intercorrelation, rater reliability studies47 and factor analytic studies48 suggest that they are measuring distinct constructs.33
Table 3

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. FLIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Depression</td>
<td>-65**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Anxiety</td>
<td>0.60</td>
<td>0.76**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Positive Assertive</td>
<td>0.03</td>
<td>-0.07</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Positive Yielding</td>
<td>0.28*</td>
<td>-0.33*</td>
<td>0.20</td>
<td>0.51**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Negative Assertive</td>
<td>-0.09</td>
<td>0.26</td>
<td>0.11</td>
<td>0.04</td>
<td>-0.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Negative Yielding</td>
<td>-0.14</td>
<td>0.13</td>
<td>0.03</td>
<td>-0.14</td>
<td>0.15</td>
<td>0.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Desire for Control</td>
<td>-0.13</td>
<td>0.12</td>
<td>0.19</td>
<td>0.08</td>
<td>-0.34**</td>
<td>0.27*</td>
<td>-0.23</td>
<td></td>
</tr>
</tbody>
</table>

Note: FLIC = Functional Living Index–Cancer.

*p < .05; **p < .01.

Statistical Analysis

We carried out multiple regression analyses to examine the degree to which initial measures on the different control parameters predicted psychosocial adjustment to breast cancer longitudinally at approximately 4 and 8 months postdiagnosis. To examine the relationship between demographic variables, stage of cancer, treatment type, and the outcome variables, we calculated bivariate correlations.

Age and education were the two variables with significant correlations and were therefore entered as covariates in the multiple regression. We also entered scores on the outcome variables from the first time point (within 6 weeks of diagnosis) as covariates in subsequent multiple regression models.

To examine our hypotheses, we also entered two specific interactions: (a) positive assertive with positive yielding and (b) desire for control with positive yielding into the regression models. So that we could test our theory properly, we entered these interaction terms after adjusting for main effects, regardless of the statistical significance of the main effects. SPSS (version 6.1.1) was the software we used for all analyses.

RESULTS

The bivariate correlations between the five control parameters we tested and the three outcome variables at the first assessment are shown in Table 3. Higher scores on the positive yielding mode were associated with better initial adjustment measured by both the FLIC and depression scales (*p < .05). Four months after the initial interview (Time Point 2), we found no significant relationships between the control variables at Time Point 1 and psychosocial adjustment, although all coefficients were in the expected direction.

Eight months after the initial interview, there was, as hypothesized, a significant interaction between desire for control and the positive yielding mode of control on adjustment measured by the FLIC (see Table 4). Those patients who were high in desire for control and low in the yielding mode showed the poorest adjustment (FLIC = 132), whereas those who were high in desire and yielding control gave evidence of the best adjustment (FLIC = 147; see Figure 1). As one can also see in Figure 1, the interaction between desire for control and the positive yielding mode also showed a similar, though nonsignificant, pattern for both the measures of depression (*p = .06) and anxiety (*p = .10).

We observed a similar, though not significant, trend for the other interaction term (Figure 2). Those breast cancer

Table 4

<table>
<thead>
<tr>
<th>Independent variable†</th>
<th>β</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLIC</td>
<td>.49</td>
<td>23.32</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Positive Yielding</td>
<td>-1.6</td>
<td>6.55</td>
<td>&lt; .05</td>
</tr>
<tr>
<td>Desire for Control</td>
<td>-1.9</td>
<td>8.94</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Interaction of Desire/</td>
<td>1.9</td>
<td>7.23</td>
<td>&lt; .01</td>
</tr>
</tbody>
</table>

Note: Overall *R² = .51. FLIC = Functional Living Index–Cancer.

† Measured at Time Point 1.
patients high in positive assertive control but low in the yielding mode showed the poorest adjustment (on all three outcome measures), whereas those high in both of these modes of control gave evidence of the best adjustment (on both the FLIC and depression scales). One plausible explanation for this interaction’s not reaching significance is that it was entered as a standard multiplicative term, one that assumes the variables are mutually reinforcing, which was not the case with these two modes of control. That is, those who scored high on assertive and low on yielding actually showed poorer adjustment than those scoring low on both variables.

In this case, using a dummy variable would provide a better test of our hypothesis. Therefore, we performed a post hoc analysis in which we entered the combination of high assertive/low yielding control as a dummy variable in the regression equation, adjusting for main effects. Results showed that this interaction did predict poorer adjustment on anxiety levels 8 months after the initial interview (p < .01) and functional living (p = .05; data not shown).

**COMMENT**

The significant interaction between desire for control and positive yielding lends partial support to the hypothesis that balancing active control efforts and desire for control\textsuperscript{13,14} with the positive yielding mode of control leads to better psychosocial adjustment. Although greater desire for control tended to be associated with poorer adjustment, those women whose desire for control was coupled with or balanced by an ability to use the yielding mode of control actually showed the best psychosocial adjustment.

The interaction between positive assertive and positive yielding control was not significant. However, as noted above, post hoc analyses (using a dummy variable rather than a multiplicative term) did suggest an interaction between these two modes of control that supports our hypothesis. That is, those women who were high in assertive and yielding control gave evidence of the best adjustment, whereas those scoring high on assertive control and low on yielding control showed the poorest overall adjustment.

We should note that the particular nature of the interaction between the assertive and yielding modes suggests a relationship between these variables that our theory would not necessarily have predicted. Findings from our clinical and theoretical work\textsuperscript{15} suggest that although a combination of both positive modes is optimal, active and yielding control efforts are important and contribute to psychological...
Figure 2. Interaction of positive assertive and positive yielding control in predicting functional living 8 months postdiagnosis.

Note. For purposes of display, depression and anxiety scales have been rescaled by a power of 10 [i.e., although the FLIC bar is 144, the depression (36) is actually 3.6, and the anxiety bar (24) is actually 2.4]. FLIC = Functional Living Index – Cancer.

health and well-being. However, in the present study, having relatively low levels of positive yielding actually appeared to negate any of the beneficial effects of the positive assertive mode.

For those women with lower levels of the yielding mode of control, being high in the positive assertive mode was associated with the poorest adjustment to the disease. It remains for future research to examine these findings in greater detail and with different study populations, but the results suggest that an assertive (“fighting spirit”) mode of control can, under certain circumstances, be unhealthy or maladaptive if one is not also able to let go of active control efforts when appropriate (i.e., positive yielding).

SUMMARY

In the present study, we attempted to build upon earlier work examining the relationship of sense of control and control-related coping styles to psychosocial adjustment in breast cancer patients. Through the use of a multidimensional measure of control (the SCI) that draws upon and integrates components of control previously identified in the literature, we have explored how several control-related constructs predict psychosocial adjustment after a positive diagnosis of the disease, as well as 4 and 8 months later. Previous research findings suggest that adopting a fighting spirit toward the illness (“I am determined to beat this disease. . .” ) is psychologically adaptive, whereas denial or fatalism is maladaptive. Such studies have added substantially to our understanding of the relationship between control-related coping and adjustment in the face of such illnesses.

Research also suggests, however, that the relationship between control and health outcomes is considerably more complex and less linear than was previously thought. For example, our theory suggests that assertive control can have maladaptive components—hence the terms negative assertive control and overcontrol. Furthermore, yielding or acceptance is not always maladaptive and can, in fact, promote psychosocial health and well-being—hence our use of the term positive yielding control.

Findings from the present study lend preliminary support to the above hypotheses and suggest that an optimal control profile in response to a stressful life experience, such as cancer, is reflected in a balanced and flexible use of positive assertive and positive yielding modes of control.

Study Limitations

This study was limited in several important ways. First, we had no true baseline measures of either the control variables or the psychosocial adjustment measures.
scores cannot be considered as true baseline values because participants had already received a diagnosis and were undoubtedly reacting to it emotionally and behaviorally. Our theory predicts that, by definition, those exhibiting a more positive control profile would tend to show less depression and anxiety and higher quality of life scores before such a diagnosis. Unfortunately, the study design did not permit collection of such data.

Second, although this study had enough statistical power to detect moderate to large effect sizes, it is still possible that we may have underestimated the effects of control on adjustment. That is, there may have been subtle effects of control on adjustment that were not detected. Third, the generalizability of the findings is limited by the study sample, which was composed primarily of White and relatively affluent women. Fourth, the study relied exclusively on self-reported levels of psychosocial adjustment that do not always correspond to objective indices.

Broader Implications and Future Directions

We have previously reviewed the extensive literature suggesting that sense of control may mediate the adverse physiological effects of stressful life events and may enhance recovery from illness. In addition, we and others have argued that feelings of loss of control and lack of control and the corresponding maladaptive efforts to regain a sense of control are at the root of most issues brought to psychotherapists and mental health professionals. This large and convincing body of evidence in the fields of health psychology and behavioral medicine points to the importance of control in both mental and physical health. We believe, therefore, that the present study has both theoretical and clinical implications that may extend beyond the specific domain of coping with breast cancer.

Our present study, for example, suggests that the use of such measures as the SCI can help identify active control efforts that can be maladaptive. It also points to the potential importance of balancing assertive and accepting control coping strategies when confronted with illness and challenging or stressful life events in general. Such measurement refinement may help clarify seemingly contradictory findings in the literature that suggest that control can have both positive and negative effects on physiological functioning and quality of life.

More careful measurement of the construct of control in health-related research may also help clarify the circumstances under which having a high desire for control and using active or assertive control efforts is adaptive. It may clarify the specific circumstances in which a desire for control and active control efforts might represent or underlie maladaptive behavioral responses (e.g., hostility) that have been shown to have important health implications. More careful and refined measurement of control could also help inform the debate about circumstances under which illusory or exaggerated perceptions of control represent healthy and adaptive psychosocial functioning.

Finally, earlier studies also suggest that a low sense of control and feelings of helplessness are related to poor prognosis in cancer and are significant predictors of first recurrence and death from the disease. Given our findings in the present study, it will be important for future researchers to examine whether a balanced use of assertive and yielding modes of control and coping styles might also positively influence immune function and disease recurrence.

ACKNOWLEDGMENTS

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NOTE

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REFERENCES


**SOCIAL CAUSATION OF DISEASE**

Biological mechanisms that mediate individual responses to stress will be the focus of the Berzelius Symposia 50 in Stockholm, May 10–12, 2000. Speakers will bring different perspectives to the program, which will address both the epidemiologic background and pathophysiological mechanisms linked to psychosocial stress.

Individual session titles, according to the Swedish Society of Medicine’s announcement, will be:

- Social Association to Disease: The Epidemiological Panorama
- Stress Models and Biophysiological Mechanisms
- Stress Consequences: The Metabolic Syndrome
- Social Determinants of Accelerated Versus Normal Aging
- Gene-Environment Interaction in a Social Context
- Psychosocial Stress and Gender-Related Factors
- Regeneration and Repair: Focus on Sleep, Hormones, and Social Factors

The sessions will end with a panel discussion of implications of the topics for society, research, and action. Speakers from Sweden, the United Kingdom, the United States, Germany, Spain, and Denmark will lead the discussions, which will be in English.

For further information, write, fax, or e-mail Annie Melin, the Swedish Society of Medicine, PO Box 738, 101 35 Stockholm, Sweden; tel: 011-46 8 440-88 78, fax: 011-46 8 440 88 84; e-mail annie.melin@svls.se or www.svls.se/soc.html