SUPPLEMENTAL MATERIAL TO BREAST CANCER AND SENSE OF CONTROL RESEARCH

Material included:

1. Control as an important psychosocial variable in cancer research
   1A. Control and breast cancer: some considerations

2. Seeking greater precision in measuring control

3. Additional results:
   3.1. *qualitative data: what gives you the most positive sense of control in your life
   3.2. *predictors of overall sense of control; control dimensions predictive of quality of life; control domains predictive of quality of life;
   3.3. *control profile of the breast cancer patients

   4.1. *Toward a control based psychotherapy and health care intervention
Control as an Important Psychosocial Variable

Increasing Interest in Psychosocial Indices. With better medical treatment, there has been increased attention to psychosocial indices, as predictors, and/or mediators of impact, and on ways to improve adjustment and coping to perceived loss of control (Pettingale, Burgess, & Greer, 1988; Irvine, Brown, Crooks, Roberts, & Browne, 1991). Some studies suggest that at least 50% of the variance in psychosocial adjustment to breast cancer is accounted for by non-medical intra-individual variables (Weisman, & Worden, 1976). For example, Rogentine et al, (1979) noted that psychological adjustment to cancer was a
better predictor of recurrence one year later than known biologi-
cal prognostic factors. The majority of early cancer research
prognosis focused on type, state, and severity of cancer; and the
type and intensity of treatment. More recent research, however,
has looked at psychosocial factors for a number of issues: can
they effect survival; health/life-style practices; and/or natt-
tudes. Since pre and post cancer medical factors have been shown
to account for but a moderate amount of variance in disease
prognosis and progression, it is recognized that there is a need
to carefully consider psychosocial factors as well.

Potential Loss of Control  The literature shows clearly
that learning that one has breast cancer has a profound psycho-
logical effect, often creating feelings of helplessness and loss
of control (Gottesman & Lewis, 1982; Taylor, Lichtman, & Wood,
1984). This loss of control can be multi-faceted, including loss
of physical function and health, fear of disease recurrence,
(Gray and Doan, 1991), feelings of isolation, anxiety about death
(Spiegel, 1992a), body image, relationship (Wortman & Dunkel-Schetter
1979), fear regarding the future and overall uncertainty (Hilton,
1989), and pain of treatment.

Research on Effects of Loss of Control in Individuals with
Cancer.  Research with cancer patients has shown that loss of
control and a concomitant sense of helplessness may have negative
effects on behavior, mood, and physiology (Lefcourt, 1973; Laz-
It has also been shown that lack of control is related to the
anxiety and depression experienced by many cancer patients
(Meyerowitz, 1980; Freidenbergs, Gordeon, Hibbard, et al, 1982);

Several psycho-social studies, discussed below, have tried to assess what coping styles are associated with psychological and even physical morbidity. One common continuum of coping which has been investigated involves helplessness, hopelessness, escape/avoidance, resignation, and fatalism on one end, and internal locus of control, perceived self-efficacy, confrontation with the disease, and fighting spirit on the other.

For example, a helpless attitude toward the disease is related to poor prognosis (Schmale & Iker, 1961; Greer et al, 1979; Di Clemente & Temoshok, 1985; Pettingale, Moris et al, 1985; Stavraky et al, 1968; Jensen, 1987; Antoni & Goodkin, 1988). Smith and Sebastian (1976) found that malignant cancer of the cervix for 31 of 40 patients was predictable from prediagnostic scores on measure of life events and recently experienced feelings of helplessness. Stanton & Snider (1993), using Lazarus and Folkman's Ways of Coping (1984), found that in breast cancer patients, cognitive avoidance as a coping strategy was a predictor of high distress and low vigor. Lazarus and Folkman's coping model (Folkman, 1984) notes the importance of beliefs in personal control in determining one's reactions to events.

**Positive Effects of Having Personal Control.** Similarly, an attitude in which a person feels in control and self-efficacious is related to positive outcome. For example, Lewis (1982) found that in late stage cancer patients, the experience of personal control over their life was significantly positively correlated with scores on self esteem, purpose in life, and negatively
correlated with anxiety. Similarly, Lewis, (1982) reported that control was associated with positive quality of life in terminally ill patients.

Similarly, Cunningham et al (1990), in a study of 273 cancer patients, noted that there was a strong positive correlation between their quality of life and the degree of control they felt able to exert over stressful situations arising from having the disease; and between self-efficacy and mood. A strong association has also been shown between hope and control (Cassileth, Zupkin, Sutton-Smith, & March, (1980); and Taylor et al (1984) indicated that psychological control is associated with better adjustment by cancer patients.

Watson, Greer, et al's (1991) research group showed that a fighting spirit was negatively correlated with helplessness. Further, they found a significant negative association between fighting spirit and psychological morbidity (depression and anxiety); and that fatalism was associated with anxious preoccupation and depression. In a five year follow-up, denial or fighting spirit coping showed a 75% recurrence free survival; versus a 35% recurrent free survival rate for stoic acceptance or helplessness/hopelessness. A ten year follow-up continued to find higher survival rates among women demonstrating fighting spirit and denial (55%) than stoic acceptance or helplessness/hopelessness (22%). Patients were similar in clinical stage, histological grade, and mammographic appearance of tumors. Investigators found psychological response to breast cancer to be the most powerful predictor of first recurrence and death from the disease.
(Greer, Morris, Pettingale, 1979; Pettingale, Morris, Greer, Haybittle 1985).

Burgess, Morris, & Pettingale, (1988) noted that low psychological morbidity was associated with positive confronting response and with high internal locus of control (using Wallston's Health Locus of Control Measure)); and that higher anxiety and depression scores were associated with a hopeless/helpless response to diagnosis and with low internal locus of control.

Hilton (1989), through canonical analysis, observed that women with a greater sense of control over the cancer situation were more likely to feel that problem solving, social support and self-controlling and information seeking strategies would help their adjustment.

Thus, in general the literature from cancer studies is congruent with research on control from other studies: certain individual coping styles and ways of seeking to regain a sense of control are associated with more positive psychological outcomes and better adjustment than others (Rodin, 1986; Thompson, 1981). Specifically, those who have more of an internal locus of control--they believe there is something they can do about a situation-- have generally more adaptive responses than those with an external locus of control (Strickland, 1978, 1990; Rotter, 1966; 1990).

3. Limits to Personal Control?

**Philosophical Issues.** But is the desire for personal control always good? Shapiro & Shapiro, (1979) in the *New England Journal of Medicine* noted that the patient-care pendulum has swung
away from the omnipotent physician and helpless patient toward one individual patient responsibility as a participant in his or her own health care: "Patients are extolled to become active warriors in the fight against their diseases." (p. 347). However, they question whether our culture may be placing too much weight on the psychology of personal responsibility in terms of individuals being perceived as the cause and cure of their disease, with the danger of an unhealthy self-blame. The authors noted (p. 348):

We see in all this a peculiarly Western characteristic, which involves an overweening desire to be in control--of our jobs, our lives, our diseases, our deaths, our universe. Somewhere in all this push for self-responsibility we see a basic contradiction.

No matter how purely we eat and drink, no matter how carefully we guard the air we breath, no matter how much we become involved with our doctors and they with us, the mortality rate will still be 100%.

This point is echoed by Cassileth (cited in Dreher, 1988), who has asked whether our culture has too high a preoccupation with personal control; and Speigel (1991) has questioned whether some self-help cancer treatments may gone overboard in suggesting that individuals can be victorious over cancer through right attitude, right behavior, and accessing the "healer within." Gray & Doan (1990) have noted some of the potential dangers of the concept of "heroic self-healing" in which individuals try to "beat" cancer through "psychological transformation." They express concern for patients who may feel shame when they are not "keeping up the fight" of "giving in" or of unconsciously admitting that cancer has defeated them.
In the review below, literature is cited noting that 1) diagnosis of breast cancer can cause feelings of loss of control; 2) coping strategies reflecting a helplessness/fighting spirit (our positive yielding quadrant four--positive assertive quadrant one continuum) have been promisingly investigated as predictors, and/or mediators of impact, and on ways to improve adjustment and coping to perceived loss of control; 3) that there are limits to active personal control (overcontrol, quadrant three); and 4) that positive yielding mode of control quadrant two needs
to be included in our assessment of healthy coping.

**Breast Cancer and Feelings of Loss of Control.** There is general agreement in the literature that finding out that one has breast cancer is a negative event, which can cause emotional distress, feelings of helplessness, loss of control (Gottesman & Lewis, 1982; Taylor, Lichtman, & Wood, 1984; Andersen et al, 1994)). This loss of control can be multi-faceted, including loss of physical function and health, fear of pain of treatment and/or disease recurrence, (Gray and Doan, 1991), feelings of isolation, anxiety about death (Spiegel, 1992a), body image, relationship (Wortman & Dunkel-Schetter, 1979), fear regarding the future and overall uncertainty (Hilton, 1989).

The **Negative Yielding (Quadrant Four)--Positive Assertive (Quadrant One) Continuum.** One common continuum of coping which has been investigated involves helplessness, hopelessness, escape/avoidance, resignation, and fatalism on one end, and internal locus of control, perceived self-efficacy, confrontation with the disease, and fighting spirit on the other.

Research with cancer patients has shown that loss of control and a concomitant sense of helplessness may have negative effects on behavior, mood, and physiology (Lefcourt, 1973; Lazarus, 1981; Folkman, 1984; Bandura, 1977, 1989; Seligman, 1975). It has also been shown that lack of control is related to the anxiety and depression experienced by many cancer patients (Meyerowitz, 1980; Freidenbergs, Gordeon, Hibbard, et al, 1982; Greer & Silberfarb, 1982, Derogatis et al, 1983).

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1979; Di Clemente & Temoshok, 1985; Pettingale, Moris et al, 1985; Stavraky et al, 1968; Jensen, 1987; Antoni & Goodkin, 1988). Smith and Sebastian (1976) found that malignant cancer of the cervix for 31 of 40 patients was predictable from prediagnostic scores on measure of life events and recently experienced feelings of helplessness. Stanton & Snider (1993), using Lazarus and Folkman's Ways of Coping (which stresses the importance of beliefs in personal control in one's reactions to events Folkman, 1984), found that in breast cancer patients, cognitive avoidance as a coping strategy was a predictor of high distress and low vigor.

Similarly, an attitude in which a person feels in control and self-efficacious is related to positive outcome. For example, Lewis (1982) found that in late stage cancer patients, the experience of personal control over their life was significantly positively correlated with scores on self esteem, purpose in life, and negatively correlated with anxiety. Similarly, Lewis, (1982) reported that control was associated with positive quality of life in terminally ill patients. Penman et al (1986) found that internal locus of control predicted better adjustment in breast cancer patients. Hilton (1989), through canonical analysis, observed that women with a greater sense of control over the cancer situation were more likely to feel that problem solving, social support and self-controlling and information seeking strategies would help their adjustment.

In a recent study of psychological adaptation among survivors of cancer, it was shown through multiple regression that
personal sense of control was the only psychosocial factor significantly related to adaptation at a six month follow-up (Ell, Nishimoto, Morvay, et al, 1989).

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Watson, Greer, et al's (1991) research group showed that a fighting spirit was negatively correlated with helplessness. Further, they found a significant negative association between fighting spirit and psychological morbidity (depression and anxiety); and that fatalism was associated with anxious preoccupation and depression. Burgess, Morris, & Pettingale, (1988) noted that low psychological morbidity was associated with positive confronting response and with high internal locus of control (using Wallstons' Health Locus of Control Measure); and that higher anxiety and depression scores were associated with a hopeless/helpless response to diagnosis and with low internal locus of control. They further found that psychological response to breast cancer to be the most powerful predictor of first recurrence and death from the disease (Greer, Morris, Pettingale, 1979; Pettingale, Morris, Greer, Haybittle 1985).

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congruent with research on control from other studies: certain individual coping styles and ways of seeking to regain a sense of control are associated with more positive psychological outcomes and better adjustment than others (Rodin, 1986; Thompson, 1981). Specifically, those who have more of an internal locus of control—they believe there is something they can do about a situation—have a generally more positive psychological adaptation than those with an external locus of control (Strickland, 1978, 1990; Rotter, 1966; 1990).

**Limits to Active Personal Control: Problems of Overcontrol**

There has recently been a series of articles and studies raising both theoretical and empirical issues regarding whether the desire for active, assertive personal control is always good (Burger, 1988; Thompson, 1988; Evans, Shapiro, Lewis, 1993). Might our culture be placing too much weight on the psychology of personal responsibility in terms of individuals being perceived as the cause and cure of their disease, with the danger of an unhealthy self-blame (Shapiro & Shapiro, 1979; Cassileth, cited in Dreher, 1988). Speigel (1991) has questioned whether some self-help cancer treatments may gone overboard in suggesting that individuals can be victorious over cancer through right attitude, right behavior, and accessing the "healer within." Gray & Doan (1990) have noted some of the potential dangers of the concept of "heroic self-healing" in which individuals try to "beat" cancer through "psychological transformation." They express concern for patients who may feel shame when they are not "keeping up the fight," of "giving in" or of unconsciously admitting that cancer
has defeated them.

Active internal personal control are not always facilitative. Active attempts at mastery are most effective when events are actually controllable; when events are beyond an individual's personal control, persistent efforts at control may actually exacerbate the problems.

Where is Positive Acceptance? Rotter's and Wallstons' tests have an implicit cultural bias in understanding control, and assume that if one does not have active control, one is either resigned or helpless, engaging in passive resignation/acceptance, and/or escape/withdrawal. Most of the Western psychological research on control has focused on the active, altering mode of control (Shapiro, 1982, 1983; Thompson, 1981; Weisz, Rothbaum & Blackburn, 1984; Shapiro, 1982). This mode of control, involving active, instrumental efforts to influence or change a situation (or oneself), has been referred to by various researchers as a mastery model (Wolpe, 1969), problem-focused instrumental coping (Lazarus, 1981), situational reconstruction (Maddi & Kobasa, 1984), and primary control (Weisz, Rothbaum, & Blackburn, 1984).

This bias can also be seen in many coping questionnaires. For example, Feifel et al's (1987) medical coping modes questionnaire has only three categories: confrontation, avoidance, and acceptance/resignation. Personal resignation and avoidance are seen as passive modes and unhealthy responses, and are contrasted with confrontation as the healthy, active mode of control and coping.

However, as noted in Science several years ago regarding the
issue of human control in general (Shapiro, Evans, Shapiro, 1987, p. 260) equating control with active efforts to alter or change, or to use restraint to refrain from altering or interfering may reflect a limiting, culture-bound definition. Other cultures conceptualize control in terms of yielding, accepting, and letting go of active control. More of a sense of control may be gained from letting go of control (acceptance) than continuing efforts to try to change that over which we do not have active control.

In a study of cancer patients, Gray and Doan (1991) state that "we also try to help patients to balance their drive to heal themselves via personal transformation with an acceptance of their own limits. In this way, we hope to minimize the sense of failure that can occur on a daily basis, or when cancer recurs or progresses."

Gray and Doan's anecdotal therapeutic interventions are given some support by a qualitative study of cancer patients by Nowlis, & Edgar (1987). Using interview and qualitative data, and subsequently identifying factors, they noted a quality they called quiet assertiveness, a person low on egotism and high on assertiveness. Those individuals tended to score high on an ego strength scale. This study suggests that two modes, assertiveness and low ego might be combined and the person still be "strong" and resilient.

Weisz and Rothbaum, drawing from cross-cultural work in Japan, conceptualized control as primary and secondary (Weisz, Rothbaum, Blackburn, 1984; Rothbaum, Weisz, & Snyder, 1982). Primary control involved active change of the environment; secondary control involved changing oneself to fit the environment—interpretive control, reappraisal, seeking meaning
in the event. What has been lacking in the literature so far is a coherent model with which to define the various modes of control, and an inventory with which to measure the modes: both an active, assertive mode; and a yielding, accepting mode of control, each of which could have positive and negative aspects to it. This was one of the principle initial motivations behind developing a third generation of control-assessment, the Shapiro Control Inventory (SCI) (Shapiro & Zifferblatt, 1976; Shapiro 1983, 1983a, b; Shapiro & Bates, 1990). Therefore, the SCI has scales to measure both an active assertive mode of control and a yielding, accepting mode of control, as well as scales to measure overcontrol (negative assertive mode) and too little control (negative yielding mode), thereby providing four different mode of control quadrant scales (Scales 5-8).

**ADDITIONAL METHODOLOGICAL ISSUES IN MEASURING CONTROL**

Besides the issue of modes of control, there are three additional problems with Rotter's and Wallstons previous efforts to measure control: sense of control as expectancy and state, general and specific domain; motivation for control; and agency of control from both self, other, and Other.

**SENSE OF CONTROL (Scales 1-4).**

**General Domain.** First, neither Rotter's nor Wallstons' scales gave an indication about whether or not one felt a "sense of control" in one's life. A distinction has now been made between generalized control expectancies (internal/external locus of control) as first identified by Rotter (Rotter, 1966, 1990) and individual control beliefs as detailed by Bandura's self-efficacy theory (Bandura, 1977; 1989; cf. also Skinner, Chapman,
Wallston himself (1992), commenting on the failure of the health locus of control measure to predict health outcomes suggests that it only measured half the theory (i.e., the expectancy and not the reinforcement.

Control is defined as "the ability to cause an effect in the intended direction" (Rodin, 1986), and sense of control, as used in this inventory, is a measure of a person's view that s/he has control, as well as the belief that s/he can gain control if desired. The SCI measures general domain sense of control through three scales: a positive sense of control scale; a negative sense of control scale; and an overall general domain sense of control scale formed from combining the two.

Domain Specific. Research has shown the importance and higher validity of domain specific data (Steptoe & Appels, 1989; Wallston, 1989). Rotter's scale is only general domain, and Wallstons' scales are only domain specific in one area: health. However, as Thompson et al (1988) and Burger (1989) stated, control can have multidimensional effects, and gaining control in one area successfully may be offset by loss of control (or fear of loss of control) in another. Therefore, some method of both general and specific domain assessment, involving the above constructs is required (Shapiro, & Bates, 1990). Scale Four of the SCI provides both overall domain specific information, as well as information on each of the twenty-five parameters that comprise the scale. This domain specific sense of control scale assesses control in the areas of body (parameters such as eating behavior, physical exercise); mind (thoughts, attention, as well
as sadness, stress); interpersonal relations (friends, significant other, family of origin); career (employment situation, work habits); self; environment; and other (alcohol consumption; drug usage; gambling; violent behavior).

**MOTIVATION FOR CONTROL.** Neither Rotter's nor Wallstons' scales involve a motivational variable of desire or effort for control. Desire for control has been distinguished from locus of control (Burger & Cooper, 1979; 1985). The SCI contains a desire for control scale, scale nine, which like Burger's, includes desire for control over the environment, but also includes desire for control over the self, i.e., self-control. This desire for control scale also includes items reflecting the following control constructs: desire for power (McClelland, 1975) and for achievement (McClelland, 1961); control as order and predictability (Kelly, 1955); control and awareness style (e.g., sensitizer/repressor) in terms of information-seeking for problem solving (Byrne, 1961; Schwartz, 1983).

Motivation for control is measured not only by the desire for control scale, but by four additional pieces of information: issues of overcontrol (when the person feels they are exerting too much control and self-control, and desire to have less control); satisfaction with modes, and where not satisfied, which modes they wish to increase or decrease; satisfaction with the twenty-five parameters; and, if a parameters is of concern to the individual, how they want to address it: e.g., change (quadrant one) or accept (quadrant two).

**AGENCY OF CONTROL: Self, Other, OTHER.** Based on the work of Levenson, (1974,1981) and others (e.g., Viney, 1974), it was
shown that internal and external were not one dimension; but rather are orthogonal, showing a zero correlation with each other. It was because of this finding that Wallstons and colleagues (1978) developed a "second generation" test--the Multi-dimensional Health Locus of Control Scales.

The locus, or source of a person's sense of control, pioneered by Rotter's and Wallstons' scales, continues to be clinically important. In the work on the SCI, the source of control is referred to as the agent of control, and that which is controlled is referred to as the object of control.

However, research demonstrates that a person's sense of control can come from one or more non mutually exclusive agents. For example, sense of control can come from self, both in terms of control over oneself, self-control (self as agent, self as object) (Thoresen & Mahoney, 1974; Shapiro, 1984), as well as from control over others and the environment (e.g., self as agent, other/environment as object (White, 1959; Shapiro & Zifferblatt, 1976; McClelland, 1975).

The paradigm of the majority of control studies supports the position that positive outcomes occur when individuals have (or believe they have) control over the environment or themselves. However, research has also shown the positive effects of control-enhancing options from the environment (e.g., the staff at the nursing home--Rodin & Langer, 1977) and/or control by a powerful benevolent other (e.g., the Doctor Taylor, 1983) (other as agent, self as object). Therefore, the SCI incorporates questions assessing a person's belief regarding "agency of control," that is
the sources (self and/or other) from which one's sense of control emanates. The SCI also provides an additional discrimination regarding to what extent the sense of control comes from particular others: family and friends, government and society, and/or a higher power (God, religion, spiritual beliefs).

Cancer Research Literature on Agency of Control: Internal and/or External. Taylor, Abrams, et al, 1988, using Rotter's Internal /External Locus of Control (1966) measure reported no difference on locus of control in cancer patients versus matched controls using Rotter's Locus of control scale. In this regard, Wallstons' more complex and sophisticated measurement of locus of control has been helpful. For example, Burish et al (1984), examining health locus of control showed that cancer patients with an external health locus of control (using Wallstons' Scales) may benefit from behavioral techniques such as Progressive Muscle Relaxation with imagery and biofeedback more than patients with an internal locus of control.

Further, a study by Bundek et al (1993) showed that in Hispanic women, the belief that one can do something about one's own health was related to more breast self-examination; and physicians control outcomes were related to physician dependent screening activities such a pap smear and physician breast exam.

For example, in Taylor's (1983) study, psychological health in one group of cancer patients was positively affected by believing the doctor, a powerful, benevolent other who had things in control, even if the patient felt she did not. Taylor (1983) and Taylor, Lichtman, & Wood, (1984) found that adjustment to
breast cancer was positively associated with a belief in personal control over disease outcome --self-control--and/or a belief in physician control, which we might call control by a powerful, benevolent other. In other words, the issue was not so much who was in control, but that someone was in control!

The spiritual element--what can be called control by a powerful, benevolent Other (Shapiro, 1989, 1993)--has been ignored in all but a few studies. In one of the few to examine religion and sense of control, Cameron et al (1987) administered Norwicki-Strickland Child Locus of Control and Faulkner-Dejong Religiosity scales to 28 adolescent cancer patients. Religion was conceptualized in this study as a secondary source of control. Specifically, the authors asked about the positive effect of vicarious control: Do you count on a supreme being to aid you or take care of things which are otherwise beyond your control? and interpretive control: Does your faith in a supreme being allow you to understand, as part of a divine plan, those things in life which you would otherwise not be able to understand or accept? The majority practiced their religion and indicated this provided support by offering security in the face of death and by helping them understand and accept their experience.
SEEKING GREATER PRECISION IN MEASURING CONTROL

This bias can also be seen in many coping questionnaires. For example, Feifel et al's (1987) medical coping modes questionnaire has only three categories: confrontation, avoidance, and acceptance/resignation. Personal resignation and avoidance are seen as passive modes and unhealthy responses, and are contrasted with confrontation as the healthy, active mode of control and coping.

However, as my colleagues and I noted in Science several years ago regarding the issue of human control in general (Shapiro, Evans, Shapiro, 1987, p. 260) equating control with active efforts to alter or change, or to use restraint to refrain from altering or interfering may reflect a limiting, culture-bound definition. Other cultures conceptualize control in terms of yielding, accepting, and letting go of active control. More of a sense of control may be gained from letting go of control (acceptance) than continuing efforts to try to change that over which we do not have active control.

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cancer patients was positively affected by believing the doctor, a powerful, benevolent other who had things in control, even if the patient felt she did not. Taylor (1983) and Taylor, Lichtman, & Wood, (1984) found that adjustment to breast cancer was positively associated with a belief in personal control over disease outcome --self-control--and/or a belief in physician control, which we might call control by a powerful, benevolent other. In other words, the issue was not so much who was in control, but that someone was in control!

Clearly there are aspects of life that are not under our individual control. To put it bluntly, life is terminal. If personal control only involves active control and mastery, then coping strategies are limited and limiting. The pejorative concept of resignation and withdrawal-escape in the coping literature takes what we might call a culture-bound (from an Eastern viewpoint of acceptance as a positive mode of control) view of what it means to cope successfully. It also is a self-centered one, in which the religious element-- what I will call control by a powerful, benevolent Other-- is ignored.

For example, Cameron et al (1987) administered Norwichi-Strickland Child Locus of Control and Faulkner-Dejong Religiosity scales to 28 adolescent cancer patients. Religion was conceptualized in this study as a secondary source of control. Specifically, the authors asked about the positive effect of vicarious control: Do you count on a supreme being to aid you or take care of things which are otherwise beyond your control? and interpretive control: Does your faith in a supreme being allow you to understand, as part of a divine plan, those things in life which
you would otherwise not be able to understand or accept? The majority practiced their religion and indicated this provided support by offering security in the face of death and by helping them understand and accept their experience.

Clinical Relevance of the SCI Scales and Items. Since the SCI scales were both theoretically and clinically derived, and then empirically verified, additional refinements and information to the item level can be therapeutically relevant. For example, one of the theories in the literature on cancer and control has to do with cancer and emotional control.

Too Much Internal Emotional Control?: An Example. LeShan, (1959), Watson & Greer, (1979, 1991); and Temoshok (1985, 1991), have noted that cancer patients may try to control their own emotions too much. Watson & Greer found that emotional control was positively correlated with fatalism, and that fighting spirit was negatively contrasted with fatalism (fatalism and helplessness were significantly correlated with each other).

However, further inspection of some of the questions with which Watson and Greer have formed their scale raise potential confounds. For example, fatalism questions include: "I've left it all to my doctors"; "There is nothing I can do that makes any difference." However, in light of the foregoing discussion, leaving it to one's doctors represents an external agency of control, and may or may not be related to a positive sense of control. It does not necessarily represent resignation (negative yielding) but may represent positive yielding. Therefore, the relationship between emotional control and fatalism may need to
be more carefully examined. To address this issue more precisely, the SCI can examine item level responses to such questions as "I hold my anger in even when I want to express it"; "I want to control my anger better"; and correlate those responses to the four modes of control scales, especially (positive assertive, positive yielding, and negative yielding).
SCI and Watson and Greer Control Inventories:  
Some Comments on Differences

Appendix 1

This Appendix offers a theoretical comparison of the differences between the SCI and Watson and Greer Control Inventories. It is suggested that for psycho-social intervention with breast cancer patients, the SCI offers several potential advantages, and provides additional data which, at the least, could complement the Watson and Greer Inventory.

The following material outlines the subscales of the SCI and compare them with Watson and Greer (W and G); and then summarize by stating additional hypotheses regarding cancer and sense of control which could be uniquely addressed using the SCI.

The SCI provides four items related to a GENERAL DOMAIN CONTROL PROFILE, as follows:

1) **Overall Positive Sense of Control** (derived from positive items related to self-efficacy; as well as reversed items related to losing or lacking control)

Watson and Greer, by their own admission, acknowledge that their fatalism and helplessness subscales are significantly associated; and closer inspection of their fatalism subscale suggests that it combines both external locus of control (helplessness) and external locus of control benevolent other (the Doctor can help me). Thus, they do not have on their scale a Positive Sense of Control Score; and their "negative sense" items actually confound helplessness with a potential positive sense of control from the Doctor. Using the SCI can help assess whether positive sense of control (regardless of agency) is a potential stress buffer related to morbidity.

2) **Agency for Sense of Control.** The SCI assesses the Agent for the positive source of control (self, family, friends, higher power).

Our research shows that it may not be so important what the agent is (e.g., God, self, family), as it is important that their be some way in which the person feels a positive sense of control. Watson and Greer do not specifically measure different sources of agency as they contribute to positive sense of control.

3) **Mode of Control.** The four quadrant model for mode of control consists of the following: positive assertive, negative assertive (overcontrol); positive yielding; negative yielding (too little control).

At first glance, there does appear to be overlap here: quadrant one (positive assertive) may be highly correlated with
Watson and Greer's fighting spirit; and quadrant four (too little control) may be highly correlated with W and G's helplessness/fatalism scales. However, the quadrant three (overcontrol) is a general domain category and does not refer just to emotional overcontrol, and so I would expect a low correlation. Finally, and most importantly, W and G do not have the equivalent of POSITIVE YIELDING, Quadrant two. This is the accepting mode by which one gains a sense of control. In Reinh- hold Niebuhr's prayer, it is "to accept that which I cannot change."

Note, however, that both positive yielding (acceptance) and positive assertive (change) can increase. As our research has found with Type A individuals receiving cognitive/behavioral counseling, both quadrant one and quadrant two shifted over the course of counseling. In others words, patients in a psycho- social in intervention learn to accept what they cannot control, but learn to develop active control (e.g., hypnosis for pain management) in other areas. This is not at all assessed by W and G.

4) Desire/Efforts for Control. This scale assesses how important it is for the person to feel in control (and reverse items include fear of losing control).

When we did our initial alpha reliability studies on this scale, two items were removed because they had such low overall correlations with the scale "I have too much self-control" and "I hold my anger in, even when I want to express it." Interestingly, the latter is one of the more significant items W and G are trying to measure on their emotional control scale. Our results surprised us, for we thought "anger in" would be part of a desire for control scale. However, this scale would not appear to overlap with W and G's emotional control scale.

**DOMAIN SPECIFIC ITEMS**

**SENSE OF CONTROL: SPECIFIC DOMAINS.** Research has shown that there is often better predictive validity when there are domain specific items. Therefore, six domains (twenty-five items) are assessed on a likert scale from very in control to very out of control:

- body (including exercise, appearance, weight);
- mind (thoughts, attention, sadness, stress);
- relationships (friends, significant other; family of origin);
- self;
- work: employment situation; finances; work habits;
- environment and other:

W and G cover the emotional control area more thoroughly, but do not look at control issues in the other domains.

**CONCERN AND MODE OF CONTROL FOR ADDRESSING CONCERN.** Finally, the SCI provides information on whether the domain item (no matter how in or out of control) is a concern to the person; and,
if it is a concern, how they want to address it: e.g., change (quadrant one) or accept (quadrant two).

This model of coping (utilizing change and/or accept) is similar in some ways to the model of R. Lazarus, or Rudy Moos' on problem and emotional-focused coping. The SCI gives an item by item breakdown so it is possible to see if there is change over time in terms of a) concern/lack of concern; and b) the nature of the coping strategy to address the concern.

Overall, I believe the following questions could be addressed by utilizing the SCI, that are not and have not been addressed by using W and G's emotional control (and helpless/fatalism/ fighting spirit scales):

MAIN HYPOTHESES

Between Group:
Main Hypothesis 1) Increase in general domain Positive sense of control (and decrease in subscale of negative loss of control) will be significantly greater in the therapy group than in the information control group.

Main Hypothesis 2) Increase in general domain positive yielding will be significantly greater in the therapy group than in the information control group.

Main Hypothesis 3) Increases in general domain positive assertive will be significantly greater in the therapy group than in the information control group.

Main Hypothesis 4) Changes in Sense of Control and Mode of Control (Hypothesis 1-3) will be associated with increased psychological health (quality of life) and decreased morbidity (including progression and severity of metastasis; relapse; length of remission).

Within Group:
A) Those with a higher positive sense of control score (regardless of agency) will evidence greater psychological and physical wellbeing than those with lower scores.

B) Those with a higher positive yielding mode of control score will evidence greater psychological and physical wellbeing than those with lower scores.

C) Those with higher positive yielding mode of control score will evidence greater psychological and physical wellbeing than those with lower scores.

SECONDARY HYPOTHESIS

i) Agency for source of sense of control for friends will increase significantly more in the therapy group than in the control group.

ii) If a patient has a high positive sense of control, the agency for the source of that sense of control will not be significant
(e.g., God versus self; friend vs. self; family vs. God, etc). (Addresses the question of what agency is most functional for obtaining a positive sense of control).

iii) Change in both general domain positive assertive mode of control and positive yielding mode of control will have a significantly more positive effect than changes in either one alone. (Addresses the question of what mode(s) are most functional for obtaining a positive sense of control).

iv) In the therapy group, there would be a significant decrease in domain specific concerns compared to the control group.

v) Where domain specific concerns existed, there would be significantly more flexibility (measured by differential endorsement of both assertive mode and yielding mode of control to address the concerns in the therapy group than in the information group.)
Anecdotally, we examined one more piece of information, the last question asked in the Interview:

**WHAT GIVES YOU THE MOST POSITIVE SENSE OF CONTROL IN YOUR LIFE?**

Fifty-two individuals responded to the above question. Six (11.5%) gave answers which could be classified as resignation, fatalism: "Nothing"; "I don't know (3), you just have to go on"; I just have to take it one day at a time."

Thirteen (25.8%) gave answers which showed an acceptance, a letting go type of control, a trust in God (10), or God and family (2). This could involve optimism, or just trust/acceptance "My faith, I will be taken care of."

Twenty-four (46.2%) said self-effort. These responses included I am responsible, optimism, resilience--I can meet challenges; I am making the decisions; getting divorce and being independent (2).

Nine (17.3%) said that their positive sense of control came from both self and other effort. One person actually quoted the Niebuhr prayer; others said "my family and my ability to make
decisions"; "I can make my own decisions; my faith in God"; "My faith and my ability to do"; "faith and doing the best I can."

INSERT FIGURE FIVE ABOUT HERE

INSERT TABLE NINE ABOUT HERE
FIGURE 5

MODE STRATEGIES FOR GAINING A POSITIVE SENSE OF CONTROL

TOTAL RESPONDENTS = 52
<table>
<thead>
<tr>
<th></th>
<th>Anxiety Scores</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relatively Low</td>
<td>Relatively High</td>
</tr>
<tr>
<td><strong>Positive Sense of Control From:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive efforts from others</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>69.23%</td>
<td>30.77%</td>
</tr>
<tr>
<td>Positive efforts from self and from others</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>66.67%</td>
<td>33.33%</td>
</tr>
<tr>
<td>Assertive, self efforts</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>37.50%</td>
<td>62.50%</td>
</tr>
<tr>
<td>No positive source stated</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>16.67%</td>
<td>83.33%</td>
</tr>
</tbody>
</table>
3.2 RESULTS

Results are examined in terms of our four research questions. Then the overall control profile of the breast cancer cohort is presented.

1. PREDICTORS OF OVERALL SENSE OF CONTROL

Baseline descriptive statistics for the SCI are presented in Table 2 and the baseline intercorrelation matrix is presented in Table 3. In examining predictors of overall sense of control, we noted that bivariate correlations revealed that overall sense of
control was related to domain-specific sense of control, and to two behavioral modes of control: positive assertive and negative yielding (see Table 3). Longitudinal multiple regression modeling revealed that increased domain-specific sense of control, positive assertive mode of control, and desire for control were associated with enhanced overall sense of control (see Table 4). These aspects of control were used to predict the quality of life outcomes in lieu of the overall sense of control score because they would be more specific indicators of the impact of control on quality of life (depressive and anxiety symptoms, and functional living).

2. CONTROL DIMENSIONS PREDICTIVE OF QUALITY OF LIFE OVER TIME

Results of multiple regression modeling revealed that domain-specific sense of control was associated with higher functional living, less depressive symptoms, and less anxiety symptoms after adjusting for the effects of age, education, and income (see Table 5). Thus, women who felt some control over important life domains (i.e., body, mind, interpersonal relations) were more likely to report better functional living and less psychosocial morbidity.
3. CONTROL DOMAINS PREDICTIVE OF QUALITY OF LIFE

To address the impact of specific control domains related to psychological and physical health among breast cancer patients, we tested multiple regression models including concern with multiple domains in predicting the above outcomes, adjusting for age, education, and income. Results of these multiple regression models revealed that the important control domains for functional living (see Table 6) were feeling in control in the mental emotional domain and less control over a subset of impulsive behavior (self-medication: smoking and drinking). Feeling mental/emotional control also significantly reduced depressive and anxiety symptoms. Although feeling in control in the body domain was also a significant predictor of less depressive symptoms, we found that feeling in control of the mind domain mediated the impact of the body domain control on depressive symptoms (see Figure Two). Based on the intercorrelation matrix at baseline (Table 3), we noted that mental control was associated with interpersonal, self-organization and impulsive behavior but bodily control was not associated with these other domains. Hierarchical modeling suggested that feeling mental/emotional control mediated the impact of feeling bodily control on depressive symptoms (Table 6). To explore this mediating relationship further, we examined how feeling in control of mind and body influenced depressive symptoms at various stages of the process of diagnosis and treatment. We found that indeed feeling in emotional/mental control mediated the impact of bodily control on depressive symptoms at diagnosis and during adjuvant treatment.
(time two) more than after treatment (time 3) had been completed (see Figure Two).

-----------------------------
INSERT TABLE SIX AND FIGURE TWO ABOUT HERE
-----------------------------
# TABLE 3: Interrelation Matrix for Measures of Quality of Life and Sense of Control at Baseline

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-0.28*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>-0.31*</td>
<td>0.15</td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>FLIC</td>
<td>0.25+</td>
<td>0.03</td>
<td>-0.19</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>-0.27*</td>
<td>0.04</td>
<td>0.15</td>
<td>-0.65***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>-0.27*</td>
<td>0.13</td>
<td>0.13</td>
<td>-0.60***</td>
<td>0.76***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Sense of Control</td>
<td>-0.12</td>
<td>0.14</td>
<td>-0.12</td>
<td>0.29*</td>
<td>-0.47***</td>
<td>-0.35**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain Specific Sense of Control</td>
<td>-0.1</td>
<td>0.03</td>
<td>-0.21</td>
<td>0.38**</td>
<td>-0.57***</td>
<td>-0.50***</td>
<td>0.70***</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Positive Assertive Mode</td>
<td>-0.39**</td>
<td>0.31*</td>
<td>-0.03</td>
<td>0.04</td>
<td>-0.07</td>
<td>0.01</td>
<td>0.55***</td>
<td>0.39**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Yielding Mode</td>
<td>-0.18</td>
<td>0.20</td>
<td>0.04</td>
<td>0.30*</td>
<td>-0.33*</td>
<td>-0.21</td>
<td>0.25+</td>
<td>0.47***</td>
<td>0.51***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Assertive Mode</td>
<td>-0.06</td>
<td>0.11</td>
<td>0.10</td>
<td>-0.09</td>
<td>0.26+</td>
<td>0.11</td>
<td>-0.14</td>
<td>-0.26*</td>
<td>0.04</td>
<td>0.25+</td>
<td></td>
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</tr>
<tr>
<td>Negative Yielding Mode</td>
<td>0.27*</td>
<td>-0.28*</td>
<td>0.05</td>
<td>-0.14</td>
<td>0.13</td>
<td>0.03</td>
<td>-0.37**</td>
<td>-0.19</td>
<td>-0.14</td>
<td>0.15</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire for Control</td>
<td>-0.22+</td>
<td>0.02</td>
<td>-0.01</td>
<td>-0.13</td>
<td>0.12</td>
<td>0.19</td>
<td>0.23+</td>
<td>-0.02</td>
<td>0.08</td>
<td>-0.34*</td>
<td>0.27*</td>
<td>-0.23+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional &amp; Mental Control</td>
<td>-0.13</td>
<td>0.14</td>
<td>-0.18</td>
<td>0.37**</td>
<td>-0.60***</td>
<td>-0.57***</td>
<td>0.72***</td>
<td>0.88***</td>
<td>0.35**</td>
<td>0.35**</td>
<td>-0.18</td>
<td>-0.30*</td>
<td>0.01</td>
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</tr>
<tr>
<td>Bodily Control</td>
<td>-0.25+</td>
<td>0.04</td>
<td>-0.22</td>
<td>0.36**</td>
<td>-0.47***</td>
<td>-0.39**</td>
<td>0.45**</td>
<td>0.76***</td>
<td>0.22+</td>
<td>0.46***</td>
<td>-0.29*</td>
<td>-0.13</td>
<td>-0.14</td>
<td>0.65***</td>
</tr>
</tbody>
</table>

* p<0.10  
** p<0.05  
*** p<0.01  
**** p<0.001
### Table 4: Longitudinal Hierarchical Regression Models Predicting Overall Sense of Control

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Overall Sense of Control</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>(Standardized Parameter Estimate)</td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>Model 1</td>
</tr>
<tr>
<td>Age</td>
<td>-0.04</td>
</tr>
<tr>
<td>Education</td>
<td>0.04</td>
</tr>
<tr>
<td>Income</td>
<td>-0.27*</td>
</tr>
<tr>
<td>T2</td>
<td>-0.14</td>
</tr>
<tr>
<td>T3</td>
<td>-0.22*</td>
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</table>

**Domain Specific Sense of Control**

<table>
<thead>
<tr>
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<th>Overall Sense of Control</th>
</tr>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Positive Assertive Mode</td>
<td><strong>0.53</strong>*</td>
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<tr>
<td>Positive Yielding Mode</td>
<td>0.01</td>
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<tr>
<td>Negative Assertive Mode</td>
<td>-0.14+</td>
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<tr>
<td>Negative Yielding Mode</td>
<td><strong>-0.19</strong></td>
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**Desire for Control**

<table>
<thead>
<tr>
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<th>Overall Sense of Control</th>
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<tbody>
<tr>
<td>-2 log-likelihood</td>
<td>364.9</td>
</tr>
<tr>
<td>Likelihood Ratio Stat.</td>
<td>--</td>
</tr>
</tbody>
</table>

* P<0.1
** P<0.01
*** P<0.001
<table>
<thead>
<tr>
<th>Predictor</th>
<th>Functional Living Index - Cancer</th>
<th>Depression Symptoms</th>
<th>Anxiety Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.20*</td>
<td>-0.23**</td>
<td>-0.23*</td>
</tr>
<tr>
<td>Education</td>
<td>0.09</td>
<td>-0.06</td>
<td>0.08</td>
</tr>
<tr>
<td>Income</td>
<td>-0.06</td>
<td>-0.06</td>
<td>0.02</td>
</tr>
<tr>
<td>T2</td>
<td>0.38**</td>
<td>-0.19</td>
<td>-0.32*</td>
</tr>
<tr>
<td>T3</td>
<td>0.82***</td>
<td>-0.29*</td>
<td>-0.24</td>
</tr>
<tr>
<td>Domain Specific Sense of Control</td>
<td>0.42***</td>
<td>-0.67***</td>
<td>-0.55***</td>
</tr>
<tr>
<td>Positive Assertive Mode</td>
<td>-0.09</td>
<td>0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Desire for Control</td>
<td>0.06</td>
<td>0.06</td>
<td>0.13</td>
</tr>
<tr>
<td>-2 log-likelihood</td>
<td>367.4</td>
<td>376.6</td>
<td>393.3</td>
</tr>
</tbody>
</table>

+ P<0.1  
* P<0.05  
** P<0.01  
*** P<0.001
### TABLE 6:
Control Domains Predicting Quality of Life over time

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Functional Living Index -Cancer</th>
<th>Depressive Symptoms</th>
<th>Anxiety Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.25**</td>
<td>-0.25**</td>
<td>-0.26**</td>
</tr>
<tr>
<td>Education</td>
<td>0.04</td>
<td>-0.01</td>
<td>0.15+</td>
</tr>
<tr>
<td>Income</td>
<td>-0.07</td>
<td>-0.06</td>
<td>0.01</td>
</tr>
<tr>
<td>T2</td>
<td>0.40**</td>
<td>-0.17</td>
<td>-0.30*</td>
</tr>
<tr>
<td>T3</td>
<td>0.83***</td>
<td>-0.21</td>
<td>-0.16</td>
</tr>
<tr>
<td>Bodily Control</td>
<td>0.23*</td>
<td>-0.16+</td>
<td>-0.04</td>
</tr>
<tr>
<td>Emotional &amp; Mental Control</td>
<td>0.24*</td>
<td>-0.61***</td>
<td>-0.64***</td>
</tr>
<tr>
<td>Interpersonal Relationship in Control</td>
<td>-0.02</td>
<td>-0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Self Organization in Control</td>
<td>0.17+</td>
<td>0.06</td>
<td>-0.02</td>
</tr>
<tr>
<td>Impulse Beh. in Control</td>
<td>-0.19*</td>
<td>0.04</td>
<td>0.01</td>
</tr>
</tbody>
</table>

-2 log-likelihood                   | 365.4                           | 365.0              | 380.9           |

+ P<0.1                             
* P<0.05                           
** P<0.01                          
*** P<0.001
Fig 1: Schematic Diagram of Shapiro Control Inventory

**Trait:** Overall Sense of Control
Computed of Positive & Negative Subscales (16 items)

**State**
- Domain Specific Sense of Control (25 items)
  - Interpersonal (4 items)
  - Self Organization (4 items)
  - Impulsive Behavior (5 items)
  - Mind (6 items)
  - Body (6 items)

**Motivation**
- Desire for Control (11 items)
- Parameter Satisfaction (25 items)
- Mode Satisfaction (49 items)
- Change as Preferred (25 items)

**Mode**
- Mode of Control
- Positive Assertive (16 items)
- Positive Yielding (14 items)
- Negative Assertive (14 items)
- Negative Yielding (5 items)

**Agency**
- Self (1 item)
- Other (1 item)
Fig 2: Mediating Effect of Emotional & Mental Control on Relationship Between Bodily Control and Depressive Symptoms adjusting for age, education and income

Bodily Control

T1: -0.69***  
T2: -0.70***  
T3: -0.35**  
Overall: -0.55***

= MEDIATING EFFECTS

Depressive Symptoms

T1: -0.32+  
T2: -0.22  
T3: -0.04  
Overall: -0.16+

Emotional & Mental Control

T1: 0.65***  
T2: 0.83***  
T3: 0.53***  
Overall: 0.69***
CONTROL PROFILE OF THE BREAST CANCER PATIENTS

Below we examine domain-specific sense of control concerns; modes of control; preferred mode of control for addressing concerns; and agency of control.

Domain-Specific Sense of Control Concerns. In the bodily control domain, there were four items where 50% or more of the group expressed concerns at Time One: the way my body functions, weight, exercise, and eating. In the mental/emotional control
domain, at least 50% of the group expressed concern about control of thoughts, attention, stress, sadness, and way I feel about myself. The other item of concern for 50% of the group was time management.

At Time Two and Time Three, sexuality became a concern of over 50% of the group (from 33%) at Time One. In addition, in terms of exercise, there was an increase in those who did not exercise at all from 38.7% to 54.2%.

**Modes of Control.** The positive assertive mode of control was significantly correlated with sense of control, both general and domain specific ($r = .54$ and $r = .41$ respectively, $p < .0001$ in both cases. The positive yielding mode of control was also significantly correlated with sense of control, both general and domain-specific ($r = .31$ and .45, $p < .01$ and .0003) respectively). Further, those who scored higher in positive yielding reported less depressive symptoms ($r = -.36$; $p < .004$), less anxiety ($r = -.26$; $p < .03$); and higher functional living ($r = .34$; $p < .006$).

**Preferred Mode of Control For Addressing Concerns.** We then examined the top three parameters of concern to determine whether subjects wished to address the concern by an assertive mode of control strategy involving active change, or by a yielding mode of control strategy involving acceptance. Of the 44 individuals (72.5%) concerned about weight, two-thirds wanted to utilize a change strategy; of the 44 concerned about body functioning, slightly over half (55%) wanted to use a change strategy; and of the 43 concerned about stress, over 77% wanted to use a change strategy. In terms of sexuality, at Time Two, 41% wanted to use a
change strategy; and at Time Three 36%. Overall, at Time One, change was the preferred strategy 41.7%, compared to 58.% at Time Two and 48.9% at Time Three.

Agency of Control. Those subjects who perceived that they were the agent and source of control reported a higher general domain and domain-specific sense of control and endorsed the positive assertive mode of control significantly more often ($r = .57, .37, \text{and } .49, p < .0001, < .003, \text{and } < .0001$ respectively).

Individuals were also asked the qualitative (open-ended) question, "What gives you the most positive sense of control in your life?" Twenty-four (46.2%) said self-effort: e.g., "I am responsible"; "I am making the decisions." Thirteen (25.8%) responded their sense of control came from others: e.g., "God," "my family"; and nine (17.3%) gave answers reflecting both self and other: e.g., "I can make my own decisions; my faith in God."

Eight-three percent of those who mentioned neither self nor other as a source of sense of control had relatively high anxiety. Interestingly, 62.% of those who mentioned only "self" as the source of control also had relatively high anxiety, a trend that approached significance ($X^2 = 7.34; p = .06$). This finding suggests that there may be some adverse effects for those subjects who feel totally responsible for maintaining a sense of control. Of those whose sense of control came from others, or from self and others, only one-third or less had relatively high anxiety.
FIGURE TWO
Sense of Control, General Domain

<table>
<thead>
<tr>
<th>Score</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Sense of Control</td>
<td>46.39 (5.54)</td>
</tr>
<tr>
<td>Positive Sense of Control</td>
<td>44.63 (5.57)</td>
</tr>
<tr>
<td>Negative Sense of Control</td>
<td>48.78 (2.53)</td>
</tr>
</tbody>
</table>

Domain-specific Sense of Control

<table>
<thead>
<tr>
<th>Score</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Domains</td>
<td>52.75 (.49)</td>
</tr>
</tbody>
</table>

Modes of Control (by Quadrant)

<table>
<thead>
<tr>
<th>Quadrant</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1, Positive Assertive</td>
<td>47.60 (2.73)</td>
</tr>
<tr>
<td>Q2, Positive Yielding</td>
<td>46.28 (2.59)</td>
</tr>
<tr>
<td>Q3, Negative Assertive</td>
<td>50.00 (1.59)</td>
</tr>
<tr>
<td>Q4, Negative Yielding</td>
<td>57.91 (1.52)</td>
</tr>
</tbody>
</table>

Motivation towards Control

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire for Control</td>
<td>49.99 (.74)</td>
</tr>
<tr>
<td>Mode Satisfaction</td>
<td>52.57 (63.1%)</td>
</tr>
<tr>
<td>Parameter Satisfaction</td>
<td>49.01 (14.84)</td>
</tr>
<tr>
<td>Change as Preferred Response Mode</td>
<td>40.60 (58.3%)</td>
</tr>
</tbody>
</table>

Agency of Control

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>As Source</td>
<td>40.57 (1.02)</td>
</tr>
<tr>
<td>Other as Source</td>
<td>53.86 (3.90)</td>
</tr>
</tbody>
</table>

RED AREA IS NON-PSYCHOLOGICALLY HEALTHY AREA
GREEN LINE REPRESENTS BREAST CANCER GROUP SCORES AS A WHOLE
BLACK LINE REPRESENTS INDIVIDUAL EXTREME SCORE
Too Much Internal Emotional Control?: An Example. Leshan, (1959), Watson & Greer, (1979, 1991); and Temoshok (1985, 1991), have noted that cancer patients may try to control their own emotions too much. Watson & Greer found that emotional control was positively correlated with fatalism, and that fighting spirit was negatively contrasted with fatalism (fatalism and helplessness were significantly correlated with each other).

However, further inspection of some of the questions with which Watson and Greer have formed their scale raise potential confounds. For example, fatalism questions include: "I've left it all to my doctors"; "There is nothing I can do that makes any difference." However, in light of the foregoing discussion, leaving it to one's doctors represents an external agency of control, and may or may not be related to a positive sense of control. It does not necessarily represent resignation (negative yielding) but may represent positive yielding. Therefore, the relationship between emotional control and fatalism may need to be more carefully examined. To address this issue more precisely, the SCI can examine item level responses to such questions as "I hold my anger in even when I want to express it"; "I want to control my anger better"; and correlate those responses to the four modes of control scales, especially (positive assertive, positive yielding, and negative yielding).

Emotional Control of Anger and Helplessness:

Holding Anger In. Because of previous research literature showing the relationship between helplessness and emotional control, we did item correlations to assess that relationship in our study. The first correlation was between the item: "I hold my anger in even when I want to express it"; and a helplessness item: "I am too passive and helpless." The association was quite small (.10); and the association between "anger in" and quadrant four, negative yielding was also small (.01). The highest correlation was between "anger in" and the negative assertive, overcontrolling, Scale 7 (r=.23, p=.076, n.s.). The breast cancer cohort group's score on anger in (4.00, sd 1.72) is slightly higher (about 5%) than a psychiatrically screened cohort of women (3.78, sd 1.48).

Control my anger better. We then examined the converse item "I want to control my anger better." This item was positively correlated with the negative sense of control scale (r=.35, p<.01); the negative assertive, quadrant three overcontrol scale (r=.26, P<.05); and negatively correlated with positive assertive, quadrant one (r=-.36, p<.01)); and positive yielding, quadrant two (r=-.39, p<.01). The breast cancer group's score (2.98, sd 1.57) is nearly identical to a psychiatrically screened cohort of women (3.00, sd 1.41).

The findings of our study do not offer support of the relationship between a Type C personality involving too higher anger control and helplessness. However, it is at least plausible that what may be important is the sense of control a person feels regarding whether and when they wish to express their emotions.

We first thought perhaps people who hold their anger in would not be able to accurately recognize the amount of times that they would like to express it, but do not. Or they may actually feel that they do not want to express it (even if perhaps they should). Therefore, we investigated the following two items: do they feel they express their anger too much, and do they feel it important to give the impression that their life is in control. However, as noted, neither question provided helpful information to confirm the relationship between overcontrolling of emotions and helplessness/hopelessness.
7. There is a significant correlation between source of sense of control and Overall General Domain Sense of Control, (likelihood ration chi-square value 9.75 p=.021). As expected, if both self and other as source is low, there is a high percentage of those with a low sense of control (66.67%); and if both self and other are high, there is a high percentage of those with a normal sense of control (78.26%). However, it appears that if the other is high and the self is low, the person’s sense of control is significantly less than if the self is high and the other is low.

We tested this in a post-hoc analysis by combining the two cells where self was high, and the two where self was low, and the results were significant (X =9.49, P<.01).

8. This second mode of control, which involves learning to accept the situation (or oneself) as is, has been referred to by various researchers as a coping model (Goldfried, 1973; Meichenbaum, 1977), secondary control (Weisz, Rothbaum & Blackburn, 1984); palliative coping (Lazarus, 1981, Lazarus and Folkman (1984)); compensatory self-improvement (Maddi & Kobasa, 1984). Even the terms used above suggest an implicit, if not explicit cultural bias (e.g., mastery versus coping; instrumental versus palliative; primary versus secondary).

9. Based on the literature on stress, control, and the immune system (cf. Rodin, 1986; Kiecolt-Glaser & Glaser, 1987), it is plausible that control may be a moderator variable worth further investigating. As Levy et al (1985) reported, a psychological state of apathy and lack of distress correlated with lower natural killer cell activity and positive auxiliary nodes, the latter two being unfavorable prognostic indicators. It would be helpful in the future to separate out lack of distress (which may be positive yielding) from apathy (which may be negative yielding).
QUESTION 2: What, if anything, do you think caused your cancer?

No Idea
Genetics
Genetics, overdose of x-rays
Genetics triggered by stress
Genetics, Diet, no children, hormones
Genetics, stress, diet, oral contraceptives, smoking (DDT)
Stress
Genetic, self, no mamograms
Genetic & stress
Stress & overweight
Stress, sewerage leak for 3 years
Stress & OC, cysts
Stress High fat diet, holding in
Stress, diet & environment
DDT (trucks in mosquito spraying 1957 long island)
DDT, having a baby late in life
DDT, Chemicals, food
3 Mile Island, lack of lead protection (dental hygenist)
Hormones
Hormones & x-rays & cat scans
Hormonal imbalance, menopause
Maybe hormonal
Estrogen related
Taking Estrogen
Bad luck
Diet
Environment, computers, air
No children, overweight
Maybe OC
Inner struggle of wanting a career and children

1. No Idea
2. Genetics
3. Diet,
4. stress,
5. smoking

6. environment
   sewerage leak for 3 years
   DDT (trucks in mosquito spraying 1957 long island)
   DDT
   overdose of x-rays
   Chemicals,
   food
   3 Mile Island,
   lack of lead protection (dental hygenist)
   computers,
   air

7. Hormones
   menopause
   oral contraceptives,
   Estrogen
   no children,
   having a baby late in life
   cysts

8. Bad luck
9. Other
   self,
   holding in
   Inner struggle of wanting a career and children
QUESTION 4: What positive coping factors do you use?

1. Physical exercise
2. Prayer
   - Trust in God
   - Try to balance self internally
   - Faith,
3. Keeping busy doing things
   - Keep busy
   - Shopping,
   - Watch TV
   - Read
   - Work
   - Keep on going
4. Positive thinking
   - Positive attitude
   - Positive thinking
   - My nature
   - Positive thoughts about outcome
   - Talk
   - Talk to myself
5. Acceptance,
   - Do the best under the circumstances
   - Strength from within, think that things could be worse
   - The knowledge that it will pass
   - Accept things, visualization & believe that all will be well, seeing how badly off someone else is, allowing myself to feel and not judge
   - Facing facts, that's the way it is, I'm not going to change it, enjoy it
   - Make the best of it
   - Try to find good in every situation
   - One day at a time, enjoy it
   - Change thought patterns
6. Denial
7. PROBLEM SOLVING
   - Think it out
   - Reasoning
   - Think it through,
   - Lay low, mull over it, action if necessary
8. Sense of humor
9. EXTERNAL THINGS
   - Husband
   - Stay with son
   - Support groups
   - Talk to sister and friends
   - Call the doctor
   - 12 step group,
10. Relaxation & MEDITATION
    - Visualization,
    - Affirmation
    - Imagery,
    - Listen to tapes,
    - Writing in a journal
11. Nothing specific
    - Nothing special, just do
12. Nothing

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QUESTION 13. DID YOU GO TO ANY SUPPORT GROUPS? WHAT DID YOU THINK OF THEM? WHY NOT? HOW OFTEN DID YOU GO?

WENT AND LIKED:
YES, 1X PER WEEK FOR 5 MONTHS. HELPFUL (20 TIMES)
YES, 1X WEEK ONGOING, WONDERFUL (>20 TIMES)
YES, 12X INITIALLY GOOD, THEN TIME TO MOVE AWAY (12 TIMES)
YES 3X VERY USEFUL (3 TIMES)
YES, GOES ONCE IN A WHILE. GOOD FOR SOMETHING (APPROX 5 TIMES)
YES, FOR THE FIRST FEW MONTHS, VERY GOOD (APPROX. 10 TIMES)
YES, 2X, LIKED ONE, DID NOT LIKE THE OTHER (2 TIMES)
YES 2 HOURS PER WEEK, GOES WHEN POSSIBLE, GOOD (> 20 TIMES)
YES WENT FOR A FEW MONTHS, ENJOYED, MAYBE GO BACK (APPROX. 10 TIMES)
YES 1X PER WEEK EVERY FEW MONTHS, GOOD (APPROX 10 TIMES)
YES 7 WEEKS IN A GROUP, NOW 2X PER MONTH, GREAT (> 20 TIMES)
YES 8X, GOOD (8 TIMES)
YES 6X (6 WEEK GROUP, 1 PER WEEK) NOW WITH BOSSOM BUDDIES (6 TIMES)
YES 6X GROUP VERY POSITIVE, INFORMATIVE. NOW GOES WHEN TOPIC GOOD (6 TIMES)
YES WENT WEEKLY, NOW BI-WEEKLY (>20 TIMES)
YES, 6X (6 WEEK GROUP) NOW 4 PEOPLE MEET PRIVATLY FOR LUNCH (6 TIMES)
YES, 1X AT THE BEGINNING, LIKED IT (1 TIME)
YES, STILL GOING, GOOD, I NEED THEM, EVERYONE SHOULD (> 20 TIMES)
YES, EVERY OTHER WEEK, VERY HELPFUL, NOW GO BY TOPIC (> 20 TIMES)

WENT AND DID NOT LIKE:
YES, 2 MEETINGS, NOT AS EXPECTED (2 TIMES)
YES, 3X VERY DEPRESSING, HORROR STORIES, NO STRESS MANAGEMENT (3 TIMES)
YES 3X DID NOT SATISFY MY NEEDS, MAYBE GO BACK (3 TIMES)
YES 1 TIME, "POOR PITYFUL ME' GROUP. DID NOT LIKE IT (1 TIME)

DID NOT GO:
NO, DID NOT FEEL I NEEDED IT
NO, GO TO BIBLE STUDY SUPPORT GROUP WEEKLY
NO, NO TIME, VERY ILL DURING TREATMENT
NO, DONT LIKE GROUP THERAPY
NO
NO, AFRAID TO GET DEPRESSED, HAD ENOUGH SUPPORT
NO, BECAME A VOLUNTEER. SPOKE TO VOLUNTEERS
NO, DID NOT WANT TO DWELL ON IT
NO, GETTING AROUND DIFFICULT, TOO WEAK WITH ALL OTHER PROBLEMS
NO, TOO TIRED AND NO MONEY
NO, JUST TALKED TO A VOLUNTEER
NO, NOT A SUPPORT GROUP PERSON, PREFER 1 ON 1 COUNCELLING

POSITIVE:
YES: 1-5 TIMES
6-10 TIMES
11-20 TIMES
> 20 TIMES

NEGATIVE:
YES: 1-3 TIMES
FOUNDATIONS FOR A CLINICAL INTERVENTION.

What did we learn from this study that might be helpful in the development of clinical and health care interventions targeted for this population? Several researchers and clinicians have stressed the importance of clinical intervention for cancer patients (cf. Cunningham, 1991; Remen, 1991; Avants et al, 1993).
Greer (quoted in Dreher, 1988, p. 32) stated that what is needed is psychological therapy to help patients to reverse patterns of helplessness/hopelessness and develop an active, positive fighting spirit. Telch & Telch (1986), and Worden & Weisman (1984) have developed interventions which encourage active coping through problem solving, cognitive restructuring, emotional expression and relational and relaxation training. As Stockdale (1991) notes, there needs to be care in defining the nature of the intervention, and Remen has thoughtfully raised the concern about what might be the possible risk if the practitioner overly encourages fighting spirit (Remen, 1991).

To help further our understanding of above questions and issues, in this section, we ask and begin to address the following based on our study: who is at risk, and what are their concerns; what are their preferred modes for addressing those concerns; and what is involved in the development of a control-based psychotherapy and health-care intervention.

**Who Is at Risk, and What is the Concern**

The overall group control profile of the women with breast cancer is quite healthy at Time One, as was seen in Figures Two and Three. On the positive side, the group's overall profile is the same as or slightly more positive than the norm group on several items: lower negative sense of control, lower negative assertive mode of control, higher on domain specific sense of control, and higher on overall satisfaction with the modes of control.

However, as can be seen from Figure Two, the group's profile is slightly lower than the norm group on overall sense of con-
trol, positive sense of control, positive assertive and positive yielding, change as a preferred response mode, and self as agency of control; and higher on negative yielding, acceptance as preferred response mode, other as agency of sense of control, and acceptance as preferred response mode. This information is important to follow closely over time to ensure maintenance within the normal range.

The most high risk group in this study are of course, the 11 individuals (17.7%) who score in the clinically depressed and/or anxious range. As we widen the scope of risk, the second group to monitor carefully over time is the 23 women, comprising 37% of the sample, who have a sense of control lower than a psychiatrically screened norm group. Finally, the SCI was designed to be both a research and a clinical assessment tool. To achieve this objective, the SCI provides parameters specific information on twenty-five potential areas of concern for each person. As was seen in Table Seven, 50% or more of the individuals in this study have concerns related to eating, exercise, body function, weight, control of thoughts and attention, stress, sadness, and the way they feel about themselves (cf. Andersen, 1989). Although perhaps not technically at risk, these are certainly concerns deserving of attention.

Addressing Areas of Concern

Self, Other, OTHER. Previous intervention research has shown that better adjustment is more often found in women who believe in their own control over the disease process as manifest through efforts in lifestyle change and complying with medical regimens. In our study, self-efforts to gain active control were quite
important. As was seen in Figure Five, there is a critical and important role for individuals to take personal responsibility in the management of their illness. A majority of the subjects noted the importance of participating in their own health care, being involved in decisions about treatment (Cassileth, Zupkin, et al, 1980), and feeling they could handle and manage their own lives.

However, as can also be seen in Figure Five, many individuals said they obtained a substantial portion of their sense of control primarily through the help of others--family and friends--, and through their religious and spiritual beliefs (cf. Antonovsky, 1979; Shapiro, 1989, 1993, 1994c). Further, as this study shows, sense of control from self, and sense of control from other, are not mutually exclusive. In fact, as Table 9 suggested, it appears that sense of control from others may have certain anxiety-buffering qualities, which can complement sense of control from self. Thus, none of the possible sources of "other" control--family and friends (Levy et al, 1990) the doctor (Taylor, 1983) and the role of religion and spiritual values (Yates, 1991)--should be ignored when examining coping and sense of control.

Preferred Modes of Control. As further detailed in Table 7, the SCI Control Profile provides information not only about where parameter specific concerns exist, but also about which modes of control individuals wish to utilize to address the situation (change/alter versus accept).

As we have previously described in the introduction, the
majority of the control and coping literature focuses on fighting spirit, and the positive assertive mode of control to alter and change the situation. Our approach has no disagreement with that perspective, if it is kept within perspective. As Cassileth noted (cited in Dreher, 1988), there may be a pernicious side of "beating" cancer, and that fighting spirit (the SCI positive assertive mode of control) needs to be integrated with and balanced by a positive yielding mode of control. As our past research has shown, psychological health involves flexible coping—a combination and integration of a positive assertive mode of control (quadrant one) and a positive yielding mode of control (positive two). (Shapiro, Friedman, & Piaget, 1991). In this study, both positive assertive and positive yielding modes of control were significantly correlated with overall sense of control (r=.54, p<.0001; and r=.32, p=.01 respectively), suggesting that flexible coping involving both modes is adaptive.

This study also provided further support for the importance of the positive yielding mode of control by the statistical correlations between positive yielding and quality of life (positive), and psychological morbidity (negative). There is also anecdotal support for this yielding, accepting mode in the literature (e.g., Gray & Doan, 1990). For example, the third author (JM), has noted the following regarding the psychotherapy groups for oncology patients he leads:

In my experience, quality of life improvement is related as strongly to quadrant positive yielding as it is to positive assertive, fighting spirit. In fact, many people seem to have a more genuine sense of peace who cope with a quadrant two, positive yielding. This mode seems to reflect a greater sense of acceptance of a given reality and less of a sense of denial. It does not at all seem related to a negative fatalism or helplessness.
Preferred Mode For Addressing Concerns. For items among the twenty-five parameters which are a concern, the test taker is asked to decide whether s/he wishes to address the parameter of concern by an "active, change/alter" strategy or by an "acceptance" strategy. This information is also detailed in Table Seven. For example, of the 31 women who were concerned with the way they feel about themselves, 16 (51.6%) wanted to address the concern by changing themselves; 15 (48.4%) wanted to address the concern by accepting themselves.

So, not one "right" coping mode for every person, and therapist should listen carefully and be sensitive to this
DISCUSSION

We have described results of longitudinal analyses which examined how control-related factors influenced quality of life outcomes for breast cancer patients. We found that higher do-
main-specific sense of control was associated with better functional living and less anxiety and depressive symptoms. Further, both sense of control and functional living were determined to be significant and independent predictors of depressive symptoms. This suggests that sense of control may be an important and independent factor to consider in quality of life, which complements but is not redundant with functional status.

Several researchers and clinicians have stressed the importance of clinical intervention for cancer patients to ease the difficulty of this difficult series of events. Although only preliminary and suggestive, there are some intriguing findings in this study which future research should investigate more fully regarding clinical intervention.

The first issue regards timing. As described in Figure Two, feeling in emotional and mental control played a weaker mediating role over bodily control at diagnosis. This role was strengthened during and after treatment. These findings suggest that control-related interventions might be best addressed soon after diagnosis and before completing treatment.

Second, our data suggests that we need to go beyond a "homogenized" one size fits all clinical intervention. Rather, the "matching" of an intervention to a person's control profile may be important. We examine this issue with regard to positive assertive and positive yielding modes of control, as well as self and other agency.

For example, previous research has shown women who reported better adjustment tend to believe in their own control over the
disease process, and also tend to make more lifestyle changes and to comply with medical regimens. Therefore, Greer stated that what is needed is psychological therapy to help patients to reverse patterns of helplessness/hopelessness and to develop an active, positive fighting spirit. In our study, effort to gain active control was quite important. A majority of the subjects in our study noted the importance of participating in their own health care, being involved in decisions about treatment, and feeling they could handle and manage their lives.

However, this study, as well as other research suggests their may be potential problems associated with only teaching a positive assertive mode of control. It appears that feeling solely responsible for being the source of one's sense of control through a positive assertive fighting spirit may represent a trade-off. Although a positive assertive mode and a sense of herself as an agent of control was associated with a higher sense of control in our study, it was also associated with more anxiety symptoms. Thus, feeling solely responsible for maintaining control in many life domains may exacerbate psychological morbidity when coping with a severe and threatening health problem.

This issue has been raised by other clinicians and researchers, who suggest that not every intervention teaching fighting spirit and self-responsibility is appropriate for every patient, and a more careful matching between patient and time course is needed. Remen has thoughtfully raised the concern about what might be the possible risk if the practitioner excessively encourages fighting spirit. Cassileth noted that there may be a pernicious side to the philosophy of "beating" cancer, such as
potential self-blame for disease recurrence.

In our study, the positive yielding mode of control was associated with less anxiety and depressive symptoms and better functional living. Further, many individuals also said they obtained a substantial portion of their sense of control primarily through the help of others (i.e., family and friends), and through their religious and spiritual beliefs. Thus, from a clinical standpoint it may be important that possible sources of "other" control—family, friends, the physician, and the role of religion and spiritual values not be ignored when examining coping and sense of control. As part of clinical interventions for some patients, health care professionals may wish to include teaching how to implement an accepting, yielding mode of control.

The findings of this study can be seen as a foundational step toward helping clinicians address the question of what control-related intervention is most effective for a particular individual patient with a specific control profile and with a particular control-related problem at a particular course in time. The SCI can provide clinically relevant details regarding the individual's specific control-related concern(s) and the subject's mode of control preference for addressing each concern at each time point. Concerns, modes, and agency preferences may change over time and interventions may need to be adjusted at different points of time, such as diagnosis, adjuvant treatment, and advanced stages.

By being able to recognize control-related individual
differences, the clinician can then tailor and match individual control-related interventions to help those individuals suffering adverse sequellae from the traumatic event. Therefore, future research needs to help develop control-based interventions matched to individuals' control profiles, and pilot efforts to demonstrate the effectiveness of those interventions for enhancing physical longevity as well as psychological well-being.
Toward a Control-Based Psychotherapy and Health-Care Intervention.

There is increasing agreement among both clinicians and researchers that control may be one of the most critical variables involved in an individual's psychological health and well-being. For example, Aaron Beck, the founder of cognitive therapy, has noted that "dominant schools of psychotherapy share one basic assumption: the emotionally disturbed person is victimized by
concealed forces over which he has no control" (1976, p. 2). The primary task, therefore, of schools of psychotherapy, is to help individuals recognize what forces are shaping their lives, and teaching them to have more control over those forces, and hence over their own lives. Albert Bandura (1989, p. 411) has noted that "among the mechanisms of <human> agency, none is more central or pervasive than people's beliefs about their capabilities to exercise control over events that affect their lives."

This study is one more piece in our efforts to develop a truly comprehensive control-based psychotherapy and health-care intervention. The purpose of such an approach is to help individuals develop adaptive cognitive and behavioral strategies, to gain, re-gain, and maintain a sense of control. The main principles of control therapy involve: clarifying assumptions about personal control brought into the therapy session; addressing the assault to the patient's sense of control; examining the control profile of the individual; and evolving individually tailored strategies for helping them re-gain a sense of control (cf. Reich & Zaruta, 1990).

In our approach, based on the mode we have been discussing, two positive modes of control are taught: an assertive, active change strategy in which individuals learn to identify, monitor, and gain active control over those aspects of their life under personal control; and a yielding, accepting mode of control in which individuals learn to positively accept with serenity (and without helplessness and feelings of resignation) those aspects of their life which are not under personal control. Specifically,
the question asked is what combination of control-enhancing strategies are most effective for a particular individual with a specific control profile and with a particular control-related problem.

Finally, it should be added that we believe that a truly comprehensive therapeutic approach to control will not only focus on and address problems due to dysfunctions of control in psychiatric and health care populations. Rather models and visions of positive psychological health and wellbeing also need to be explored and examined. It is necessary and important to begin to determine what constitutes aspects and uses of control which may be reflective of such positive psychological health. Who are individuals with exceptional abilities to exercise positive cognitive and behavioral self-control, and who have worldviews reflecting a coherent, meaningful, and positive sense of control? Raising such questions may cause us to question whether there are there limitations to some of our traditional models of control as related to positive psychological health (Shapiro, 1984b; Kohlberg; 1981; Fowler, 1981). For example, how limiting is a model of psychological health in which control is viewed only as instrumental, assertive activity (classically defined and operationalized as independence and autonomy)? What about modes of control which involve acceptance and coping with areas in all of our lives in which instrumental activity has been curtailed, or in which loss of control is inevitable? Issues of control can apply not only to specific clinical and health care problems, but can involve addressing some of the most fundamental concerns facing humans, including questions of identity, meaning, explora-
tion of one's place in the universe, and facing death and dying (Shapiro, 1990a). These are clearly critical control-related lifecycle challenges which must be discussed in any comprehensive approach to human mental wellbeing.
SENSE OF CONTROL AS INDEPENDENT VARIABLE

I.V.  MEDIATORS  D.V.

SENSE OF CONTROL (SCALES 1-3) ➔ WILL INCREASE LIKELIHOOD OF HEALTH BEHAVIORS (Farquhar) ➔ INCREASED QUALITY OF LIFE (Flic)

compliance

DECREASED DEPRESSION Ces-d ➔ DISEASE PROGRESSION Registry

DECREASED ANXIETY Scl-a

CNS immune system (E,NE) (NK)

neuroendocrine system

SENSE OF CONTROL AS DEPENDENT VARIABLE

I.V.  Mediator  D.V.

COPING MODES
POSITIVE/- ASSERTIVE
POSITIVE/- YIELDING
(Scales 5-8)

AGENCY
SELF 119
OTHER 120

→ better coping flexibility

HIGHER SENSE OF CONTROL (SCALES 1-3)

CONTROL PSYCHOTHERAPY

Motivational Variables
*DESIRE FOR CONTROL (Scale 9)

fear of loss of control

*MODE SATISFACTION (10)

*PARAMETERS OF CONCERN (11)

intervention

PREFERRED MODE (12) ➔ DOMAIN SPECIFIC

to address concern SENSE OF CONTROL

cultural values regarding modes SCALE 4

Additional Variables Investigated:

Attribution of Causality Additional Life Event Stressors
Social Support Groups Not Done: Risk Perception vs.
Social Support Networks objective risk: heredity (family
Coping Factors history), age

* Most + sense of C.
CANCER AND SENSE OF CONTROL

This study extends previous work on control to the study of two groups of cancer patients: breast and ovarian. Four questions are being asked: 1) is there a relationship between sense of control and physical wellbeing: morbidity and mortality; 2) is there a relationship between sense of control and emotional wellbeing; 3) what mode(s) of control are most functional for obtaining this sense of control; and 4) are there differences in questions one, two, and three above depending upon the severity and prognosis of the cancer.

MAIN HYPOTHESES

Within Cancer Group

1) Those with a higher positive sense of control score (regardless of agency) will evidence greater psychological and physical wellbeing than those with lower scores. This will be true for within group comparisons in either breast or ovarian cancer.

2) Those with a higher positive yielding mode of control score will evidence greater psychological and physical wellbeing than those with lower scores.

3) Those with higher positive assertive mode of control score will evidence greater psychological and physical wellbeing than those with lower scores.

Between Group

A) General domain Positive sense of control (and decrease in subscale of negative loss of control) will be significantly greater in the breast cancer localized group than the ovarian.

B) Positive coping will show more quadrant two positive yielding in the ovarian group than the breast cancer group (Reflecting the fact that there is less one can do actively).

C) General domain positive assertive will be significantly greater in the breast cancer group than in the ovarian group.

D) Higher scores in Sense of Control and Mode of Control (Hypothesis A-C) will be associated with increased psychological health (quality of life) and decreased morbidity (including progression/ severity of metastasis; relapse; remission length)

SECONDARY HYPOTHESIS

i) If a patient has a high positive sense of control, the agency for the source of that sense of control will not be significant (e.g., God versus self; friend vs. self; family vs. God, etc). (Addresses the question of what agency is most functional for obtaining a positive sense of control).

ii) Change in both general domain positive assertive mode of control and positive yielding mode of control will have a significantly more positive effect than changes in either one alone. (Addresses the question of what mode(s) are most functional for obtaining a positive sense of control).

iii) Those who are able to maintain a sense of control in more domain specific areas will do better than those whose loss of control in one area generalizes to other domains.

iv) Where domain specific concerns existed, those who do better will be significantly more flexible (measured by differential endorsement of both assertive mode and yielding mode of control to address the concerns.)