

Posttraumatic Growth in a Cognitive Behavioral Couple Intervention for Women with Early
Stage Breast Cancer

Naomi L. Wiesensthal

A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of requirements for the degree of Doctor of Philosophy in the Department of Psychology (Clinical Psychology).

Chapel Hill

2006

Approved by:

Professor Donald H. Baucom
Professor Patrick J. Curran
Professor Deborah J. Jones
Professor Joseph C. Lowman
Professor Laura S. Porter

© 2006
Naomi L. Wiesenenthal
ALL RIGHTS RESERVED

ABSTRACT

NAOMI L. WIESENTHAL: Posttraumatic Growth in a Cognitive Behavioral Couple
Intervention for Women with Early Stage Breast Cancer
(Under the direction of Professor Donald H. Baucom)

Breast cancer patients and their partners often report positive functioning they attribute to cancer – termed posttraumatic growth. This study attempts to understand the nature of that growth in the couple context. Specifically, is growth a more individual or relational phenomenon? Do happier marriages promote growth? Does individual growth promote marital adjustment? Individual-based interventions with breast cancer populations have enhanced posttraumatic growth, but because partners also suffer and may be involved in the growth process, this study evaluates a couple-based cognitive behavioral intervention incorporating efforts to promote growth. Prior couple-based interventions with cancer populations have improved psychological, relationship, and sexual functioning, but this is the first intervention aimed at enhancing posttraumatic growth. In addition, this study seeks to understand the role of gender in growth and the trajectory of growth over time.

Participants were 36 heterosexual couples in which the wife was diagnosed with Stage I, II, or IIIa breast cancer. Twenty-three couples were randomized to intervention and 13, to the treatment-as-usual control condition. Pretest and posttest assessments included Benefit Finding (Antoni et al., 2001), the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996), and the Dyadic Adjustment Scale – Short Form (Sharpely & Rogers, 1984).

Data were analyzed using multilevel modeling, with time nested within individual, and individuals within couples. Intraclass correlation coefficients revealed that although somewhat relational in nature, posttraumatic growth remains a predominantly individual phenomenon. Further, relationship quality does not enhance growth, nor does growth facilitate happier relationships. Despite strong gains in other domains, treatment did not enhance posttraumatic growth, nor did couples in the treatment condition develop a more similar perspective on growth in the cancer experience. In addition, posttraumatic growth was not more relational in nature for treatment than for control couples. Consistent with hypotheses, women initially reported greater growth than men. Over time, in the control condition, men experienced an increase in growth, approaching women's level. In the treatment condition, however, this convergence did not occur. Thus, contrary to expectations, couples did not come to a shared experience of meaning in the cancer experience, regardless of relationship quality, nor did the couple-based intervention appear to facilitate growth.

To Mom, Dad, and Josh, who have been there from the start, and to George, who shares the
journey

ACKNOWLEDGEMENTS

Numerous people have assisted in the planning, research, and writing of this project. First, I would like to thank my advisor, Professor Donald H. Baucom, for his invaluable insight and guidance and his constant kindness and support throughout the process. I also would like to thank the members of my dissertation committee: Professors Patrick J. Curran, Deborah J. Jones, Joseph C. Lowman, and Laura S. Porter, who have been of great assistance in the conceptualization, analysis, and writing of this dissertation. In addition, I have benefited greatly from the insights of the Baucom lab group and from the aid of Dr. Kristopher Preacher, Dr. Christopher Wiesen, Michael Peterman, and Daniel Serrano. Dr. Michael O'Malley and the Lineberger Comprehensive Cancer Center's CCEP Predoctoral Fellowship in Cancer Prevention and Control have greatly facilitated the completion of this project. I must express my gratitude to the CanThrive team and to the many couples who volunteered their time, as well – without them, this research would have been impossible.

I also would like to thank my parents, David and Sandra Wiesenthal, my brother, Joshua Wiesenthal, his fiancée, Amy Chatterson, and George Bowker for their tireless love, support, encouragement, advice, and laughter. They share my triumphs and tribulations and provide me with a firm foundation in the world. I am grateful, too, to my grandparents, Charles and Debora Wiesenthal and James and Betty Young, whose love and support was constant, and who – with my parents – instilled in me the joy of learning. To all of these

people, and to all of the other friends and family whose presence, love, and support have brightened my way and lightened my load, thank you.

TABLE OF CONTENTS

	Page
LIST OF TABLES	xii
LIST OF FIGURES	xiii
 Chapter	
I. INTRODUCTION	1
Breast Cancer and its Impact	1
Physical Symptoms	1
Psychological Sequelae	2
Impact on Partners	2
Sexual Disruption	3
Relationship Factors Can Be of Importance in Women's Response to Breast Cancer	4
Positive Responses to Negative Events	5
Posttraumatic Growth	6
The Concept	6
Posttraumatic Growth: The Process	6
The Role of Distress and Positive Affect	8

The Role of Rumination	9
Nature of the Trauma.....	10
Distinguishing Posttraumatic Growth from Related Concepts	11
Domains of Growth	13
Self-Perception	14
Life Philosophy	14
Interpersonal Relationships	15
Distinct Processes?	15
Relationship with Adjustment	16
Role of the Partner Relationship in Posttraumatic Growth	18
Breast Cancer as Trauma	19
Evidence of Posttraumatic Growth in Women with Breast Cancer	19
Relationship Between Posttraumatic Growth and Adjustment	21
Psychosocial Interventions for Individuals with Cancer	24
Evidence of Posttraumatic Growth in Couples Facing Cancer	26
Psychosocial Interventions for Couples with Cancer	29
Efficacy of Couple-Based Interventions with Cancer	29
Efficacy of Couple-Based Interventions Across Populations	31
Summary	32
The Current Study.....	32
Posttraumatic Growth in the Couple Context.....	33
Gender and Time Effects.....	35
Effectiveness of a Couple-Based Intervention to Enhance Posttraumatic Growth ..	37

II. METHOD.....	39
Participants	39
Procedure	44
Measures	45
Dyadic Adjustment Scale – Short Form (DAS – 7)	45
Biographical, Medical, and Health Behavioral Information Sheet	46
Benefit Finding	47
Posttraumatic Growth	47
III. RESULTS	50
Posttraumatic Growth in the Couple Context	53
Posttraumatic Growth as a Relational Phenomenon	53
Impact of Relationship Functioning on Posttraumatic Growth	56
Role of Posttraumatic Growth in Relationship Adjustment	56
Gender and Time Effects	58
Gender Differences in Posttraumatic Growth	58
Trajectory of Posttraumatic Growth Over Time	60
Convergence in Posttraumatic Growth Scores Over Time	61
Effectiveness of the Relationship Enhancement Intervention	61
Effectiveness of Treatment in Increasing Posttraumatic Growth	61
Effectiveness of Treatment in Enhancing Convergence in Partners’ Scores	62
Effectiveness of Treatment in Increasing the Relational Nature of Posttraumatic Growth	63

IV. DISCUSSION.....	64
Posttraumatic Growth in the Couple Context.....	64
Gender and Time Effects.....	67
Effectiveness of the Relationship Enhancement Intervention.....	69
Summary.....	73
Limitations and Future Directions.....	74
Implications.....	76
APPENDIX.....	98
Outline of Relationship Enhancement Intervention Sessions.....	98
REFERENCES	101

LIST OF TABLES

Table	Page
1. Missing Items by Measure	78
2. Summary of Hierarchical Linear Modeling Analysis for Variables Predicting Benefit Finding Scores (N = 36 Couples)	79
3. Summary of Hierarchical Linear Modeling Analysis for Variables Predicting PTGI Summary Scores (N = 36 Couples)	81
4. Summary of Hierarchical Linear Modeling Analysis for Variables Predicting PTGI-I (Relating to Others Subscale) Scores (N = 36 Couples).....	83
5. Summary of Hierarchical Linear Modeling Analysis for Variables Predicting DAS-7 Scores, Including Benefit Finding (N = 36 Couples).....	85
6. Summary of Hierarchical Linear Modeling Analysis for Variables Predicting DAS-7 Scores, Including PTGI Summary Scores (N = 36 Couples).....	87
7. Summary of Hierarchical Linear Modeling Analysis for Variables Predicting DAS-7 Scores, Including PTGI Relating to Others Subscale Scores (N = 36 Couples)	89
8. Correlations Between Partners in Posttraumatic Growth Scores (N = 36 couples)	91

LIST OF FIGURES

Figure	Page
1. Trajectories of Benefit Finding scores over time.....	92
2. Trajectories of PTGI Summary scores over time.	93
3. Trajectories of PTGI Relating to Others (PTGI-I) subscale scores over time.....	94
4. Trajectories of DAS-7 scores over time.....	95
5. Gender by time by treatment interaction predicting PTGI Summary Scale scores.	96
6. Gender by time by treatment interaction predicting scores on PTGI Relating to Others subscale (PTGI-I).....	97

I. INTRODUCTION

Breast Cancer and its Impact

Cancer is a leading public health problem in developed countries (Jemal et al., 2003). Breast cancer is the cancer that most frequently affects women, and following prostate cancer, is the second most common cancer, overall (National Cancer Institute, 2006). Estimates for the USA in the year 2006 included incidences of 212, 920 new cases of female invasive breast cancer; 61, 980 new cases of female ductal or lobular carcinoma in situ (noninvasive cancer isolated inside a milk duct or lobule, respectively); and 40, 970 female deaths from breast cancer (American Cancer Society, 2006). Breast cancer was estimated to account for 31% of new cancer diagnoses in women in 2006 (American Cancer Society, 2006), and its incidence is on the rise (National Cancer Institute, 2006). It is a disease with far-reaching sequelae. Its symptoms span physical, psychological, and interpersonal domains, and the disease affects not only women, but also their families, friends, and particularly their partners.

Physical Symptoms

With breast cancer, overall physical functioning may decline (Bloom, 2002). More specifically, patients often report concern with arm and chest functioning, discomfort, and pain (Bloom, 2002). Other physical symptoms include fatigue and possible weight gain (Bloom, 2002), and early osteoporosis and fractures can occur (Ganz, 2000). In addition, the possibility of other cancers is present (Bloom, 2002). Further physical symptoms vary by

treatment type, with surgery causing pain, numbness, swelling, and stiffness; radiation causing swelling and itching, as well as skin changes; and chemotherapy causing nausea, hair loss, infection, and possibly sterility (Moyer & Salovey, 1996). Sadly, the symptoms of breast cancer are not only limited to the physical domain.

Psychological Sequelae

Research suggests that, in addition to physical symptoms, breast cancer patients may experience psychological reactions, such as depression, anxiety, and confusion (Andersen, Anderson, & deProse, 1989; Gotay & Muraoka, 1998). These psychological symptoms are not entirely surprising, given the level of life disruption that breast cancer and its treatment can bring about. Physical sequelae can result in difficulty with work, as well as reduced insurability, while at the same time, costly medical treatments may tax financial resources (Bloom, 2002). In addition, the disease and its treatment may disrupt parenting and other family roles (Bloom, 2002) and, thereby, affect those closest to patients.

Impact on Partners

Although breast cancer clearly has wide-reaching effects on female patients, it also can have a huge impact on their partners. In some studies, healthy partners reported almost as many or more problems as patients (Baider & Kaplan De-Nour, 1988; Baider, Walach, Perry, & Kaplan De-Nour, 1998; Germino, Fife, & Funk, 1995; Nijboer et al., 1998; Northouse, Mood, Templin, Mellon, & George, 2000; Weiss, 2002). In fact, some studies suggest that husbands of female cancer patients report worse distress than male cancer patients (Baider & Kaplan De-Nour, 1988; Baider, Perez, & De-Nour, 1989), although this finding is somewhat inconsistent (Baider & Kaplan De-Nour, 1988). What is clear is that cancer impacts both partners and not only the cancer patient. Partners report less social support than do patients

(Northouse et al., 2000). Partners also experience a disruption in lifestyle, along with concern about their wives and families (Samms, 1999). In addition, studies also show significant patient-partner correlations for outcomes (Baider & Kaplan De-Nour, 1988; Northouse et al., 2000). In fact, some studies have found that both patients' and partners' distress and coping were predicted by partners' distress and coping in multiple regression and path model analyses (Baider, Koch, Esacson, & Kaplan De-Nour, 1998; Ben-Zur, Gilbar, & S., 2001; Gilbar, 1999). In addition to affecting each partner individually, breast cancer also can impact the couple as a unit and their relationship.

Sexual Disruption

Sexuality is one arena of couple functioning that frequently becomes disrupted with cancer. Estimates of sexual dysfunction (including less frequent intercourse and orgasmic difficulties) in women with breast cancer range from 21% to 40% (Andersen, 1985; Gotay & Muraoka, 1998). Not surprisingly, partners also experience dysfunction; in one study, 30% of women reported that their partners had trouble achieving orgasm (Andersen et al., 1989). Treatment modality may play a role, with more invasive procedures associated with greater sexual disruption (Andersen, 1985). In particular, cancer and its treatment can cause disfigurement and may threaten feelings of femininity, attractiveness, and sexuality (Andersen, 1985; Moyer & Salovey, 1996; Northouse et al., 2000). Changes in the ways women view their bodies and in self-image can affect women's sense of "sexual confidence and desirability" (Moyer & Salovey, 1996, p. 112). Partners may avoid sexual interactions for fear that they will hurt the patient physically (Moyer & Salovey, 1996). Premature menopausal status induced by chemotherapy and vaginal dryness may also contribute to disruptions in sexual functioning (Ganz, 2000). Furthermore, cancer patients may place

disproportionate focus on physical symptoms or sensations after diagnosis, and data from healthy individuals suggests that such “spectator” responses can impair sexual functioning (Andersen, 1985). In addition to changes in physical health, changes in life priorities may contribute to sexual disruption (Andersen, 1985). A host of other life stressors that may accompany cancer (e.g., financial or occupational stress) can also contribute to sexual disturbance in cancer patients (Andersen, 1985). Finally, changes in mood, particularly anxiety and depression, may result in sexual disturbances (Andersen, 1985; Moyer & Salovey, 1996). Clearly, the effects of cancer are large and far-reaching, but a positive partner relationship may help mitigate its effects.

Relationship Factors Can Be of Importance in Women’s Response to Breast Cancer

Relative to patients who are unmarried, married cancer patients seem to experience less distress and better adjustment. Indeed, in a study of cancer and lupus patients, married (or employed) patients showed less demoralization than divorced or separated patients (Katz, Flasher, Cacciapaglia, & Nelson, 2001). Perceptions of emotional support and of one’s ability to discuss matters with one’s partner have shown positive, moderate correlations with measures of social and emotional adjustment and self-esteem in women with breast cancer (Zemore & Shepel, 1989). It has been argued that social support helps protect cancer patients from the negative effects of cancer and cancer treatment (Lewis et al., 2001; Moyer & Salovey, 1996). In fact, one study found moderate correlations between the quality of the partner helping relationship (operationalized as the patient’s perception of the helpfulness of speaking with her partner about her breast cancer experience) and patient psychological outcomes (Pistrang & Barker, 1995). The correlations between relationship satisfaction and patient psychological well-being were somewhat weaker but followed the same pattern

(Pistrang & Barker, 1995). Furthermore, this same study showed that the relationship between a woman and her partner is special; other helping relationships cannot replace a partner (Pistrang & Barker, 1995). That is, a satisfying and helpful partner relationship was negatively correlated with anxiety, depression, and hostility (Pistrang & Barker, 1995). In addition, negative correlations of the same magnitude between partner relationship factors and psychological symptoms still were found among those women in the sample who had good helping relationships with people other than their partners (Pistrang & Barker, 1995). Clearly, then, a positive partner relationship can help mitigate the negative impact of breast cancer on a patient. Such a relationship may also facilitate positive outcomes in the cancer experience.

Positive Responses to Negative Events

Traditional views in psychology focus on negative events following crises and minimize the possibility of positive outcomes after such events. However, recent theory and research suggest that along with negative sequelae, trauma can provide the opportunity for growth and positive functioning that might not have occurred without the stressor. This research area is still in its infancy, and there remains great variability in theoretical conceptualizations, as well as in methods, events, and populations studied (Thornton, 2002). One of the most comprehensive and well-known conceptualizations is Tedeschi, Calhoun, and colleagues' concept of posttraumatic growth.

Posttraumatic Growth

The Concept

Tedeschi, Calhoun, and colleagues define posttraumatic growth as both a process used to cope with negative events such as breast cancer *and* the positive outcome(s) of this process (Tedeschi, Park, & Calhoun, 1998).

Posttraumatic Growth: The Process

The process of posttraumatic growth, by definition, must begin with a trauma. In their view, traumatic events involve losses of people one loves, of roles or abilities one values, and/or of the ways one understands life (Tedeschi et al., 1998), a definition of trauma that is somewhat broader than that used by the American Psychiatric Association (Tedeschi & Calhoun, 2004). In the wake of trauma, people question their basic assumptions (called schemas) about life and the world, often resulting in pain and anxiety (Tedeschi et al., 1998). People realize that their existing beliefs, goals, and/or behaviors are not working well since the trauma's occurrence (Calhoun & Tedeschi, 1998b). Because the schemas that give understanding, meaning, and manageability to the world are challenged, that comprehensibility, meaning, and manageability may disappear (Tedeschi & Calhoun, 1995). For instance, people may lose the belief that their goodness would protect them from "bad" events (Tedeschi & Calhoun, 1995). In place of these disconfirmed schemas, new ones develop (Tedeschi & Calhoun, 1995). In other cases, schemas are modified to be more comprehensive and/or deeper (Tedeschi & Calhoun, 1995). In yet other cases, schemas can adequately account for traumatic events, and as such, do not need to be modified, and do not provide the opportunity for growth (Tedeschi & Calhoun, 1995). People retain some aspects of schemas, discard others, and incorporate or develop yet other schema elements (Calhoun

& Tedeschi, 1998b). They develop an understanding of themselves before, during, and after their struggle (Calhoun & Tedeschi, 1998b). When the struggle is central in the person's life story and the posttrauma reconstrual includes positive evaluation of the self or the world, growth can occur (Tedeschi & Calhoun, 1995). In other words, out of this struggle, some people rebuild their lives in ways that they see as better, valuing both the process and the outcome (Calhoun & Tedeschi, 1999; Tedeschi et al., 1998). Several factors are thought to play a role in promoting posttraumatic growth, among them distress, positive affect, rumination, and the nature of the trauma.

The concept of posttraumatic growth is reminiscent of crisis theory, from the 1960s, which posits that people and families exist in a general state of equilibrium (Caplan, 1964; Langsley & Kaplan, 1968). When pressures disrupt that equilibrium and "the usual re-equilibrating forces are unsuccessful during the usual time range" (Caplan, 1964, p. 39), a crisis can result in which a person is no longer able to cope using their current resources, leaving the person feeling upset and stressed and his or her functioning compromised (Caplan, 1964; Langsley & Kaplan, 1968). The person must then try to resolve the situation and reinstate equilibrium (Caplan, 1964; Langsley & Kaplan, 1968). The new equilibrium may look very different than the old (Caplan, 1964). Successful resolution of the crisis situation leads to enhanced "sense of control" and "enlarges the individual's ego and his repertoire of solutions to problems" (Langsley & Kaplan, 1968, p. 3). This process describes crisis-related growth. Of course, at times, individuals are unable to successfully cope due to the stressor itself, personality, or psychosocial stressors, leading to "decompensation" or "regression" (Langsley & Kaplan, 1968, p. 4). These authors note the importance of the social network in facilitating or deterring successful crisis resolution at a time when people

are more vulnerable than usual to others' influence (Caplan, 1964). They encourage the social network to "help the person confront the crisis – in manageable doses" (Caplan, 1964, p. 293), assist in information-gathering, provide support, and encourage help-seeking, but also to avoid providing "false reassurance" and discourage blaming others (Caplan, 1964, pp. 294-295).

The Role of Distress and Positive Affect

There is little research that has studied the development of posttraumatic growth longitudinally and prospectively. At present, notions about the development of posttraumatic growth and important factors in that process are largely restricted to clinical observation and theory. Calhoun and Tedeschi (1998b) propose that distress may be essential for posttraumatic growth, as it can be a catalyst for change. It pushes people to understand and deal with trauma (Calhoun & Tedeschi, 1998b). However, it is also possible that before distress has been at least somewhat resolved, growth cannot occur (Schaefer & Moos, 1998). In other words, there must be some relief from distress to allow the development of posttraumatic growth (Calhoun & Tedeschi, 1998b; Nolen-Hoeksema & Davis, 2004); when one's resources are overwhelmed, negative outcomes may occur (Tedeschi & Calhoun, 1995). Interestingly, it appears that both positive and negative affect can co-occur during periods of stress (Folkman, 1997; Folkman & Moskowitz, 2000; Linley & Joseph, 2004). Positive affect may help people build resources and problem-solve, as well as provide protection or a "break" from negative physiological and psychological effects of stress (Folkman & Greer, 2000; Folkman & Moskowitz, 2000). As such, positive affect may facilitate posttraumatic growth. Indeed, positive affect has been shown to be related to greater meaning among breast cancer survivors (Bower et al., 2005). In addition, it is

believed that optimism, dispositional hope, self-efficacy, extraversion, and openness to experience may set the stage for growth (Affleck & Tennen, 1996; Luszczynska, 2005; Schulz & Mohamed, 2004; Urcuyo, Boyers, Carver, & Antoni, 2005). It is likely, then, that posttraumatic growth is an outgrowth of not just negative affect, but of positive affect, as well (Calhoun & Tedeschi, 1998b; Stanton & Low, 2004).

The Role of Rumination

In addition to distress and positive affect, “rumination” is proposed as being necessary in the posttraumatic growth model of trauma-induced growth (Calhoun & Tedeschi, 1998b, 1999). The authors define rumination as a process in which one thinks of the trauma and related issues to the point that they frequently intrude in daily activities (Calhoun & Tedeschi, 1998b). They draw a distinction between “constructive rumination”, which involves “finding meaning in the event and noticing changes in the self” (Calhoun & Tedeschi, 1998b, p. 227), and “regretful rumination”, which includes wishing that the crisis had never occurred (Calhoun & Tedeschi, 1998b). Whereas regretful rumination can be counterproductive, they argue that constructive rumination, including spiritual or existential rumination, as well as thoughts about disengaging from old ways of living and introducing new ways to live, may lay the groundwork for posttraumatic growth (Calhoun & Tedeschi, 1998b). This distinction is akin to that drawn by Nolen-Hoeksema and Davis (2004) between brooding and reflection, where brooding is “moody pondering that ... is toxic to mental health” (p. 63) and reflection is more neutral in valence and involves efforts at resolution and coping. They argue that reflection may set the stage for posttraumatic growth, whereas brooding does not. Of course, characteristics of traumatic events may make the distress and rumination essential to posttraumatic growth more or less likely.

Nature of the Trauma

Calhoun and Tedeschi argue that to allow for the possibility of posttraumatic growth, an event must be sufficiently catastrophic to challenge or destroy a person's understanding of the world and of life (Calhoun & Tedeschi, 1998b). In fact, the more an event is perceived as threatening and harmful, the greater the potential for growth (Linley & Joseph, 2004). It is essential to note that it is not the event itself, but rather a person's struggle to cope with it, that brings about growth (Calhoun & Tedeschi, 1998b). Tedeschi and Calhoun (1995) delineate several characteristics of traumas that may increase the probability of negative psychological responses: when a trauma occurs suddenly or unexpectedly, when the person has little control over the situation, and when the trauma is unusual, chronic, or attributed to other people. They go on to argue that, despite the pain associated with trauma, it is the struggle with trauma's negative consequences that lays the groundwork for future growth (Tedeschi & Calhoun, 1995). Collins and colleagues (Collins, Taylor, & Skokan, 1990) predict that chronic traumas or crises may make growth less likely, because they drain a person's resources, leaving less energy for the growth process. They also posit that interpersonal traumas, such as rape, may make growth less likely, because they tend to shatter assumptions about human nature and thereby impede relationship enhancement, one facet of posttraumatic growth (Collins et al., 1990). On the other hand, an illness may facilitate interpersonal growth by urging people to "pull together", and if chronic, observations of growth may provide people with a sense of control in a situation where they otherwise might feel helpless.

Distinguishing Posttraumatic Growth from Related Concepts

The concept that positive outcomes can emerge from negative experiences is not new, but as noted earlier, psychology has only recently begun empirical exploration of it. As such, there is no overarching, coherent theory of the process by which this occurs, nor does there exist a unified lexicon. Although several theorists have contemplated and investigated factors contributing to growth, as well as the ramifications thereof, the most comprehensive model of the *process* of growth appears to be Tedeschi and Calhoun's. As stated earlier, they conceptualize posttraumatic growth as both a process and an outcome (Tedeschi et al., 1998). Given that various investigators and writers use different terms to describe similar phenomena, it may be helpful to distinguish posttraumatic growth from related concepts. One related term is *positive reappraisal*. Tennen and Affleck (1998) define positive reappraisal as a *process* by which people attempt to view crises as growth opportunities. This is an intentional or active process (Tennen & Affleck, 1998), but one that does not necessarily imply rumination. For instance, a positive reappraisal may be the outgrowth of struggle and reflection (e.g., "Looking back, I guess that coping with this disease is helping me realize what truly matters in life and what does not"). Alternatively, one might draw on a stock set of reinterpretations that require little reflection or reinterpretation (e.g., "This is a challenge a higher authority (God) has given me to test me or make me stronger"). Further, positive reappraisal does not necessarily occur exclusively with trauma, but could also occur in the presence of other challenging events (e.g., the assignment of a difficult task) and at any stage during the process of dealing with that event (e.g., at the time of diagnosis or task assignment, during the process, or at the end of the process).

The same authors (Affleck & Tennen, 1996; Tennen & Affleck, 1998) describe *benefit-finding* (sometimes called *growth conclusions*) as beliefs about the positive consequences of – including growth experiences from – struggles with adversity. This is a concept analogous to Tedeschi and Calhoun's posttraumatic growth *outcome*. Benefit-finding is an outcome and does not necessarily imply the presence of an active or ruminative process; rather, it could be the product of either automatic or effortful thought processes, or both. For instance, someone might come to realize growth or benefit almost spontaneously or through modeling by or suggestion from someone else. However, benefit finding may also occur as an outcome of positive reappraisal, or through benefit seeking, a similar process where one searches for benefits or growth outcomes (G. Affleck, personal communication, December 2, 2003). Again, benefit finding need not occur exclusively during or after trauma, but could also occur during or after other challenging events. Once benefit has been found, some individuals remind themselves of positive changes as a coping strategy, a process these authors have termed *benefit reminding* or *growth reminding* and which has been found related to pleasurable mood (Affleck & Tennen, 1996; Tennen & Affleck, 1998). For instance, someone feeling ill with chemotherapy might attempt to cope by reminding herself that she and her husband have become closer while struggling with her cancer and its treatment.

In addition, S.E. Taylor (1983) describes *meaning* as (a) causal attributions about why an event occurred and (b) beliefs about its impact (S. E. Taylor, 1983). Davis and colleagues (Davis, Nolen-Hoeksema, & Larson, 1998) highlight the distinction between these two components of meaning, arguing that making sense of why an event occurred is different from finding something positive in the aftermath of the experience. For instance, people with

heart disease may develop causal explanations for the event, including poor diet and inactivity. They may also develop an understanding of the impact of the disease in their lives, perhaps viewing a diagnosis as a “wake-up call” to realize how special their loved ones are to them or to slow down at work. In the case of negative events, individuals may *seek* meaning (an effortful and possibly ruminative process) and/or *find* meaning (an outcome). The search for meaning does not necessarily imply the presence of ongoing or past trauma, and the found meaning is not always positive. Both components of meaning could be seen as part of the process and outcome of posttraumatic growth.

In sum, *posttraumatic growth* is conceptualized as both a process and an outcome arising from the struggle with trauma. The term can be differentiated from several related concepts. For instance, *positive reappraisal* is an attempt to view a difficult experience as an opportunity for growth, but does not imply the presence of either active rumination or trauma. Similarly, *benefit finding* refers to the identification of positive outcomes in a difficult experience, but, like positive reappraisal, necessitates neither rumination nor trauma. *Benefit reminding*, also called *growth reminding*, consists of active attempts to use such perceptions of benefit or growth to cope. Finally, these terms are distinguished from the concept of *meaning* in difficult life experiences. Individuals can seek and/or find meaning, although that meaning may not be positive, and again, the presence of trauma is not necessary.

Domains of Growth

According to Calhoun and Tedeschi’s theory, the outcomes of posttraumatic growth fall into three main categories: self-perception, life philosophy, and interpersonal relationships (Calhoun & Tedeschi, 1998b, 1999; Tedeschi et al., 1998). People may

experience growth in one domain and not another, in all three domains, or not at all (Calhoun & Tedeschi, 1998b). (Those who do not grow may experience either no change, or deterioration in functioning in the wake of a crisis, with a more severe reaction being posttraumatic stress disorder.)

Self-Perception

First, people may note positive change in their personalities and skills (Affleck & Tennen, 1996; Schaefer & Moos, 1998). They may become aware of their strength and come to label themselves as “survivors” rather than “victims” of the trauma (Tedeschi & Calhoun, 1995; Tedeschi et al., 1998). Survivors may feel greater self-reliance and self-efficacy (Tedeschi & Calhoun, 1995; Tedeschi et al., 1998). Interestingly, they may become simultaneously aware of their own vulnerability, thereby instigating changes in relationships, priorities, and appreciation of life (Calhoun & Tedeschi, 1999; Tedeschi et al., 1998).

Life Philosophy

In addition to – and perhaps related to – changes in self-perception, people may grow in their appreciation of life, including the “little things” (Calhoun & Tedeschi, 1999; Tedeschi & Calhoun, 1995; Tedeschi et al., 1998). They may adjust their priorities (Affleck & Tennen, 1996; Calhoun & Tedeschi, 1999; Tedeschi et al., 1998). People may grapple with existential issues and/or note spiritual development (Calhoun & Tedeschi, 1999; Tedeschi & Calhoun, 1995; Tedeschi et al., 1998). People also may experience a growth in wisdom (Tedeschi et al., 1998). They may develop serenity and understand the paradoxes of life; for instance, they may develop the belief that one must be able to both act and not act, to both rely on other people and also on oneself, and to place the trauma in the past and also in the present (Tedeschi & Calhoun, 1995).

Interpersonal Relationships

Along with changes in self-perception and life philosophy, people often report stronger relationships with friends and family after a trauma has occurred (Affleck & Tennen, 1996). They may grow in their ability and/or willingness for self-disclosure or emotional expression, which may then contribute to intimacy and enhanced relationships (Calhoun & Tedeschi, 1999; Tedeschi & Calhoun, 1995; Tedeschi et al., 1998). People may see characteristics they were not aware that another person possessed, leading to new possibilities in that relationship (Calhoun & Tedeschi, 1999). In addition, existing relationships may be enhanced through greater empathy and altruism (Affleck & Tennen, 1996; Calhoun & Tedeschi, 1999; Tedeschi & Calhoun, 1995; Tedeschi et al., 1998), and people may form new social networks that also can offer them support (Schaefer & Moos, 1998).

Distinct Processes?

Janoff-Bulman (2004) hypothesizes that the role of schema change in growth may depend on the particular domain of growth under consideration. In the domain of self-perception, for instance, through the process of coping with trauma, people may realize strengths of which they were previously unaware or develop new strengths and skills to help cope (Janoff-Bulman, 2004). Changes in skills, combined with changes in assumptions (or schemas, e.g., about vulnerability), can provide the survivor with preparedness and protection from future traumas (Janoff-Bulman, 2004). In the interpersonal and life philosophy domains, on the other hand, she argues that survivors realize that their assumptions about the world have been destroyed; they cannot understand why trauma happened to them, and must confront their ongoing vulnerability. In so doing, they may contemplate their lives, finding

greater appreciation for life itself, making new choices, and setting new priorities (Janoff-Bulman, 2004). As she states, “in essence they have moved from concerns about the meaning of life to the creation of meaning in life” (Janoff-Bulman, 2004, p. 33). With growth in so many domains of functioning, one also might expect better adjustment to the negative event and enhanced psychological well-being, overall.

Relationship with Adjustment

Based on her work in women facing breast cancer, S. E. Taylor (1983) has proposed a theory of cognitive adaptation, in which people faced with a threatening event successfully adjust by engaging in (a) attempts to find meaning, (b) efforts for mastery over the event and over one’s life (i.e., managing the event and preventing its recurrence), and/or (c) self-enhancement (involving social comparisons) to regain self-esteem. As noted earlier, she defines meaning as (a) causal attributions about why the event occurred and (b) beliefs about its impact (S. E. Taylor, 1983). She argues that finding positive meaning in the experience with cancer – that is, believing that cancer spurred a reconstruction of lives (attitudes and priorities) along better and “more meaningful lines” (p. 1163) – produces better adjustment (S. E. Taylor, 1983). Thompson adds that a focus on positives in a stressful event may assist people in grappling with the psychological issues that the event raises, including attributing causality and determining implications of the event for perspectives on one’s life and the world (Thompson, 1985). A focus on the positives can help one feel less negatively about one’s experience and avoid attributions of blame (Thompson, 1985). Taylor has argued that focusing selectively on positive attributes of a difficult or unpleasant situation or of oneself also can help restore self-esteem (S. E. Taylor & Brown, 1988). Further, it is possible that changing one’s goals in life after a negative event may provide an opportunity to regain

control that was lost in another domain because of the event (S. E. Taylor, 1983). Thus, changing one's perception of an event can facilitate growth (S. E. Taylor & Brown, 1988). Taylor argues that the elements of cognitive adaptation, which she describes as "positive illusions", are important in protection from current and future threats (S. E. Taylor, 1983). Through these self-enhancing efforts, people may "return to or exceed their previous level of psychological functioning" (S. E. Taylor, 1983, p. 1170). Other authors (e.g., Calhoun & Tedeschi, 2004; Stanton & Low, 2004) disagree with her conceptualization, arguing that posttraumatic growth is not entirely an illusion and citing as evidence the fact that individuals report both positive and negative outcomes from their trauma.

In fact, research to date provides some evidence for a relationship between posttraumatic growth and positive emotional adjustment (although results are somewhat mixed), between growth and physical health, and between growth and health behavior (Affleck & Tennen, 1996; Bower et al., 2005; Calhoun & Tedeschi, 1998a; Carver & Antoni, 2004; Davis et al., 1998; Park, 1998; Thornton, 2002; Urcuyo et al., 2005). Furthermore, growth is associated with perceptions of enhanced ability to handle later life crises (Park, 1998). In fact, the ability to imagine benefit allows the creation of goals (Folkman & Greer, 2000), which is a key element of coping. In a cross-sectional study of multiple sclerosis patients, benefit-finding was related to social support seeking and positive reappraisal, but also to greater anxiety and anger (Mohr et al., 1999). It is possible that posttraumatic growth is related to both positive and negative adjustment, if one views these constructs as separate, rather than as two poles of the same construct (Thornton, 2002). Some theorists argue that growth is, in and of itself, a positive outcome, while others argue that it is merely a path to positive adjustment (Park, 2004). It is possible that growth (e.g., development of new skills)

facilitates future adjustment, that adjustment facilitates growth by helping people find meaning, or that another, third construct (e.g., optimism) underlies both growth and adjustment (Park, 1998). In other words, it is possible that better adjusted people are more likely to grow and find benefit, but also that the ability to find benefit and grow contributes to adjustment (S. E. Taylor, Lichtman, & Wood, 1984), or that optimists are more apt to grow and to be better adjusted. Longitudinal research is uniquely equipped to examine this issue (Park, 1998).

Role of the Partner Relationship in Posttraumatic Growth

One important element of posttraumatic growth outcomes is enhancement of interpersonal relationships, including marital and family relationships (Affleck & Tennen, 1996; Calhoun & Tedeschi, 1999; Tedeschi & Calhoun, 1995; Tedeschi et al., 1998). However, it is likely that the partner relationship plays a key role in the *process* of growth, and is not merely part of the outcome. For instance, partners may process events together in ways that promote growth, or one partner may model growth and thereby facilitate the other's growth. Partners can provide comfort, support, a positive emotional environment, and new schemas to facilitate the rumination that Tedeschi and Calhoun posit to be part of the posttraumatic growth process (Schaefer & Moos, 1998; Tedeschi & Calhoun, 2004; Weiss, 2004a, 2004b). Furthermore, they can model contentment and growth in the aftermath of trauma (Weiss, 2004a, 2004b) and assist in the prevention of helplessness or hopelessness (Lechner & Antoni, 2004). In addition, partners may compliment patients' coping and remind them of other people's goodness and the importance of relationships (McMillen, 2004). If these processes occur, one would expect better relationships to foster more growth, which would in turn foster better relationships. Few studies have examined the role of the

partner relationship in the posttraumatic growth process. Breast cancer, which has wide-reaching impact on both partners in a couple, may provide an ideal opportunity for studying just this process.

Breast Cancer as Trauma

Breast cancer can be conceptualized as a trauma, according to definitions of trauma that incorporate a loss (of people, roles, abilities, or ways one views life) that shakes a person's assumptions about life and the world, causing distress (e.g., Tedeschi et al., 1998). At the very least, a cancer diagnosis can shatter a woman's (or couple's) assumptions about her (or their) relative invulnerability to illness or death; at worst, the world may seem to crumble. Thornton describes cancer as "a prototypical stressful event" (Thornton, 2002, p. 156), noting that it "strikes without warning and poses a serious threat to current and future well-being", with little known about its etiology and treatments that can be extremely aversive. Cordova and colleagues (Cordova, Cunningham, Carlson, & Andrykowski, 2001a) found that for 61% of women in their sample, reactions to breast cancer met DSM-IV criteria for trauma. Likewise, in Weiss' research (2004a; 2004b), responses to breast cancer met DSM-IV criteria for a traumatic event in 63% of women and 47% of husbands.

Evidence of Posttraumatic Growth in Women with Breast Cancer

Tedeschi and Calhoun's model posits that out of traumas such as breast cancer, growth can emerge. Indeed, research supports the notion that cancer survivors experience positive changes as a result of their struggles, including perceptions of improvement in the areas of growth outlined by Tedeschi and Calhoun: individually, in relationships, and spiritually or with lessons in life (E. J. Taylor, 1995). For instance, in one sample of cancer patients, 84% reported a different self-view; 83%, changes in interpersonal relationships;

79% in priorities or activities; 67% in future plans; and 66% in world views (Collins et al., 1990). These patients reported more positive than negative changes in each of these domains (Collins et al., 1990). Another study, which examined cancer and lupus patients, found that reports of benefit in the experience were twice as common as reports of demoralization or of relationship deterioration (Katz et al., 2001); furthermore, patients reported growth in the domains of both interpersonal relationships and life philosophy (Katz et al., 2001). Similarly, cancer patients under evaluation for bone marrow transplant reported greater satisfaction with religion than did non-cancer control group participants (Andrykowski, Brady, & Hunt, 1993). Cancer patients also reported a shift in goals after diagnosis, toward appreciation of life and enjoyment of every day (Thompson & Pitts, 1993). Several studies have used the Posttraumatic Growth Inventory (PTGI), an instrument created by Tedeschi and Calhoun (Tedeschi & Calhoun, 1996) to assess growth outcomes in the domains specified in their model of growth. Using this instrument, Lechner and colleagues discovered reports of growth among cancer survivors, demonstrated by both their global PTGI scores and their scores on each of the PTGI's five specific subscales (Lechner et al., 2003). Similarly, another study using the PTGI in a sample of ovarian cancer survivors also found reports of growth (Wenzel et al., 2002). A third study used a translation of the PTGI and found reports of growth among Chinese cancer patients (Ho, Chan, & Ho, 2004).

The above-mentioned studies examined general cancer populations, but similar findings exist in studies using exclusively breast cancer samples. In one study of women with breast cancer, most participants reported positive change as a result of their cancer diagnoses (Antoni et al., 2001). In another study, 83% reported finding benefit in the cancer experience, typically in the realm of interpersonal relationships (Sears, Stanton, & Danoff-Burg, 2003).

In yet another sample, over half reported reappraising their lives (S. E. Taylor, 1983). Seventeen percent reported negative changes as a result of their illness, but 53% reported positive changes only (S. E. Taylor, 1983); this sample tended to view themselves as better-adjusted than they had been before their diagnoses (S. E. Taylor, 1983). Yet another study found that on the Cancer Patient Behavior Scale, women with breast cancer reported more improvement in their outlook on life and religious satisfaction than did women with benign breast problems (Andrykowski et al., 1996); these women also viewed spirituality as more important than did women with benign breast disease (Andrykowski et al., 1996). In addition, using the PTGI, Bellizzi and Blank (2006), Weiss (2002), and Manne and colleagues (2004) found reports of growth among women with breast cancer, and in another study using the PTGI, women with breast cancer, compared to healthy controls, reported greater spiritual change and appreciation of life (Cordova et al., 2001a). These themes of change are echoed in phenomenological, or qualitative, studies of women with breast cancer, and not just in quantitative studies (Coward, 1990; Fife, 1994; Nelson, 1996; O'Connor, Wicker, & Germino, 1990; Thibodeau & MacRae, 1997; Wyatt, Kurtz, & Liken, 1993). Given that posttraumatic growth does appear to occur among women with breast cancer, it would seem important to know the impact of that growth on women's well-being.

Relationship Between Posttraumatic Growth and Adjustment

In the cancer literature, the relationship between posttraumatic growth and affect is rather unclear. Some studies have found no relationship between the two. For instance, Antoni and colleagues (2001) discovered that scores on a measure of benefit finding were unrelated to scores on measures of distress among women with breast cancer. Likewise, Cordova and colleagues found that breast cancer and healthy control groups were similar in

levels of positive and negative functioning and that posttraumatic growth was unrelated to depression or well-being (Cordova et al., 2001a). Further, Tomich and Helgeson (2004) found no relationship between benefit finding and physical or mental functioning.

Despite some studies' finding of no relationship between posttraumatic growth and affect, other studies have found a stronger connection between the two. For instance, Germino and colleagues' research suggests that both patients and their partners try to understand the role of cancer in shaping their world and their relationship (termed the "meaning" of cancer), and this meaning tends to be positive, or in the direction of growth (Germino et al., 1995). In their work, they found that greater meaning was associated with better adjustment, both individually and within the couple (Germino et al., 1995). This finding has been corroborated by other research with breast cancer survivors (Bower et al., 2005; Carver & Antoni, 2004). Likewise, in their review article, Linley and Joseph (2004) comment on a consistent relationship between positive affect and growth.

Other studies suggest just the opposite relationship. For example, one study revealed that, despite worse mood disturbance, cancer patients (as compared to their next-of-kin) reported relationships that were more satisfactory, which reflects interpersonal growth (Cassileth et al., 1985). Another study examining parents of children with leukemia revealed that higher scores on the Posttraumatic Growth Inventory predicted greater anxiety and avoidance in both parents (Best, Streisand, Catania, & Kazak, 2001). Interestingly, among cancer patients, disease stage is related to benefit-finding in a slightly reverse-U-shaped pattern (Lechner et al., 2003). That is, benefit-finding was highest among cancer patients with Stage II cancer, followed by those with Stage III (although this difference did not attain statistical significance), then by those with Stages 0 or I and, finally, by those with Stage IV

cancer (Lechner et al., 2003). Furthermore, when statistically controlling for disease stage, the perception of threat remained related to benefit finding (Lechner et al., 2003). This result is consistent with conceptualizations (e.g., Calhoun & Tedeschi, 1998b) stressing the importance of traumas of a certain magnitude in setting the stage for posttraumatic growth. However, this conclusion is tempered by the findings of yet another study, in which patients with poorer prognoses perceived fewer positive and more negative changes, compared with those who had better prognoses (Collins et al., 1990). Clearly, the relationship between posttraumatic growth and adjustment remains somewhat unclear.

As with many phenomena, the method of measuring traumatic growth may impact the relationship found between growth and adjustment. Sears and colleagues (2003) conducted a study examining positive responses to cancer among women with early-stage breast cancer. They defined benefit finding as “the identification of benefit from adversity” (Sears et al., 2003, p. 487) and assessed it by asking participants whether they had experienced any benefit from the cancer experience (Sears et al., 2003). Positive reappraisal coping, on the other hand, was defined as the intentional use of found benefit to cope, analogous to Affleck and Tennen’s benefit reminding, and operationalized through the Positive Reappraisal subscale of the COPE (Sears et al., 2003). Finally, they referred to posttraumatic growth as benefit developing in the struggle with crises, and they assessed it through use of the PTGI (Sears et al., 2003). They found that initial positive reappraisal coping (i.e., benefit reminding), but not benefit-finding, predicted better mood and perceived health at three and 12 months and higher PTGI scores at 12 months (Sears et al., 2003). Interestingly, positive mood at 12 months was significantly correlated with PTGI scores at 12 months (Sears et al., 2003). In other words, PTGI scores at 12 months predicted better mood at 12 months, even after

statistically controlling for initial mood (Sears et al., 2003). Thus, it appears that the manner in which benefit from adversity is assessed affects its relationship to adjustment. Given the growth and positive functioning that are possible in – and even facilitated by – the struggle with cancer, interventions must be considered to help promote or enhance the well-being of those coping with such difficult and potentially devastating life events.

Psychosocial Interventions for Individuals with Cancer

Psychosocial interventions in cancer populations are of paramount importance, because of the obvious distress brought about by cancer diagnoses and treatments, but also because of the potential for growth in the struggle with cancer. A handful of studies have examined the effect of individual-based interventions on posttraumatic growth. In the first randomized, controlled, clinical trial of a psychosocial intervention that examined benefit-finding, Antoni and colleagues (2001) provided women with breast cancer with ten two-hour sessions of cognitive-behavioral stress management training and didactic material in a group format. They found that their intervention served to decrease depressive symptoms and increase benefit finding and optimism at post-test and at 3-month follow-up, but not by 9-month follow-up (Antoni et al., 2001). Participants undergoing this same intervention also evidenced modulation (i.e., normalization) of serum testosterone levels (Cruess et al., 2001). Interestingly, there was a negative correlation between benefit-finding and testosterone levels, suggesting a relationship between greater benefit-finding and lower levels of testosterone (Cruess et al., 2001). In addition to changes in testosterone levels, participants in this intervention evidenced cortisol reductions as well, and the authors posit that benefit finding may mediate the relationship between the intervention and lowered cortisol levels (Cruess et al., 2000). The authors concluded by arguing that interventions aimed exclusively

on reducing distress may neglect opportunities to enhance growth; rather, they suggested that psychosocial interventions should intentionally include components designed to enhance potential for growth (Antoni et al., 2001).

A second study examined the role of “written emotional expression” on positive adjustment among women with breast cancer (Stanton et al., 2002). Participants wrote on either (a) their “deepest thoughts and feelings” about their breast cancer experiences, (b) “positive thoughts and feelings” (i.e., benefit finding) about their breast cancer experiences, or (c) facts about their breast cancer and treatment (Stanton et al., 2002, p. 4162). Participants in groups (a) and (b) fared better on physical health outcomes at three-month follow-up than did participants in the third group (c). Interestingly, there was an avoidance by condition interaction effect on psychological outcome measures (i.e., Profile of Mood States and Functional Assessment of Cancer Therapy), where avoidance referred to intentional avoidance of cancer-related thoughts and feelings. Essentially, writing about one’s deepest thoughts and feelings was most useful for women showing little avoidance, whereas writing about positive thoughts and feelings was most useful for women displaying more avoidance (Stanton et al., 2002).

A third study examined the value of electronic support groups for women with breast cancer (Lieberman et al., 2003). The researchers found decreases in depression, significant improvement on the Spirituality subscale of the PTGI, and a marginally significant increase on the New Possibilities subscale of the PTGI after participating in such groups (Lieberman et al., 2003). These results should be viewed with caution, however, because this study was neither randomized nor controlled (Lieberman et al., 2003). Given (a) the evidence of individual growth in the face of cancer, (b) the efficacy of individual-based psychosocial

interventions that have studied posttraumatic growth, (c) the effect of cancer on the partner and relationship, and (d) the role of the partner relationship in coping with cancer, it seems important to investigate the presence of posttraumatic growth in the couple context, along with interventions to promote such growth.

Evidence of Posttraumatic Growth in Couples Facing Cancer

Perhaps most relevant to the marital context is that posttraumatic growth occurs in interpersonal domains. Cancer patients endorse wanting to spend more time with family after diagnosis (Thompson & Pitts, 1993), and compared to their next-of-kin, report emotional relationships that are closer or more satisfying (Cassileth et al., 1985). In addition, women with breast cancer report greater emotional support than do those with benign breast lumps (Zemore & Shepel, 1989). A study comparing women with breast cancer to healthy controls found higher scores among the breast cancer group on the PTGI Relating to Others subscale (Cordova et al., 2001a).

In terms of the partner relationship in particular, a group of cancer patients under evaluation for bone marrow transplantation reported greater love for their partners and a better partner relationship than did non-cancer control group participants (Andrykowski et al., 1993). Following breast cancer, one study has found that marital satisfaction is typically high (Lichtman, Taylor, & Wood, 1988). In that study, husbands' and wives' satisfaction scores were strongly correlated, although husbands were more satisfied than their wives (Lichtman et al., 1988). This study found slight, but nonsignificant, improvement in relationship satisfaction before and after cancer diagnosis and treatment, although this assessment was retrospective (Lichtman et al., 1988). On the Cancer Patient Behavior Scale, women with breast cancer reported more growth in love for their partners than did women

with benign breast problems (Andrykowski et al., 1996). Likewise, these women also reported a trend toward improved partner relationships on the Cancer Patient Behavior Scale, although these results did not attain statistical significance (Andrykowski et al., 1996). Thus, there is clear support for the notion of posttraumatic growth, and particularly in the interpersonal domain, among women with breast cancer.

Because partners often suffer along with patients, they, too, may experience posttraumatic growth. One study examined posttraumatic growth in breast cancer survivors and their husbands (Weiss, 2002). When asked to describe the most significant positive changes that the struggle with cancer had brought about, 98% of the wives and 88% of the husbands reported that the experience had prompted *some* positive changes in their lives, despite the fact that at the same time, 88% of wives and 83% of husbands also reported negative changes. On the PTGI, both men and women reported growth. Women, however, reported greater growth than their husbands on all but one subscale (i.e., Relating to Others, in which women reported nearly significantly more growth). Partners were able to corroborate each other's growth; in other words, when husbands and wives rated their partner's growth on the PTGI, those ratings were similar to their partner's self-reported growth on the PTGI, showing low to moderate, significant correlations with self-reported PTGI scores ($r = .28$ to $.65$).

In another study, Weiss (2004a) examined predictors of posttraumatic growth in the husbands of women with breast cancer. She found that deeper commitment to the partner relationship and the presence of posttraumatic growth in wives were significant predictors of husband's posttraumatic growth (Weiss, 2004a). Support from wives was also correlated with PTGI scores in husbands (Weiss, 2004a). In a third study, Weiss (2004b) examined

correlates of posttraumatic growth in married women with breast cancer. She found that marital emotional support (as well as contact with somebody else who had experienced a similar event and grown from through that experience) was correlated with PTGI total score (Weiss, 2004b).

Manne and her colleagues (2004) completed another study examining posttraumatic growth in women with early stage breast cancer (i.e., Stage 1, Stage 2, Stage 3a, and ductal carcinoma in situ) and their partners over a year and a half post diagnosis. They found evidence of posttraumatic growth in both patients and partners, and that growth increased over time in all domains assessed by the PTGI. Patients reported greater growth than partners, but their scores were positively correlated ($r = 0.21$). Among patients, those who were more emotionally expressive showed an increase in growth over time. Manne and colleagues suggest that this may be due to a reduction in negative feelings through expression, thereby allowing greater experiencing of positive feelings and benefit finding. In addition, they note that when feelings are expressed, their expression may prompt feedback about one's strength and recognition of one's growth. Further, such disclosure can enhance intimacy. Those partners who engaged in more emotional processing showed a lesser decline in growth over time. Interestingly, in this study, growth scores were unrelated to relationship satisfaction scores (assessed through the Dyadic Adjustment Scale). The authors explain this finding by postulating that marital quality may fluctuate less than one might anticipate, or alternatively, that marital quality may be a consequence of, rather than a contributor toward, growth.

Weiss argues that partners can provide comfort, support, a positive emotional environment, and new schemas to facilitate the rumination that Tedeschi and Calhoun posit

to be part of the posttraumatic growth process (2004a; 2004b). In support of this contention, one study found that women who engaged in more emotional processing perceived more benefits from the cancer experience (Antoni et al., 2001). Further, partners can model contentment and growth in the aftermath of trauma (Manne et al., 2004; Weiss, 2004a, 2004b). Indeed, husbands' and wives' PTGI scores were modestly correlated ($r = .20$), and presence of posttraumatic growth in wives predicted husbands' posttraumatic growth (Weiss, 2004a). Given the evidence for posttraumatic growth in the couple context, optimism that interventions might promote that growth is warranted.

Psychosocial Interventions for Couples with Cancer

Although individual-based interventions targeting growth in cancer patients have been successful, they remain limited in their scope. Because both patients and partners can suffer and grow through the cancer experience, and because partners can help ease each other's distress and promote each other's well-being, couple-based interventions are a particularly promising avenue for delivery of such interventions. In fact, it has been argued that couple-based interventions might be more effective than individual treatments (Baider & Kaplan De-Nour, 1988; Baider et al., 1989). It would seem important that, in addition to addressing distress, these interventions should address the potential for growth. There are no published studies of couple-based interventions targeting posttraumatic growth. As such, the existing couple-based interventions in cancer populations are reviewed below.

Efficacy of Couple-Based Interventions with Cancer

One study of brief couples counseling for postmastectomy women and their partners assessed the efficacy of a treatment that included psychoeducation, discussions of self-image and perceptions of one's partner, and behavioral exercises targeting areas of concern for the

couple (Christensen, 1983). Results revealed that, compared to control group couples, treatment couples showed a greater decrease in emotional discomfort and increase in sexual satisfaction for both partners, as well as a decrease in depression among women (Christensen, 1983).

Another, brief, couple therapy program for couples with difficulty relating to cancer targeted social support and assistance between partners, with the goal of restoring feelings of equity (Kuijer, Buunk, De Jong, Ybema, & Sanderman, 2004). Participants in treatment were compared to a wait-list control condition. Among treatment couples, both partners reported greater perceptions of equity and relationship quality at the end of treatment, and patients reported less distress. Among wait-list control couples, these changes either did not occur or occurred later on. The findings for treatment couples held at 3-month follow-up, although relationship quality did decline slightly from posttest (Kuijer et al., 2004).

A third, larger study (Scott, Halford, & Ward, 2004) for women with early stage breast and gynecological cancers and their partners investigated the efficacy of couple-based psychoeducation and coping training surrounding cancer-related issues. Unlike other couple-based intervention studies, which have compared treatment to no-treatment control groups, these researchers included medical information and individual intervention control conditions, which provide a more stringent test of their intervention's efficacy. They assigned women to one of three conditions: "medical information education", "patient-only coping training", or "couple coping training" (Scott et al., 2004). The individual coping training involved four two-hour, in home treatment sessions providing support in conjunction with psychoeducation and training in coping and cognitive restructuring. The couple condition consisted of five two-hour, in-home sessions that emphasized coping with cancer together

and providing support for each other in the experience, as well as counseling on sexual issues. Both individual and couple treatments included an exploration of the meaning of the cancer experience. Participants in the couple coping training condition showed improvement in observational measures of couple coping that was maintained at 6-month follow-up, as well as in sexual functioning (i.e., fewer sexual problems, better sexual self-schema, greater perceived partner-acceptance, lesser decline in sexual intimacy), and a reduction in psychological distress for women (also at 6- and 12-month follow-up times) and a trend toward reduction in distress for men at posttest (Scott et al., 2004). The efficacy of these three interventions (Christensen, 1983; Kuijer et al., 2004; Scott et al., 2004) in cancer populations is heartening, and suggests that couple-based programs to enhance growth might also be promising.

Efficacy of Couple-Based Interventions Across Populations

In a review of empirical studies of couple-based interventions that was not restricted to the cancer literature, Epstein and Baucom (2002) found that behavioral couple therapy (i.e., interventions designed to teach communication and other skills and directly and adaptively modify couple interactions) met Chambless and Hollon's (1998) criteria for an efficacious and specific therapy. In other words, behavioral couple therapy was shown superior to wait-list and placebo interventions in studies by several independent research teams (Epstein & Baucom, 2002). Cognitive behavioral couple therapy, which incorporates cognitive restructuring (i.e., modification of maladaptive thinking patterns) into behavioral couple therapy, shows results similar to behavioral couple therapy (Epstein & Baucom, 2002). This therapy modality currently meets criteria for a possibly efficacious treatment (Epstein & Baucom, 2002). As such, growth-promoting interventions incorporating

behavioral and cognitive elements are promising avenues for exploration among cancer survivors and their partners.

Summary

The research reviewed above highlights the importance of couple-based psychosocial interventions targeting women with breast cancer and their partners. Not only is this a population that experiences great distress, but it is also a group with a high potential for growth. Interventions designed to reduce distress and to promote positive functioning are clearly warranted. Couple-based treatments are uniquely equipped for this purpose, inasmuch as they can use the partner and the relationship to promote positive functioning and reduce distress in each person (not just the patient), as well as in the couple's relationship. Research to date supports the effectiveness of behavioral and cognitive-behavioral couple-based interventions in cancer and non-cancer populations, as well as for individual-based treatments to promote growth. As such, the current study set out to investigate the efficacy of a couple-based intervention to reduce distress and promote positive functioning in breast cancer survivors and their partners.

The Current Study

The current study had three chief aims. The first was to investigate the nature of posttraumatic growth in the couple context. That is, we attempted to determine whether partners' growth scores were related, as well as whether marital quality facilitated posttraumatic growth and posttraumatic growth, in turn, enhanced relationship adjustment. Second, we explored the impact of gender on posttraumatic growth and the trajectory of growth over time. Finally, we assessed the effectiveness of a couple-based intervention that incorporated therapeutic efforts to promote posttraumatic growth, to determine whether it

served to increase posttraumatic growth in general, bring couples to a more shared perspective of growth in the cancer experience, and increase the relational nature of posttraumatic growth. Each of these goals and their corresponding hypotheses are presented below and were tested using a controlled, longitudinal design.

Posttraumatic Growth in the Couple Context

This study is among the first to investigate the nature of couples' growth in the wake of a trauma such as breast cancer. As such, we are unsure whether growth is a relational or strictly individual phenomenon. The current study examined reports of posttraumatic growth at two time points. Greater similarity and association in partners' reported growth (termed the "relational" nature of posttraumatic growth) would suggest that the construct was more relational in nature. However, greater similarity and association between an individual's pretest and posttest scores, relative to between partners' scores, would suggest that posttraumatic growth was a more individual phenomenon, although the construct of posttraumatic growth could be both individual and relational in nature. Posttraumatic growth is predicted to be fairly relational in nature. If growth is a relational phenomenon, one partner may show growth (operationalized as Benefit Finding or PTGI score) to a greater extent or sooner than the other and then help the other partner to grow, through support, modeling, and/or provision of positive schemas. Alternatively, the couple might engage in constructive rumination together, and thus grow simultaneously.

In two samples of breast cancer survivors and their partners, partners' PTGI scores were correlated (approximate $r = .20$) with each other (Manne et al., 2004; Weiss, 2004a). Similarly, when married parents whose infants were leaving a newborn intensive care unit were studied, scores on the "seeking meaning" subscale on the Ways of Coping Checklist

(which includes items such as “tried to rediscover what is important in life”, an element of posttraumatic growth) were correlated ($r = .45, p < .01$; Affleck, Tennen, & Rowe, 1990). However, mothers’ and fathers’ scores on benefit appraisal were uncorrelated ($r = 0.02, ns$) with each other (Affleck et al., 1990).

Next, the current study attempted to explore the association between relationship functioning and posttraumatic growth. It was predicted that better pretest relationship functioning (defined as greater relationship adjustment) would predict higher PTGI scores. Prior studies have found relationship factors to predict posttraumatic growth. For instance, growth among husbands of women with breast cancer has been shown to be predicted by commitment to the marital relationship and also by greater growth among their wives (Weiss, 2004a). In addition, husbands’ growth was correlated with support from their wives (Weiss, 2004a). Among the breast cancer survivors themselves, positive emotional support in the partner relationship was related to growth. Weiss has argued that partners provide each other with comfort, support, a positive emotional environment, and new schemas, all of which should facilitate constructive rumination in the posttraumatic growth process (Weiss, 2004a, 2004b). Negative support, on the other hand, is analogous to social constraints, which are defined as negative responses by the social network to attempts at disclosure, including unwillingness to listen or help and insensitive comments or actions, leading to an unwillingness on the part of the patient to express oneself (Lepore, Silver, Wortman, & Wayment, 1996; Zakowski et al., 2003; Zakowski, Ramati, Morton, Johnson, & Flanigan, 2004). Among mothers whose infants died of Sudden Infant Death Syndrome, intrusive thoughts were positively related to depressive symptoms in socially constrained mothers (receiving negative support), but negatively related to depressive symptoms among other

mothers (Lepore et al., 1996). Among breast cancer survivors, talking about cancer was related to lower levels of depression and greater well-being, and social constraint, to greater depression and lower well-being (Cordova, Cunningham, Carlson, & Andrykowski, 2001b). The authors have argued that positive social support may facilitate constructive rumination and help people understand the trauma, learn coping strategies, and better control emotions, whereas negative support or social constraint could interfere with constructive rumination by increasing stress and inhibiting productive and constructive conversation (Cordova et al., 2001b; Lepore et al., 1996; Zakowski et al., 2004). It follows, then, that higher-functioning couples, who are more likely to provide each other with comfort, positive support, and a positive emotional environment, and less likely to provide negative support or impose social constraint, should also show greater individual posttraumatic growth at pretest and posttest. Further, it was hypothesized that greater PTGI scores would predict better relationship adjustment, in that growth should facilitate individual and couple functioning. Consistent with this expectation, Germino and colleagues (1995) found that the experience of meaning in the cancer experience predicted greater relationship adjustment. These effects were hypothesized to hold over and above the effects of the intervention in enhancing relationship functioning, support, and posttraumatic growth.

In sum, posttraumatic growth was predicted to be fairly relational in nature. Further, it was hypothesized that marital quality would serve as a resource to facilitate posttraumatic growth, and that, in turn, that growth would enhance relationship adjustment.

Gender and Time Effects

A second set of goals was to explore the relationship between gender and posttraumatic growth and to investigate the trajectory of growth over time as a function of

gender. The research on gender effects is somewhat exploratory in nature, because prior research is inconsistent in the areas of gender differences. It was considered likely that women, who experienced the trauma of breast cancer more directly than do their husbands, would show higher PTGI scores. There is some evidence in the literature that women generally may tend to experience more posttraumatic growth than do men (Linley & Joseph, 2004; Park, Cohen, & Murch, 1996; Polatinsky & Esprey, 2000; Tedeschi & Calhoun, 1996; Weiss, 2002; Yaskowich, 2003), although this result is not always found (e.g., a studies of cancer survivors by Collins et al., 1990; Widows, 2005). In addition, when participants married to each other were examined in a study of parents whose infants were leaving a newborn intensive care unit, mothers and fathers did not differ in benefit or harm appraisal (Affleck et al., 1990).

It was anticipated that over time, both husbands and wives would show an increase in PTGI scores, as they had more time to absorb the shock of diagnosis and reflect on the breast cancer process. S. E. Taylor posits that the attribution process may be more important later in illness, because earlier on, people are more focused on medical details and decisions and emotional responses to the diagnosis and treatment (S. E. Taylor et al., 1984); she posits that these worries must dissipate before people are able to process causal attributions (S. E. Taylor et al., 1984). The same may be true for processing of growth (Calhoun & Tedeschi, 1998b). In support of this hypothesis, some research with breast cancer survivors suggests a positive relationship between time since diagnosis and posttraumatic growth (Cordova et al., 2001a; Sears et al., 2003). Interestingly, the opposite relationship was found by Weiss (2004a; 2004b) in her sample of breast cancer survivors and their husbands. Yet other researchers have found no relationship between time-since-diagnosis and benefit finding

(Andrykowski et al., 1993; Dirksen, 1995; Lechner et al., 2003; Thompson & Pitts, 1993). Weiss (2004b) suggests that a possible confound in comparing results from these different studies is that her investigation excluded women who had been diagnosed less than one year earlier, whereas Cordova's (and Lechner's) did not. Further, it was hypothesized that husbands' and wives' scores would become more similar over time, as they might engage in constructive rumination together.

In sum, we predicted that women would experience greater posttraumatic growth than men, and that growth scores would increase over time for all participants. We also expected that male and female partners' scores would become more similar over time.

Effectiveness of a Couple-Based Intervention to Enhance Posttraumatic Growth

The final aim of this study was to test the effectiveness of a couple-based, cognitive-behavioral intervention that incorporated efforts to increase posttraumatic growth and general relationship functioning in the wake of breast cancer diagnosis and treatment. It was hypothesized that couples in the intervention condition would experience a greater increase in PTGI scores than couples in a treatment-as-usual comparison condition. Prior research provides support for the effectiveness of cognitive-behavioral interventions for couples (Epstein & Baucom, 2002). In addition, other couple-based intervention studies have been effective among couples facing cancer (e.g., Christensen, 1983; Kuijer et al., 2004; Scott et al., 2004), and individual-based interventions among women with breast cancer have been shown to enhance reports of benefit in the cancer experience (e.g., Antoni et al., 2001; Lieberman et al., 2003; Stanton et al., 2002). Moreover, it was predicted that couples in the treatment condition would come to a more shared understanding of growth in the cancer experience, compared to control couples. That is, at posttest, relationship enhancement

couples were expected to experience more similar amounts of growth than would treatment-as-usual couples, because intervention couples would be encouraged to face cancer and its treatment as a team and taught skills to facilitate the process¹. For this same reason, posttraumatic growth was expected to be a more relational phenomenon for treatment couples than for control couples. That is, partners' posttest posttraumatic growth scores and changes in growth scores over time were predicted to be more closely related among treatment couples than among control couples.

In sum, it was hypothesized that couples in the relationship enhancement intervention would experience a greater increase in posttraumatic growth and come to a more similar experience of growth in the cancer experience, compared to treatment-as-usual couples. Further, posttraumatic growth was predicted to be more relational in nature among intervention couples.

¹ Thus, at posttest, we expected women in the intervention condition to show the highest PTGI scores, followed by men in the intervention condition, then by women in the treatment-as-usual condition, and finally, by men in the treatment-as-usual condition.

II. METHOD

Participants

Participants consisted of 36 heterosexual couples in which the female partner was recently diagnosed with early stage (i.e., Stage I, Stage II, or Stage IIIa) breast cancer. Women ranged in age from 30 to 75 years, with a mean age of 51.48 years ($SD = 11.79$). On average, women had 15.15 years of education ($SD = 2.46$). Women reported their ethnicity as follows: White ($N = 31$; 86.1%), Black ($N = 2$; 5.6%), Hispanic ($N = 1$; 2.8%), Asian or Pacific Islander ($N = 1$; 2.8%), and Other ($N = 1$; 2.8%). Men ranged in age from 35 to 85 years, with a mean age of 52.76 years ($SD = 12.83$). On average, men had 15.4 years of education ($SD = 3.39$). Men reported their ethnicity as follows: White ($N = 33$; 91.7%), Black ($N = 1$; 2.8%), Hispanic ($N = 1$; 2.8%), and Other ($N = 1$; 2.8%). For couples in the study, the median joint yearly income was \$75, 000 to \$99, 999.

To participate, couples were required to have been either married or living together in a committed heterosexual relationship for at least the past 12 months. Participation was restricted to heterosexual couples, because same-sex couples may grapple with different issues than heterosexual couples (e.g., partner's fear of developing breast cancer). By the woman's report, the couples had been married or living together from one to 52 years, with a mean of 22 years ($SD = 14.58$; husbands reported a mean of 21.69 years, $SD = 14.72$). Couples reported one to four children, with an average of 2 children ($M = 2.41$, $SD = 1.08$ by the woman's report; $M = 2.16$, $SD = 1.11$ by the man's report). Couples were excluded if

either partner did not speak English or had a current or past diagnosis of severe and persistent mental illness (e.g., a diagnosis of schizophrenia).

Time from diagnosis to study entry ranged from zero to 15 months, with a mean of 3.83 months ($SD = 3.66$). Of those women whose medical status had been confirmed, nine were diagnosed with Stage I breast cancer, 12 with Stage IIa or IIb breast cancer, and one with Stage IIIa breast cancer. Women with later stage breast cancer were excluded from participation, because their prognosis is less optimistic, and consequently, it was believed that they might be grappling with different issues than women with earlier-stage cancer (e.g., more severe fear of mortality, end-of-life planning, etc. in the later-stage patients). For this same reason, women with prior cancer diagnoses were also excluded. In addition to the interventions provided by the study, 14 men and 13 women reported using other community or psychosocial interventions.

Participants were recruited as part of two studies (a pilot study and a larger-scale study) being conducted at both the University of North Carolina (UNC) Hospital and Duke University's Medical Center. The following procedures were used to recruit participants for the pilot study. Before women attended their scheduled appointments at the UNC Hospital's Multidisciplinary Breast Clinic/Conference, a member of the research team reviewed the Summary of Medical Records for women scheduled to attend in order to determine their eligibility for the present study. No other information was retained. If information about relationship status was not available from records, the research team member obtained this data directly from the women. UNC's Committee on the Protection of the Rights of Human Subjects (Medical School IRB) provided authorization to view this information and approach

women for recruitment purposes. Once recruited, women signed a HIPAA form providing the team with access to their medical records to determine eligibility.

Either a member of the research team or a patient counselor at UNC Hospital who worked with cancer patients attended the Multidisciplinary Breast Clinic/Conference. Afterwards, when appropriate, one of these researchers/counselors made initial contact with patients who were married or in a committed relationship. They approached the woman after the consultation in which she was informed of her diagnosis, but only with the permission of that patient's oncologist.

Because receiving a diagnosis of breast cancer can overwhelm patients, the researchers did not seek consent for participation at that time. Rather, the researchers or counselors provided the women with a brochure and explanation of the study and asked the women to provide their telephone number and sign a brief form permitting project staff to telephone them with additional information. If the couple then wished to receive more information or agreed to take part in the study, the researcher made an appointment for the couple with a member of the research team to provide additional information, answer questions, and obtain consent.

If a counselor, physician, or member of the research team deemed a woman unduly distressed upon hearing her diagnosis, they decided whether to approach the woman about the study during her initial visit. When inappropriate, or if the woman could not be contacted for some other reason (e.g., multiple appointments without breaks), a member of the research team telephoned the woman and her partner to describe the study, following the procedures outlined above. A similar recruitment procedure was followed for recruitment of participants

in the larger study, which is ongoing and is being conducted at both UNC Hospital and at Duke University Medical Center.

In both the pilot and larger studies, once participants had consented to participation in the study, they completed an initial assessment that involved several questionnaires and interaction tasks. A research assistant who was blind to the treatment condition to which the couple was assigned completed this assessment. The couple also completed similar post-test, 6-month follow-up, and 12-month follow-up assessments. After assessment, participants were assigned to treatment conditions using a block randomized procedure, such that in the pilot study, of every six couples, three were randomly assigned to the couple-based relationship enhancement intervention condition and three, to treatment-as-usual. In the larger study of 292 couples, a block randomization procedure was again used, such that for every 12 couples at a given site (i.e., UNC or Duke University Medical Center), five were randomly assigned to the couple-based relationship enhancement intervention; five to a new, couple-based cancer education condition; and the remaining two, to treatment-as-usual. To maintain consistency in the current study's sample across pilot and larger-scale participants, only data from couples in the relationship enhancement intervention and treatment-as-usual conditions were used, because the cancer education condition did not exist in the pilot study.

After completion of the six sessions of the couple-based intervention or the same amount of time for treatment-as-usual couples (approximately 14 weeks), couples returned for similar post-test assessments. The couples returned again six and 12 months after the posttest assessment for follow-up assessments involving the same questionnaires and assessment tasks. In the pilot study, each couple was compensated with \$50 per assessment, for a total of \$200. In the larger-scale study, each couple received \$40 per assessment, plus

\$20 for completing daily diary measures at pretest and prior to six-month follow-up, again for a total of \$200.

Couples were randomly assigned to one of the couple-based interventions (i.e., couple-based relationship enhancement or couple-based cancer education) or to treatment-as-usual. Relationship Enhancement consisted of six bi-weekly 75-minute sessions with a psychology graduate student, doctoral-level psychologist, or social worker. Sessions were provided individually to each couple (rather than in a group format). The sessions addressed issues such as: the importance of approaching cancer as a couple, medical information about breast cancer, effective decision-making and problem-solving skills, skills for communicating thoughts and feelings, providing each other with practical help, maintaining positives during the cancer experience, reflecting on growth in the cancer experience, and promoting healthy sexual functioning during and after cancer treatment. A brief outline of the six sessions is provided in the Appendix. The therapist taught skills to help the couple work together as a team facing cancer and its associated challenges. Couples were taught to apply these skills in-session to their particular life circumstances, and they were encouraged to practice and use them in daily life, outside of sessions. Sessions were audiotaped and videotaped for the purposes of supervision and treatment protocol adherence.

Couples who were assigned to treatment-as-usual were provided with a list of Internet resources, educational brochures, and information on local community resources. They completed all assessments, just as those participants assigned to Relationship Enhancement and Cancer Education conditions; however, they received no active or structured intervention by the research team.

Procedure

At each assessment period (pretest, posttest, 6-month and 12-month follow-up), both partners completed self-report measures of individual and relationship functioning. Because of Relationship Enhancement's emphasis on communication skills, at each assessment point, couples also engaged in three videotaped conversations on cancer-related issues. In one such conversation, the female partner shared thoughts, feelings, and/or concerns about cancer, and the male partner tried to listen supportively. In another conversation, their roles were reversed. In the remaining interaction, the couple decided upon a cancer-related issue requiring a decision and attempted to problem-solve around that issue. The current study used both pretest and posttest data. Although participants completed several self-report measures, only those pertinent to the current research questions are described below.

The current study includes pretest data from 23 couples in the Relationship Enhancement condition (of which seven are drawn from the pilot study and 16, from the larger study) and 13 couples from the treatment-as-usual condition (of which seven are drawn from the pilot study, and six, from the larger study). Posttest data were available from 16 relationship enhancement couples (seven from the pilot study and nine from the larger study) and 10 treatment-as-usual couples (six from the pilot study and four from the larger study). Of those participants who did not provide posttest data, five had not yet scheduled the second assessment but intended to do so, and five had dropped out of the study. Of those who dropped out, two couples stated that it was too difficult to attend treatment sessions, one couple felt too overwhelmed by life circumstances to continue, another couple dropped after being informed that cancer had metastasized to the brain, and the fifth couple gave no reason for terminating participation. Participants who completed and did not complete posttest

assessments were similar on all demographic variables. In all statistical analyses, the presence of complete (i.e., pretest *and* posttest) data and dropout status were tested to determine whether they improved model fit. The presence of complete data improved model fit in models predicting growth, but dropout status did not improve fit in any models.

Measures

Dyadic Adjustment Scale – Short Form (DAS – 7)

The Dyadic Adjustment Scale – Short Form (DAS – 7; Sharpely & Rogers, 1984) consists of seven items, with three assessing whether partners agree or disagree on issues in certain domains, and three assessing frequency of couple-level activities in the past month. One sample item assesses agreement on “amount of time spent together” (where a Likert-style score of zero means “always disagree”, and five, “always agree”); another assesses frequency of “work[ing] together on a project” (where zero means “never”, and five, “more than once a day”). A final item assesses overall relationship satisfaction, with a score of zero corresponding to the rating of “extremely unhappy”, and six, to “perfect”. The DAS-7 has good reliability, with a Cronbach’s alpha ranging from about .78 to .84 (Hunsley, Best, Lefebvre, & Vito, 2001; Hunsley, Pinsent, Lefebvre, James-Turner, & Vito, 1995). In addition, it has convergent validity with the full Dyadic Adjustment Scale (DAS) and, compared to that measure, similar relationships to other measures of marital functioning, such as the Kansas Marital Satisfaction Scale and the Emotional Self-Disclosure Scale (Hunsley et al., 2001; Hunsley et al., 1995). The DAS has reasonable sensitivity, specificity, and positive predictive validity in predicting relationship distress (Heyman, Sayers, & Bellack, 1994). Furthermore, it can be used to discriminate between distressed and non-distressed marriages (Hunsley et al., 2001).

In the current study, men's pretest DAS-7 scores ranged from 17 to 32 points, with a mean of 25.54 points ($SD = 4.34$), whereas women's scores ranged from 15 to 36, with a mean of 25.88 ($SD = 4.78$). At posttest, men's scores ranged from 14 to 35 ($M = 25.94$, $SD = 4.57$) and women's scores, from 14 to 34 ($M = 26.65$, $SD = 4.61$). These values are similar to those reported in normative samples (Hunsley et al., 2001; Hunsley et al., 1995). In the current study, inter-item reliability was high. Cronbach's alpha for both men's and women's pretest DAS-7 was .79. At posttest, alpha was .77 for women and .82 for men.

When data were missing, the missing items were inspected to assess whether there was any systematic pattern in omitted items. After concluding that there was not, the proportion of missing items was examined. When greater than half of the items comprising any given scale were omitted, that person's scale score was considered "missing" for the purposes of analyses. When half or fewer items were missing, the average of that person's items for each scale/subscale were used to impute the missing item(s) in the calculation of scale scores. Data on missing items for each measure are provided in Table 1.

Biographical, Medical, and Health Behavioral Information Sheet

Both partners completed a form that asked for biographical information, such as age, education, salary, profession, ethnic status, length of committed relationship, number of children, and age of children, if any. This form also asked participants to report involvement in other psychosocial and community interventions (i.e., type and frequency of interventions such as support groups, therapy, spiritual counseling, etc.). Finally, this form inquired about general health behaviors, including smoking, drinking alcohol, exercise, nutrition, and sleep patterns. The research team consulted the female partner's medical chart to determine tumor size, involvement of lymph nodes, and stage of pathology.

Benefit Finding

Benefit Finding is a 17-item measure developed by Antoni and colleagues to assess an individual's finding meaning and benefit from the experience of breast cancer (Antoni et al., 2001). Participants responded to each statement regarding benefit from the breast cancer experience (e.g., "having breast cancer has helped me take things as they come") by selecting one of five Likert-style responses ranging from one ("not at all") to five ("extremely"). This is a unitary-scale inventory. The scale has demonstrated strong psychometric properties (e.g., Cronbach's $\alpha = 0.95$, reasonable reliability and validity) and has been found to be responsive to psychosocial interventions with breast cancer patients (Antoni et al., 2001). So that male partners might also complete this measure, in their questionnaires, the stem "having had breast cancer..." instead read "my partner's having had breast cancer..."

In the current sample, men's mean pretest scores averaged 57.25 points (range = 17 to 80, $SD = 16.39$) and women's mean pretest scores, 60.73 points (range = 25 to 83, $SD = 14.29$). At posttest, men's mean score was 54.81 (range = 29 to 77, $SD = 14.00$) and women's mean score was 62.16 (range = 29 to 81, $SD = 14.43$). These values are similar to those reported by Antoni and colleagues in their study of benefit finding among women with early stage breast cancer (Antoni et al., 2001). Inter-item reliability for this measure was extremely high. At pretest, Cronbach's α for Benefit Finding for women was .93 and for men was .96. At posttest, α was .95 for women and .91 for men.

Posttraumatic Growth

The Posttraumatic Growth Inventory (PTGI) is a 21-item measure that assesses self-perception of growth following trauma (Tedeschi & Calhoun, 1996). A sample item is "I have a greater sense of closeness with others". Participants responded by selecting one of six

Likert-style responses per item, ranging from zero (“I did not experience this change as a result of my crisis”) to five (“I experienced this change to a very great degree as a result of my crisis”). In addition to a scale summary score, the inventory contains five subscales to measure growth in multiple domains: Relating to Others, New Possibilities, Personal Strength, Spiritual Change, and Appreciation of Life. Each of these subscales and the overall scale show substantial internal consistency (Cronbach’s alpha for the entire scale is .90; alphas for subscales range from .67 to .85) (Tedeschi & Calhoun, 1996). Studies using the PTGI with breast cancer survivors and their husbands have found even higher Cronbach’s alphas: from .91 to .97 for the overall scale and alphas from .78 to .93 for subscales (Cordova et al., 2001a; Manne et al., 2004; Weiss, 2004a). The PTGI Summary scale scores and scores on the Relating to Others subscale were considered most appropriate in addressing the relationship between marital adjustment and posttraumatic growth in the wake of breast cancer; as such, analyses will consider both Summary and Relating to Others scales.

Both Benefit Finding and PTGI measures were selected for use in the current study. Benefit Finding has been used to demonstrate change in a treatment outcome study for individuals with breast cancer (Antoni et al., 2001), and the PTGI has been widely used, both within and outside of the cancer literature, including in the context of couples facing breast cancer (e.g., Manne et al., 2004; Weiss, 2002, 2004a). Thus, to enable comparison with other studies, and because the PTGI Relating to Others subscale was of theoretical interest, both measures were selected.

In the current study, the mean pretest PTGI Summary Score for men was 50.18 (range = 0 to 105, $SD = 28.47$) and for women was 65.10 (range = 8 to 99, $SD = 24.81$). At posttest, the mean score for men was 52.41 (range = 15 to 82, $SD = 20.29$) and for women was 63.85

(range = 16 to 94, $SD = 21.72$). These scores are similar to (or slightly higher than) those from other studies of couples facing breast cancer (Cordova et al., 2001a; Manne et al., 2004; Weiss, 2004a). On the Relating to Others subscale, men's mean pretest score was 19.06 (range = 0 to 35, $SD = 9.56$) and women's mean pretest score was 24.19 (range = 8 to 35, $SD = 7.79$); at posttest, men's mean score was 20.45 (range = 6 to 21, $SD = 6.96$) and women's mean score was 23.10 (range = 8 to 32, $SD = 7.00$). These scores are similar, or slightly higher than, scores reported in other studies of breast cancer survivors (Bellizzi & Blank, 2006; Cordova et al., 2001b; Manne et al., 2004). In the current study, inter-item reliability for the PTGI Summary scale was extremely high. Cronbach's alpha for PTGI Summary scores at pretest was .97 for women and .98 for men. At posttest, alpha was .96 for women and .95 for men. Reliability for the PTGI Relating to Others Subscale, again, was high. At pretest, alpha was .91 among women and .95 among men; at posttest, it was .91 among women and .90 among men.

III. RESULTS

Before conducting the major statistical analyses, data were carefully examined. Data were visually inspected for the presence of outliers. No obvious outliers were visible, and the decision was made to retain somewhat more extreme data points, given that in relatively small samples, one cannot definitively conclude that an observation is not part of the population of interest, and removing data decreases statistical power. Diagnostics were performed, and data were examined to ensure they met the assumptions of each statistical test. Violations of assumptions were rare, and minor at most. Alpha was set at .05 for all statistical analyses, in an effort to balance the risks of Type I and Type II errors with a small sample and multiple statistical tests. Scores on continuous variables were grand-mean-centered, according to the suggestions of Aiken and West (1991) and Raudenbush and Bryk (2002).

To investigate posttraumatic growth in couples facing breast cancer, as well as the effectiveness of the current, couple-based intervention in facilitating that growth, this study employed hierarchical linear modeling as a general data analytic strategy. Hierarchical linear modeling is conceptualized “as a hierarchical system of regression equations” (Hox, 1998, p. 148). It uses maximum likelihood estimation (rather than the ordinary least squares method, as in multiple regression). It permits modeling of factors hypothesized to contribute to posttraumatic growth, allowing for multiple levels of dependency among those factors. For instance, time point (i.e., pretest or posttest) is nested within individuals, and individuals are

nested within couples. Between-subject (or between-couple) factors include gender and treatment condition (i.e., intervention vs. treatment-as-usual). Thus, this technique permits analysis of the relative contributions of time, gender, membership in a particular couple, and treatment condition in predicting PTGI scores, as well as interactions among these different variables at different levels of nesting (e.g., a gender by treatment group by time interaction). Further advantages of HLM include its allowance of missing data and adjustments for heteroscedasticity in data. Assumptions of hierarchical linear modeling include that the dependent variable's data be distributed in a linear and continuous manner, as well as homoscedasticity in data, and that the error variance at each level be normally distributed around a mean of zero, with errors at each level independent of errors at another level.

All models were first tested to determine whether allowing a heterogeneous variance structure (i.e., different variance structures at different time points) would significantly improve model fit. This test was conducted by using the Likelihood Ratio Test using Full Information Maximum Likelihood (FIML) models with and without heterogeneous variance structures and comparing those models for an improvement in model fit (comparing deviances using the χ^2 statistic). In all cases, this addition did not improve fit, and as such, the results presented do not incorporate heterogeneous variance into the models. In addition, the models subsequently were tested using Restricted Maximum Likelihood (REML), because REML provides more accurate estimates of random effects than does FIML. In all models, multiple predictor and interaction terms were used. To improve power and model stability, and to permit unambiguous testing of lower-order interaction terms, all nonsignificant 4-way interaction terms were dropped from the models before interpreting results. Because data from the current study include assessments from only two individuals

and at only two time points, intercepts were allowed to vary randomly, but slopes were fixed in all models, according to the recommendations of Atkins (2005). In other words, models allowed for between-individual and between-couple variability in intercepts (i.e., pretest scores), but constrained pretest-posttest slopes to be invariant across individuals and couples. Individual trajectories over time for Benefit Finding, PTGI Summary scale, PTGI Relating to Others subscale, and DAS-7 scores are shown in Figures 1, 2, 3, and 4, respectively.

Certain covariates of relationship adjustment and growth were considered of theoretical importance (i.e., gender, assessment point, and treatment condition), and as such, were incorporated into every model. Other covariates were considered of potential importance, and therefore, were tested in each model for potential improvement in model fit (tested using REML with linear contrasts and the Wald F test). When nonsignificant, these covariates were dropped from the model. For the models predicting growth, covariates tested but not retained include: age, ethnicity, joint yearly income, number of years of education, cancer stage², time since diagnosis at study entry, involvement in other psychosocial or community interventions, and whether the coupled dropped out of the study. For the models predicting DAS-7 scores, covariates tested, but not retained, include: age, number of children, the presence of complete data for that participant (i.e., both pretest *and* posttest), ethnicity, education, joint yearly income, stage, time since diagnosis at study entry, involvement in other psychosocial or community interventions, and whether the coupled dropped out of the study. The presence of complete data significantly improved model fit in models predicting Benefit Finding, Posttraumatic Growth Inventory, and Posttraumatic

² In this study, disease stage was not related to benefit finding, although other studies with a larger range of cancer stages found different results (Lechner et al., 2003).

Growth Inventory Relating to Others subscale scores. As such, this variable was retained as a predictor in the latter two models³. Time married significantly improved model fit in all models predicting DAS-7 scores, and as such, was retained as a predictor in these models.

In comparison to the Posttraumatic Growth Inventory (PTGI) and its Relating to Others subscale (PTGI-I), the Benefit Finding measure was a considerably less sensitive measure. As such, results for analyses including the Benefit Finding scale will be presented in tables, but discussed in less detail in the text of this document.

Posttraumatic Growth in the Couple Context

Posttraumatic Growth as a Relational Phenomenon

The first hypothesis was that posttraumatic growth would be a relational, rather than individual, phenomenon. In other words, it was thought that if partners processed growth experiences together, shared schemas, modeled positive change for each other, and reinforced each other's benefit finding, then they also would report similar amounts of growth. To assess this question, an intraclass correlation coefficient (ICC) was computed for each growth measure. The ICC assesses the proportion of total observed variability in a measure that is attributable to differences between groups (i.e., in this study, between individuals and between couples). The ICC also can be interpreted as a correlation coefficient, pooling across groups (i.e., correlation between pretest and posttest scores across individuals, or correlation between partners' scores across couples). An ICC differentiates within- and between-group variability and also incorporates information about actual scale

³ The presence of complete data was not retained as a predictor in the Benefit Finding model, because its inclusion reduced available between-couple variability to the point that couple-level random effects were impossible to estimate. Because the couple-level random effects were of greater theoretical interest than the presence of complete data, the decision was made to retain couple-level random effects in the model, rather than retain the presence of complete data as a predictor.

values, rather than simply covariance. In these ways, an ICC differs from a correlation coefficient, which is computed using overall scale variability and covariance in scores, without taking into account actual scores. The higher the couple ICC, the more similar partners' scores are. The higher the individual ICC, the more similar an individual's pretest and posttest scores are. Thus, a high couple ICC would suggest that growth was fairly relational in nature, whereas a high individual ICC would suggest that growth was more individual in nature.

The following ICCs were calculated in the context of hierarchical linear models in which the outcome measures were either Benefit Finding (see Table 2), PTGI (see Table 3), or PTGI-I (see Table 4), and the predictors were gender, assessment point, treatment condition, and DAS-7 score (and all possible interactions among these four variables), as well as the availability of posttest data (for PTGI and PTGI-I models). In all three models, time was nested within individuals, and individuals were nested within couples. The models are presented below. For Benefit Finding, the model was, for time i in individual j in couple k :

$$\begin{aligned} \text{Benefit Finding}_{ijk} = & \gamma_{000} + \gamma_{001}\text{Treatment Condition}_k + \gamma_{010}\text{Gender}_{jk} + \\ & \gamma_{100}\text{Time}_{ijk} + \gamma_{200}\text{DAS-7}_{ijk} + \gamma_{300}\text{Time}_{ijk} \times \text{DAS-7}_{ijk} + \gamma_{400}\text{Gender}_{jk} \times \text{Time}_{ijk} + \\ & \gamma_{500}\text{Time}_{ijk} \times \text{Treatment}_k + \gamma_{600}\text{Gender}_{jk} \times \text{DAS-7}_{ijk} + \gamma_{700}\text{Treatment}_k \times \text{DAS-7}_{ijk} + \\ & \gamma_{020}\text{Gender}_{jk} \times \text{Treatment}_k + \gamma_{800}\text{Gender}_{jk} \times \text{Time}_{ijk} \times \text{Treatment}_k + \\ & \gamma_{900}\text{Gender}_{jk} \times \text{Time}_{ijk} \times \text{DAS-7}_{ijk} + \gamma_{1000}\text{Gender}_{jk} \times \text{Treatment}_k \times \text{DAS-7}_{ijk} + \\ & \gamma_{1100}\text{Time}_{ijk} \times \text{Treatment}_k \times \text{DAS-7}_{ijk} + \gamma_{1200}\text{Gender}_{jk} \times \text{Time}_{ijk} \times \text{Treatment}_k \times \text{DAS-} \\ & 7_{ijk} + u_{00k} + u_{0jk} + r_{ijk}. \end{aligned}$$

For PTGI, the model was, for time i in individual j in couple k :

$$\begin{aligned} \text{PTGI}_{ijk} = & \gamma_{000} + \gamma_{001}\text{Complete Data}_k + \gamma_{002}\text{Treatment Condition}_k + \\ & \gamma_{010}\text{Gender}_{jk} + \gamma_{100}\text{Time}_{ijk} + \gamma_{200}\text{DAS-7}_{ijk} + \gamma_{300}\text{Time}_{ijk} \times \text{DAS-7}_{ijk} + \\ & \gamma_{400}\text{Gender}_{jk} \times \text{Time}_{ijk} + \gamma_{500}\text{Time}_{ijk} \times \text{Treatment}_k + \gamma_{600}\text{Gender}_{jk} \times \text{DAS-7}_{ijk} + \\ & \gamma_{700}\text{Treatment}_k \times \text{DAS-7}_{ijk} + \gamma_{020}\text{Gender}_{jk} \times \text{Treatment}_k + \\ & \gamma_{800}\text{Gender}_{jk} \times \text{Time}_{ijk} \times \text{Treatment}_k + \gamma_{900}\text{Gender}_{jk} \times \text{Time}_{ijk} \times \text{DAS-7}_{ijk} + \\ & \gamma_{1000}\text{Gender}_{jk} \times \text{Treatment}_k \times \text{DAS-7}_{ijk} + \gamma_{1100}\text{Time}_{ijk} \times \text{Treatment}_k \times \text{DAS-7}_{ijk} + \\ & \gamma_{1200}\text{Gender}_{jk} \times \text{Time}_{ijk} \times \text{Treatment}_k \times \text{DAS-7}_{ijk} + u_{00k} + u_{0jk} + r_{ijk}. \end{aligned}$$

The PTGI-I model was identical to the PTGI model, substituting PTGI-I_{ijk} in the place of PTGI_{ijk} as the outcome.

For Benefit Finding, the couple ICC was .0549 (5.49%, *ns*) and the individual ICC was .6324 (63.24%, $p < .01$). These findings indicate that between-couple differences accounted for approximately 5% of the total observed variability in Benefit Finding, and that between-individual differences accounted for approximately 63% of the total observed variability in Benefit Finding (alternatively, one might say that across couples, the correlation between partners' scores was .05, and across individuals, the pretest-posttest correlation in scores was .63). For the PTGI, the couple ICC was .2606 (26.06%, *ns*), and the individual ICC was .5161 (51.61%, $p < .01$). For the PTGI-I, the couple ICC was .1653 (16.53%, *ns*), and the individual ICC was .5064 (50.64%, $p < .01$). For the PTGI and PTGI-I measures, the couple ICCs are substantial, suggesting that one's partner likely impacts one's posttraumatic growth. However, the individual ICCs are notably higher than couple ICCs, suggesting that posttraumatic growth is a predominantly individual phenomenon. As such, the hypothesis that posttraumatic growth would be a relational, rather than individual, phenomenon received only partial confirmation.

In hierarchical linear modeling, when nesting at one level (i.e., within individual or within couple) is nonsignificant, the model may be altered such that data are no longer

considered nested. However, in the current study, despite nonsignificant ICCs, the nesting structure (i.e., time within individual and individual within couple) was maintained.

Although nonsignificant (possibly due to low power), ICCs generally were still reasonably large in magnitude and were consistent with the data structure. That is, in the current study, data at different time points were collected from the same individuals, and individuals were recruited within couples. Thus, the data were still considered dependent, rather than independent. In addition, there was theoretical cause to partition variability in this nested manner; because individual and relationship factors were posited to influence growth, it seemed appropriate to model between-person and between-couple variability in growth scores.

Impact of Relationship Functioning on Posttraumatic Growth

The second hypothesis was that positive relationship adjustment would serve as a resource that would facilitate the experience of growth in the cancer experience. To test this hypothesis, the same statistical models were used as in Hypothesis #1 above. A main effect of DAS-7 scores was predicted. In all three models, the effect of DAS-7 was nonsignificant. As such, there appears to be no effect of relationship adjustment in enhancing posttraumatic growth.

Role of Posttraumatic Growth in Relationship Adjustment

The third hypothesis was that posttraumatic growth would serve as a resource to enhance relationship functioning, over and above the effect of the relationship enhancement intervention in enhancing both relationship functioning and posttraumatic growth. To assess this hypothesis, three hierarchical linear models were used. In all three models, DAS-7 scores were the outcome measures. In all three models, time was nested within individuals, and

individuals were nested within couples. Predictors included gender, treatment condition, assessment time, growth score (either Benefit Finding, PTGI, or PTGI-I in different models), and all possible interactions between these four variables, as well as the length of time that the couple had been married. Three separate models were employed, rather than a single model with all three growth measures as predictors, to address issues of multicollinearity between Benefit Finding, PTGI, and PTGI-I scores. Benefit Finding and PTGI scores were highly correlated (Pearson product-moment correlation coefficients were .74 between Benefit Finding and PTGI and .73 between Benefit Finding and PTGI-I). Further, PTGI-I scores were used in the calculation of PTGI scores (Pearson product-moment correlation between PTGI-I and PTGI were .94).

The models are presented below. For DAS-7 scores, using Benefit Finding as a predictor, the model was, for time i in individual j in couple k :

$$\begin{aligned} \text{DAS-7}_{ijk} = & \gamma_{000} + \gamma_{001}\text{Length of Marriage}_k + \gamma_{002}\text{Treatment Condition}_k + \\ & \gamma_{010}\text{Gender}_{jk} + \gamma_{100}\text{Time}_{ijk} + \gamma_{200}\text{BF}_{ijk} + \gamma_{300}\text{Time}_{ijk} \times \text{BF}_{ijk} + \gamma_{400}\text{Gender}_{jk} \times \text{Time}_{ijk} \\ & + \gamma_{500}\text{Time}_{ijk} \times \text{Treatment}_k + \gamma_{600}\text{Gender}_{jk} \times \text{BF}_{ijk} + \gamma_{700}\text{Treatment}_k \times \text{BF}_{ijk} + \\ & \gamma_{020}\text{Gender}_{jk} \times \text{Treatment}_k + \gamma_{800}\text{Gender}_{jk} \times \text{Time}_{ijk} \times \text{Treatment}_k + \\ & \gamma_{900}\text{Gender}_{jk} \times \text{Time}_{ijk} \times \text{BF}_{ijk} + \gamma_{1000}\text{Gender}_{jk} \times \text{Treatment}_k \times \text{BF}_{ijk} + \\ & \gamma_{1100}\text{Time}_{ijk} \times \text{Treatment}_k \times \text{BF}_{ijk} + \gamma_{1200}\text{Gender}_{jk} \times \text{Time}_{ijk} \times \text{Treatment}_k \times \text{BF}_{ijk} + u_{00k} \\ & + u_{0jk} + r_{ijk}. \end{aligned}$$

The models with PTGI Summary scores and PTGI Relating to Others scores as predictors were almost identical, substituting PTGI or PTGI-I scores and interactions in the place of Benefit Finding scores and interactions.

Results for models with Benefit Finding, PTGI, and PTGI-I as predictors are presented in Tables 5, 6, and 7, respectively. ICCs were computed for all models with DAS-7 as outcome. In all models, both individual and couple ICCs were fairly substantial. In the model including Benefit Finding as a predictor, the couple ICC was .5521 (55.21%, $p < .01$)

and the individual ICC was .2098 (20.98%, $p < .05$). In the model with PTGI as a predictor, the couple ICC was .5426 (54.26%, $p < .01$) and the individual ICC was .2085 (20.85%, $p < .05$). In the model with PTGI-I as a predictor, the couple ICC was .5432 (54.32%, $p < .01$) and the individual ICC was .1872 (18.72%, $p < .05$). The relatively greater proportion of variability accounted for by between-couple differences compared to between-individual differences suggests that relationship adjustment was a more relational than individual phenomenon, as would be predicted; however, there was still a fair amount of inter-individual variability in this construct, as well.

Main effects of Benefit Finding, PTGI, and PTGI-I were expected for each of the three models, respectively. In all three models, the main effect of the growth variable was nonsignificant. Furthermore, all other predictors were nonsignificant, with the exception of length of time married (in which longer marriages predicted greater relationship adjustment). Thus, the hypothesis that growth in the cancer experience would foster greater relationship adjustment was disconfirmed.

Gender and Time Effects

Gender Differences in Posttraumatic Growth

The fourth hypothesis was that women would experience greater posttraumatic growth than their husbands at both pretest and posttest. The same models were used as in the first and second hypotheses above. A main effect of gender was predicted, such that women's growth scores would be greater than their husbands'. In the Benefit Finding model, the effect of gender was nonsignificant, but in the PTGI and PTGI-I models, this effect was complicated by the presence of higher-order interactions.

In the PTGI and PTGI-I models, there were significant gender by time by treatment interactions, as depicted in Figures 5 (for the PTGI model) and 6 (for the PTGI-I model). In the control condition, at pretest, women's PTGI scores (intercept = 20.99, $SE = 9.64$, $z = 2.18$, $p = 0.03$) were significantly higher than men's scores (intercept = -0.53, $SE = 9.70$, $z = -0.05$, $p = 0.96$)⁴. Over time, men experienced a significant increase in PTGI scores (slope = 14.59, $SE = 5.32$, $z = 2.74$, $p < 0.01$), whereas women did not, and women even showed a nonsignificant decrease over time (slope = -4.59, $SE = 5.61$, $z = -0.82$, $p = 0.41$). In the treatment condition, women's scores were again significantly higher than zero, the grand mean (intercept = 19.03, $SE = 7.34$, $z = 2.59$, $p < 0.01$), although men's scores were not (intercept = 9.34, $SE = 7.57$, $z = 1.23$, $p = 0.22$). Women and men both showed a nonsignificant increase in PTGI scores over time (women's slope = 5.35, $SE = 4.56$, $z = 1.17$, $p = 0.24$; men's slope = 3.06, $SE = 4.48$, $z = 0.68$, $p = 0.49$).

In the PTGI-I model, there was a significant gender by time by treatment interaction. Among control couples, at pretest, women experienced significantly greater posttraumatic growth than did men⁵ (for women, intercept = 6.23, $SE = 2.86$, $z = 2.18$, $p = 0.03$; for men, intercept = -2.36, $SE = 2.88$, $z = -0.82$, $p = 0.41$). Over time, men's posttraumatic growth scores increased significantly and approached women's levels (slope = 6.56, $SE = 1.93$, $z = 3.40$, $p < .01$), whereas women's scores showed a nonsignificant decline over time (slope = -3.37, $SE = 2.00$, $z = -1.69$, $p = 0.09$). In the relationship enhancement condition, women's scores were, again, significantly greater than zero (i.e., the grand mean; intercept = 6.10, $SE = 2.18$, $z =$

⁴ Men's and women's scores were considered significantly different from each other at pretest, because women's scores were significantly greater than zero (i.e., the grand mean), and men's scores were very slightly below zero.

⁵ At pretest, women's scores were significantly greater than zero (i.e., the grand mean), and men's scores were slightly below zero (ns).

2.80, $p < .01$), whereas men's scores were not (intercept = 3.22, $SE = 2.25$, $z = 1.43$, $p = 0.15$). However, slopes for both men (slope = 0.07, $SE = 1.58$, $z = 0.05$, $p = 0.96$) and women (slope = 1.60, $SE = 4.97$, $z = 0.32$, $p = 0.75$) were nonsignificant.

As such, there is some support for the hypothesis that women experienced greater growth than their husbands at pretest and posttest, at least when using PTGI and PTGI-I scores to assess growth. Furthermore, dependent t -tests indicated that pretest gender differences in the sample as a whole were statistically significant (for PTGI, $t(34) = 2.72$, $p = .01$; for PTGI-I, $t(34) = 2.77$, $p < .01$). However, the gender difference narrowed over time for control group couples, as men approached the levels of growth that their wives experienced.

Trajectory of Posttraumatic Growth Over Time

The fifth hypothesis was that both women and men would experience an increase in posttraumatic growth over time. The same statistical models were used as in the first, second, and fourth hypotheses above. A main effect of time was predicted, such that growth scores would increase from pretest to posttest. In the Benefit Finding model, the effect of time was nonsignificant. In the PTGI and PTGI-I models, the effect of time was complicated by the gender by time by treatment effect described above, in which treatment-as-usual partners' scores converged over time, but relationship enhancement couples' scores did not. Thus, there is some limited support for the hypothesis that growth would increase over time, in that men in the control condition appeared to experience an increase in posttraumatic growth over time. However, women and relationship enhancement participants did not experience an increase over time.

Convergence in Posttraumatic Growth Scores Over Time

The sixth hypothesis was that husbands' and wives' scores would become more similar over time. The same statistical models were used as in the first, second, fourth, and fifth hypotheses above. A gender by time interaction was predicted, such that over time, women's and men's scores would increase, but men's scores would increase even more steeply, such that partners' scores would be more similar to each other at posttest than at pretest. In the Benefit Finding model, this interaction was nonsignificant. In the PTGI Summary scale and PTGI-I models, this effect was complicated by the presence of the higher-order interactions described earlier (i.e., gender by time by treatment interactions). In the treatment-as-usual control condition, couples' scores converged over time, but in the relationship enhancement condition, they did not converge. As such, there was only limited support for the hypothesis that men's and women's scores would converge over time.

Effectiveness of the Relationship Enhancement Intervention

Effectiveness of Treatment in Increasing Posttraumatic Growth

The seventh hypothesis was that couples in the relationship enhancement condition would show a greater increase in growth scores than would couples in the treatment-as-usual control condition. The same statistical models were used as in the first, second, fourth, fifth, and sixth hypotheses above. A treatment by time interaction was predicted. In the Benefit Finding model, this interaction was nonsignificant. In the PTGI and PTGI-I models, this effect was again complicated by the presence of the higher-order interactions described earlier (i.e., gender by time by treatment interactions). Only men in the control condition showed a significant increase in PTGI and PTGI-I scores over time; neither women nor men in the relationship enhancement condition demonstrated increases in growth over time. As

such, there was no support for the hypothesis that relationship enhancement couples would show a greater increase in growth scores than treatment-as-usual couples.

Effectiveness of Treatment in Enhancing Convergence in Partners' Scores

The eighth hypothesis was that the tendency for couples' growth scores to converge over time would be stronger among relationship enhancement than treatment-as-usual control couples. To test this hypothesis, the same statistical models were used as in the first, second, fourth, fifth, sixth, and seventh hypotheses above. A treatment by gender by time interaction was predicted. For the Benefit Finding model, this interaction was nonsignificant. In the PTGI and PTGI-I models, the treatment by gender by time interactions were significant, as described earlier. However, the convergence effect that was seen among control couples did *not* occur among couples in the relationship enhancement condition. The failure to observe convergence among treatment couples may have been due to pretest differences between treatment and control couples. That is, despite randomization, pretest PTGI-I scores among relationship enhancement men ($M = 21.82$, $SD = 7.44$) were higher than among treatment-as-usual men ($M = 14.38$, $SD = 11.15$; $t(18.42)^6 = -2.14$, $p < .05$, two-tailed). For PTGI scores, the differences were large and in the same direction, but did not attain statistical significance (for relationship enhancement, $M = 55.37$, $SD = 25.48$; for control, $M = 41.39$, $SD = 32.04$; $t(33) = -1.43$, $p = .16$, two-tailed). It should be noted that posttest scores for men in both treatment (PTGI $M = 53.86$, $SD = 17.45$; PTGI-I $M = 20.83$, $SD = 6.02$) and control groups (PTGI $M = 50.57$, $SD = 24.20$; PTGI-I $M = 19.92$, $SD = 8.37$) were similar (for PTGI,

⁶ Levene's F test for equality of variances suggested that the two groups had unequal variances, and as such, a t test for groups with unequal variances was conducted.

$t(17.58)^7 = -0.38, p = .71$, two-tailed; for PTGI-I, $t(24) = -0.32, p = .75$, two-tailed). It appears that partners' scores *do* converge over time in the control condition (where men's initial PTGI-I scores are lower than in the treatment condition), but that treatment does not enhance this convergence effect. As such, the hypothesis that relationship enhancement couples would experience a greater convergence in growth scores than treatment-as-usual control couples was disconfirmed.

Effectiveness of Treatment in Increasing the Relational Nature of Posttraumatic Growth

Because the relationship enhancement treatment condition aimed to teach couples to approach cancer together, the ninth and final hypothesis was that posttraumatic growth would be a more relational phenomenon for treatment couples than for control couples. To assess this question, one-tailed, between-partner correlations were calculated for treatment and for control couples, both for posttest scores and for changes in growth scores on all three of the growth measures. Positive correlations were expected in all cases, both for treatment and control couples. However, correlations were expected to be stronger for treatment than for control couples. In all cases, correlations failed to attain statistical significance, as seen in Table 8. Thus, the hypothesis that posttraumatic growth would be a more relational phenomenon for treatment than for control couples was not confirmed.

⁷ Again, Levene's F test for equality of variances suggested that the two groups had unequal variances, and as such, a t test for groups with unequal variances was conducted.

IV. DISCUSSION

The purpose of this study was to better understand the nature of posttraumatic growth in the context of couples facing early stage breast cancer. It is one of the first longitudinal, prospective investigations to examine posttraumatic growth, and to do so in the couple context. It is also the first study to examine the effectiveness of a couple-based intervention designed, in part, to enhance posttraumatic growth.

Posttraumatic Growth in the Couple Context

The first set of hypotheses concerned the nature of posttraumatic growth within the couple context. Posttraumatic growth has been conceptualized as both a process and an outcome (Tedeschi et al., 1998), and the current study examined growth *outcomes* at two time points. Associations between partners' reported growth were examined and termed the "relational" nature of posttraumatic growth. The greater the similarity or association in scores, the more relational in nature the construct would appear to be. However, the greater the similarity and association between individuals' own pretest and posttest scores, the more individual a phenomenon it would appear to be. It is important to note that posttraumatic growth could have both individual and relational components.

Although this study did not examine the process of growth per se, it examined reports of growth outcomes. In the current study, both husbands and wives did report experiencing benefit from the cancer experience at both pretest and posttest, and to a similar or greater extent than did participants in other investigations of individuals and couples with breast

cancer (Antoni et al., 2001; Bellizzi & Blank, 2006; Cordova et al., 2001a; Manne et al., 2004; Weiss, 2002, 2004a). The results of the current study suggest that posttraumatic growth is both relational and individual in nature, but that it remains predominantly an individual phenomenon. Depending on the growth measure, the correlations between partners' scores ranged from .05 (Benefit Finding) to .26 (Posttraumatic Growth Inventory), and the correlations between assessment times for individuals, from .51 (PTGI Relating to Others subscale) to .63 (Benefit Finding). The between-partner PTGI score correlations are similar to those in other studies of couples facing breast cancer (Manne et al., 2004; Weiss, 2002). Thus, these findings suggest that posttraumatic growth, as an outcome, is much more individual than relational in nature.

These results suggest that partners do not necessarily come to a shared perspective of growth in the cancer experience, but it is possible that they still may promote and nurture each other's unique, individual pattern of growth. Analogously, in the process of psychotherapy, a therapist provides a great deal of support and assistance to facilitate a client's personal development and symptom reduction (a shared *process*), but one would not necessarily expect client and therapist mental health outcomes to be closely related. Thus, although posttraumatic growth may be a primarily individual phenomenon, it does occur in the context of a relationship that may exert an influence on that growth. Couples may process growth experiences together and provide each other with comfort, support, a positive emotional environment, and new schemas. Partners also may model growth for each other, reinforce each other's growth, and assist in the prevention of helplessness and hopelessness. In sum, at least when examining PTGI scores, it appears that individual factors seem to contribute most to reports of growth, but that one's partner also influences those reports.

However, the role of the couple or partner in an individual's posttraumatic growth *process* is unclear. Future research examining the process, rather than simply the outcome, of posttraumatic growth might shed light on this issue.

It was hypothesized that not only would being in a relationship influence an individual's growth, but that the quality of that relationship also would have an impact. More specifically, it was anticipated that individuals in more positive, better-adjusted relationships would experience greater posttraumatic growth. A happy relationship was expected to serve as a resource to facilitate the experience of growth. Spouses in such relationships are considered more likely to provide each other with comfort, support, a positive emotional environment, and new schemas, all of which could facilitate constructive rumination in the posttraumatic growth process (Weiss, 2004a, 2004b). Previous research has shown that social support and commitment to marriage facilitated the experience of posttraumatic growth (Luszczynska, 2005; Schulz & Mohamed, 2004; Weiss, 2004a). In the current study, however, there was no significant effect of relationship adjustment facilitating growth. Low statistical power may have contributed to the finding that relationship adjustment did not predict growth, but even so, it does not appear that relationship adjustment is a strong predictor of growth. This is consistent with the findings of some studies, which found no relationship between marital status and posttraumatic growth (Tomich & Helgeson, 2004; Widows, 2005) and that social support did not enhance posttraumatic growth (Widows, 2005). Taken together with the previous observation that growth was more individual than relational in nature, it does not appear that one's partner and one's relationship quality have a large impact on one's posttraumatic growth.

Consistent with the notion that growth and relationship functioning would be interwoven, it also was hypothesized that posttraumatic growth would serve as a resource to facilitate relationship adjustment. Surprisingly, posttraumatic growth did not significantly predict relationship adjustment. As such, the results of the current study provided no support for this prediction, in stark contrast to the findings of Germino and colleagues (1995). These results were consistent with those of Manne and colleagues (2004), who also found that relationship adjustment did not predict couples' posttraumatic growth. Thus, it does not appear that individual growth has a strong impact on one's relationship adjustment.

Measurement issues may be partly responsible for the finding that posttraumatic growth and relationship adjustment were unrelated. That is, it is possible that the measure of relationship adjustment used (i.e., DAS-7) was not sensitive enough to detect subtle effects of posttraumatic growth. However, Manne and her colleagues (2004) used the full DAS with similar results, increasing confidence in the finding that posttraumatic growth is predominantly an individual, rather than a relational, phenomenon, and does not impact a couple's relationship adjustment.

Gender and Time Effects

A second set of hypotheses concerned the effects of gender and time on posttraumatic growth. It was predicted that women, who were the cancer patients and experienced the trauma of cancer most directly, would experience greater posttraumatic growth than their husbands. Further, it was predicted that, over time, both partners would experience an increase in growth and develop a more shared perspective on growth in the cancer experience. It was thought that initially, people might focus on making critical medical decisions and on acute emotional responses, but that as time passed, individuals might be

better able to make attributions and to process growth experiences cognitively (Calhoun & Tedeschi, 1998b; S. E. Taylor et al., 1984). Further, it was believed that if couples processed growth experiences together, their growth outcome scores would converge over time, suggesting a shared perspective on the cancer that incorporated perceptions of growth. That is, it was predicted that their scores would be more similar to each other at posttest than at pretest.

Indeed, the results of this study suggested that at pretest, women did experience greater growth than did their husbands. This finding is similar to those from some previous studies (e.g., Linley & Joseph, 2004; Manne et al., 2004; Park et al., 1996; Polatinsky & Esprey, 2000; Tedeschi & Calhoun, 1996; Weiss, 2002; Yaskowich, 2003), although it stands in contrast to those of other investigations (e.g., Affleck et al., 1990; Collins et al., 1990; Widows, 2005). Because the trauma of breast cancer is more proximal for women than for men, it seems plausible that women would be more likely to engage in the rumination process that is proposed by Calhoun and Tedeschi (1998b; Calhoun & Tedeschi, 1999) to be important for posttraumatic growth. Hence, their greater growth at pretest is consistent with expectations. It is important to note that the effects of gender and patient status were confounded in this study. Previous research suggests that women generally may be more likely to experience growth (Linley & Joseph, 2004; Park et al., 1996; Polatinsky & Esprey, 2000; Tedeschi & Calhoun, 1996; Yaskowich, 2003). Thus, it is impossible to tell whether the greater growth observed among women at pretest was due to gender or to patient status. Additional investigations of posttraumatic growth among cancer patients of both genders could help to clarify this issue.

In the control condition, men experienced an increase in posttraumatic growth over time, approaching the levels experienced by their wives. In the treatment condition, this effect did not occur. Pretest PTGI and PTGI-I scores among relationship enhancement men were higher than among treatment-as-usual men and higher than mean PTGI scores in other studies [in which PTGI scores ranged from approximately 33 to 47 (Manne et al., 2004; Weiss, 2004a)]. Thus, an increase in scores was not readily apparent. However, posttest scores for men in both treatment and control groups were similar. As such, this surprising effect may be merely an artifact of pretest differences in growth scores between treatment and control groups, because randomization was less effective in such a small sample. In the presence of this perplexing issue, general effects of time and of partners' convergence in scores could not be easily interpreted. Further research is necessary to better understand the role of time, gender, and convergence over time. Other investigations to date are equivocal as to whether posttraumatic growth increases over time (Cordova et al., 2001a; Manne et al., 2004; Sears et al., 2003), remains stable (Andrykowski et al., 1993; Dirksen, 1995; Lechner et al., 2003; Thompson & Pitts, 1993), or even declines (Weiss, 2004a, 2004b). At present, the factors that account for this inconsistency in changes in growth over time are unknown, but investigations clearly vary in terms of populations studied, timing of assessments of posttraumatic growth, and what, if any, intervention was provided.

Effectiveness of the Relationship Enhancement Intervention

Individual interventions for women with breast cancer have resulted in enhanced posttraumatic growth and benefit finding (Antoni et al., 2001; Lieberman et al., 2003; Stanton et al., 2002). These individual interventions are limited in their scope, however, in that partners also suffer during breast cancer (Baider & Kaplan De-Nour, 1988; Baider,

Walach et al., 1998; Germino et al., 1995; Nijboer et al., 1998; Northouse et al., 2000; Weiss, 2002), and spouses have the potential to help ease each other's distress and promote well-being. Other couple-based interventions for breast cancer have been effective in reducing psychological distress and improving relationship and sexual functioning, but did not target posttraumatic growth (Christensen, 1983; Kuijer et al., 2004; Scott et al., 2004). The current investigation is the first to assess a cognitive-behavioral couple-based intervention designed in part to facilitate posttraumatic growth.

In the current study, it was hypothesized that couples in the relationship enhancement condition would experience a larger increase in posttraumatic growth than would couples in the treatment-as-usual control condition, but there was no support for this hypothesis. It was surprising that the relationship enhancement condition, which generally was oriented toward helping couples process the breast cancer experience from a psychological perspective and which also devoted a session explicitly to processing growth experiences, did not seem to enhance perceptions of growth. These findings stand in contrast to the results of other studies that employed individual interventions that were effective in promoting posttraumatic growth (Antoni et al., 2001; Lieberman et al., 2003; Stanton et al., 2002). The current findings also are surprising given that the current relationship enhancement intervention has had notable, positive effects in other domains of functioning, including both partners' relationship satisfaction and psychological distress, as well as female fatigue, pain, social and role functioning, body image, and sexual functioning (Baucom et al., 2005).

It also was predicted that couples in the relationship enhancement condition, in which couples were encouraged to face cancer as a team and taught skills to facilitate the process, would experience a greater convergence in growth scores than would treatment-as-usual

control couples. That is, it was predicted that treatment couples' scores would be more similar to each other at posttest than at pretest, compared to control couples. Data provided no support for this hypothesis, and in fact, data from the PTGI and its Relating to Others subscale suggested just the opposite pattern. As noted earlier, control couples showed convergence in growth scores over time, but treatment couples' scores did not converge. Despite random assignment, pretest PTGI and PTGI-I scores among relationship enhancement men were higher than among treatment-as-usual men and higher than mean PTGI scores in other studies. However, posttest scores for men in both groups were similar. As such, this surprising effect may be an artifact of differences in pretest growth scores between treatment and control groups. Nonetheless, there is no evidence to suggest that the relationship enhancement condition, which encouraged processing of growth experiences, brought couples to a more shared understanding of growth in the cancer experience.

Because the relationship enhancement treatment taught couples to approach cancer as a team and devoted a session to the processing of growth experiences, it was predicted that posttraumatic growth would be a more relational phenomenon for treatment than for control couples. Surprisingly, this hypothesis was disconfirmed. Between-partner correlations in posttest growth scores and changes in growth scores were nonsignificant for both treatment and control groups. Thus, posttraumatic growth appears to be a similarly individual phenomenon for both treatment and control couples alike.

Thus, the results of the current study suggest that the relationship enhancement condition was no more effective than treatment-as-usual control in (a) increasing posttraumatic growth, (b) bringing couples to a more shared perspective of growth in the cancer experience, or (c) increasing the relational nature of growth. Overall, it was believed

that the treatment would have done so, given the couple-based focus, teaching of skills, explicit emphasis on processing posttraumatic growth, and reasonable effect sizes in other domains of functioning. One potential explanation for these effects might be the higher levels of pretest growth reported by treatment than control participants. Low statistical power in a small sample is another possible reason. Both of these explanations could be tested through collection of a larger sample, which would increase statistical power and allow random assignment to more evenly distribute posttraumatic growth scores among treatment and control conditions. Alternatively, treatment may have a “sleeper effect”, in which changes in growth might not be observed immediately but become apparent at a later point in time. Given the ongoing status of the larger treatment outcome study from which the current data were drawn, it eventually will include a larger sample and one-year follow-up data, thereby permitting a test of these possible explanations.

It also is possible that strengthening the growth-focused elements of the relationship enhancement treatment might serve to enhance that growth. Further research on couple-based interventions with stronger growth elements would cast light on whether the current growth intervention elements were too weak. Alternatively, it is equally plausible that the relationship enhancement treatment’s focus on growth interfered with its natural development. Other treatments did not explicitly target growth in their interventions, but their interventions still enhanced growth (Antoni et al., 2001; Lieberman et al., 2003; Stanton et al., 2002). Furthermore, the literature contains cautions against forcefully encouraging clients to experience growth (Calhoun & Tedeschi, 1999). Although the current intervention aimed to promote growth in a sensitive and gentle manner, it is possible that the intervention was too strong. The ongoing collection of a larger sample should help address this question by

determining whether greater posttest growth occurs among control participants, who do not receive the growth intervention, than among relationship enhancement participants, who do. At present, pretest differences in treatment and control men's growth scores complicate this issue.

Summary

The findings of the current study reveal that the experience of posttraumatic growth outcomes, although somewhat relational in nature, remains a predominantly individual phenomenon. It appears that partners may influence each other's growth to some extent, but that growth remains a largely individual construct. It is not known whether partners engage in a growth process that facilitates growth outcomes, and if so, what the nature of that process might be. Furthermore, relationship quality does not appear to promote the experience of posttraumatic growth, nor does the experience of greater individual growth result in better relationship adjustment.

Second, women initially reported greater posttraumatic growth than did men, but over time, in the control condition, men experienced more growth and approached the levels of growth that women reported, whereas women did not show an increase in growth over time. Surprisingly, this effect did not occur in the treatment condition, perhaps due to unequal pretest growth scores for men between treatment conditions.

Finally, this was the first randomized, controlled study of a couple-based intervention that included efforts to promote posttraumatic growth. Contrary to predictions, posttraumatic growth was not a more relational phenomenon among treatment than control couples in this study. Further, the treatment did not serve to enhance posttraumatic growth, nor did relationship enhancement condition couples arrive at a more shared perspective on growth in

the cancer experience, compared to treatment-as-usual control condition couples. Rather, among treatment couples this convergence effect did not occur at all, likely because despite randomization, pretest growth scores differed between experimental conditions. In the treatment condition, men's pretest growth scores were much higher than in the control condition, and thus, had less room to increase. As such, there is no evidence for the effectiveness of this intervention in promoting posttraumatic growth.

Limitations and Future Directions

The current study has several limitations to be addressed in future research. The first set of limitations concerns the size and composition of the sample. First, the sample is rather small, and a larger sample would provide greater statistical power to facilitate the detection of subtler effects. Also, despite randomization, pretest posttraumatic growth scores differed between treatment and control men; it is hoped that this problem will be addressed with a larger sample, which is currently being collected. In addition, although efforts were made to recruit a more diverse sample, the current sample was fairly homogeneous in composition. Participants were predominantly middle-aged, White, affluent, and well educated, and their cancer was early in stage. As such, effects of age, ethnicity, income, education, and cancer stage were not detectable. Prior investigations suggest that these variables may be important. For example, posttraumatic growth may be associated with younger age (Bower et al., 2005; Widows, 2005), ethnic minority status (Bower et al., 2005; Tomich & Helgeson, 2004; Urcuyo et al., 2005), lower (Tomich & Helgeson, 2004) or higher (Bower et al., 2005) income, lower education (Urcuyo et al., 2005; Widows, 2005), and with cancer stage, in a reverse-U-shaped pattern, such that greatest growth is reported by participants with Stage 2 and 3 cancer (Lechner et al., 2003).

Second, the present study examined only pretest and posttest data. Future investigations of these couples will follow participants for up to one year after the conclusion of treatment (or equivalent timeframe for control participants), allowing for an examination of the trajectory of posttraumatic growth over a longer period of time. It will also be possible to determine whether the relationship enhancement intervention might have a “sleeper effect” in facilitating posttraumatic growth in couples with cancer. The presence of a cancer education control condition will provide an even more stringent test of the relationship enhancement condition.

A third set of limitations concern measurement issues. Future research should examine the Benefit Finding measure and the Posttraumatic Growth Inventory to determine whether they assess different constructs. Although these measures are highly correlated with each other, and although both measures appear to assess the acknowledgement of positive change in difficult situations, the two inventories yielded different patterns of results in the current study, with the PTGI a more sensitive instrument.

In addition, the current study examined the outcome, rather than the process, of posttraumatic growth. As such, the process of posttraumatic growth in individuals and couples facing breast cancer remains unknown. Future research should consider the development of process-focused growth measures to enable the study of the growth process.

Future research also should consider development of couple-based growth inventories. It is possible that reports of growth as a couple would be more closely tied to relationship functioning than would be reports of individual posttraumatic growth. This may be the case, because reports of growth *as a couple* and relationship adjustment are constructs that exist at the same level (i.e., the couple level, rather than the individual level). However,

posttraumatic growth as currently assessed is an individual-level construct, and relationship adjustment is a couple-level construct (although reported by an individual).

Finally, relationship adjustment may be too global and far-removed from the posttraumatic growth process for the two constructs to be closely associated. It is thought that couples may process growth experiences together and provide each other with comfort, support, a positive emotional environment, and new schemas to facilitate growth. Thus, global relationship adjustment may be less closely involved in the process of posttraumatic growth than other, more specific constructs, such as positive communication and social support, which could directly impact the process of sharing schemas and supporting each other. Thus, when examining the association between posttraumatic growth and the marital relationship, future studies should examine constructs more focal to the posttraumatic growth process than simple global marital adjustment.

Implications

The current study is among the first longitudinal, prospective investigations of posttraumatic growth in the context of couples with early stage breast cancer. Results suggest that both partners experience posttraumatic growth, and that growth is a predominantly individual phenomenon. Within this sample, it appears to be neither impacted by the quality of the marital relationship, nor to influence that relationship quality. In addition, although female patients initially experience greater growth than their male partners, partners' trajectories of growth over time remain unclear.

The current investigation also is the first to test a couple-based intervention designed, in part, to increase posttraumatic growth. The relationship enhancement intervention was not effective in facilitating growth. It is possible that the growth-focused elements of the

intervention were too weak in nature, and thus ineffective. However, it also is equally plausible that the intervention's explicit focus on growth may have interrupted the natural process of growth. Future research is warranted to develop interventions to enhance couples' experience of growth, benefit, and positive functioning in an event as negative and traumatic as cancer.

Table 1

Missing Items by Measure

Measure	Assessment	# Participants Excluded	# Missing Items	# Participants Retained	# Missing Items
DAS-7	Male Pretest	1	4	1	1
	Female Pretest			1	1
	Male Posttest			2	≤ 2
	Female Posttest				
Benefit Finding	Male Pretest	1	17	4	≤ 4
	Female Pretest	1	14	5	1
	Male Posttest	1	9	1	6
	Female Posttest			1	1
PTGI	Male Pretest	1	21	6	≤ 2
	Female Pretest			3	1
	Male Posttest	1	11	2	≤ 3
	Female Posttest			3	1
PTGI-I	Male Pretest	1	7	2	≤ 2
	Female Pretest				
	Male Posttest			2	≤ 3
	Female Posttest			2	1

Table 2

Summary of Hierarchical Linear Modeling Analysis for Variables Predicting Benefit Finding Scores (N = 36 Couples)

Variable	Fixed Effects			
	γ	SE(γ)	df	t
Intercept	-2.83	4.18	34	-0.68
Gender	1.93	5.80	71	0.33
Time	4.51	3.62	71	1.24
Gender x time	-1.77	5.23	71	-0.34
Treatment condition	3.19	5.25	34	0.61
Gender x treatment condition	1.70	7.24	71	0.23
Time x treatment condition	-8.16	4.73	71	-1.72
Gender x time x treatment condition	9.55	6.77	71	1.41
DAS-7	0.34	0.82	71	0.42
Gender x DAS-7	0.15	1.23	71	0.12
Time x DAS-7	0.41	0.96	71	0.43
Gender x time x DAS-7	-1.44	0.79	71	-1.82
Treatment condition x DAS-7	-0.32	1.04	71	-0.31
Gender x treatment condition x DAS-7	0.99	1.40	71	0.71
Time x treatment condition x DAS-7	0.35	0.99	71	0.36

Note. All γ estimates failed to attain statistical significance.

Random Effects			
Subject	u	$SE(u)$	z
Couple	11.87	35.10	0.34
Individual	136.77*	44.50	3.07
(within couple)			
Residual	67.63*	15.12	4.47

* $p < .01$.

Table 3

Summary of Hierarchical Linear Modeling Analysis for Variables Predicting PTGI Summary Scores (N = 36 Couples)

Fixed Effects				
Variable	γ	SE(γ)	df	t
Intercept	-0.53	9.70	33	-0.05
Posttest data available	-16.62*	7.83	33	-2.12
Gender	21.52*	8.77	72	2.45
Time	14.59**	5.32	72	2.74
Gender x time	-19.18*	7.56	72	-2.54
Treatment condition	9.87	9.08	33	1.09
Gender x treatment condition	-11.83	10.97	72	-1.08
Time x treatment condition	-11.53	6.93	72	-1.66
Gender x time x treatment condition	21.47*	9.83	72	2.18
DAS-7	-1.92	1.28	72	-1.50
Gender x DAS-7	3.35	1.85	72	1.81
Time x DAS-7	0.51	1.42	72	0.36
Gender x time x DAS-7	-1.01	1.16	72	-0.87
Treatment condition x DAS-7	2.49	1.65	72	1.51
Gender x treatment condition x DAS-7	-1.42	2.10	72	-0.68
Time x treatment condition x DAS-7	-0.05	1.45	72	-0.04

* $p < .05$. ** $p < .01$.

Random Effects			
Subject	u	$SE(u)$	z
Couple	166.94	111.63	1.50
Individual	330.70**	114.61	2.89
(within couple)			
Residual	143.07**	35.19	4.07

** $p < .01$.

Table 4

Summary of Hierarchical Linear Modeling Analysis for Variables Predicting PTGI-I (Relating to Others Subscale) Scores (N = 36 Couples)

Fixed Effects				
Variable	γ	SE(γ)	df	t
Intercept	-2.36	2.88	33	-0.82
Posttest data available	-4.71*	2.28	33	-2.07
Gender	8.59**	2.82	73	3.05
Time	6.56**	1.93	73	3.40
Gender x time	-9.93**	2.72	73	-3.65
Treatment condition	5.59*	2.74	33	2.04
Gender x treatment condition	-5.72	3.52	73	-1.63
Time x treatment condition	-6.49*	2.48	73	-2.62
Gender x time x treatment condition	11.46**	3.52	73	3.25
DAS-7	-0.79	0.43	73	-1.85
Gender x DAS-7	1.06	0.62	73	1.72
Time x DAS-7	0.79	0.50	73	1.58
Gender x time x DAS-7	-0.72	0.41	73	-1.76
Treatment condition x DAS-7	0.61	0.54	73	1.12
Gender x treatment condition x DAS-7	-0.08	0.70	73	-0.12
Time x treatment condition x DAS-7	-0.54	0.51	73	-1.05

* $p < .05$. ** $p < .01$.

Random Effects			
Subject	u	$SE(u)$	z
Couple	9.61	9.18	1.05
Individual	29.43**	10.98	2.68
(within couple)			
Residual	19.08**	4.30	4.44

** $p < .01$.

Table 5

Summary of Hierarchical Linear Modeling Analysis for Variables Predicting DAS-7 Scores, Including Benefit Finding (N = 36 Couples)

Fixed Effects				
Variable	γ	SE(γ)	df	t
Intercept	0.10	1.23	34	0.08
Length of time married	0.11*	0.04	68	2.49
Gender	0.34	1.18	68	0.29
Time	-0.36	0.96	68	-0.38
Gender x time	-0.38	1.30	68	-0.29
Treatment condition	-0.86	1.53	34	-0.56
Gender x treatment condition	-0.01	1.48	68	-0.01
Time x treatment condition	0.82	1.26	68	0.65
Gender x time x treatment condition	0.86	1.75	68	0.49
Benefit Finding	0.04	0.06	68	0.69
Gender x Benefit Finding	-0.03	0.07	68	-0.38
Time x Benefit Finding	-0.02	0.06	68	-0.34
Gender x time x Benefit Finding	< -0.01	0.06	68	-0.02
Treatment condition x Benefit Finding	-0.02	0.07	68	-0.22
Gender x treatment condition x Benefit Finding	0.07	0.09	68	0.75
Time x treatment condition x Benefit Finding	-0.02	0.07	68	-0.19

* $p < .05$.

Random Effects

Subject	u	$SE(u)$	z
Couple	10.29**	3.59	2.87
Individual	3.91*	1.87	2.09
(within couple)			
Residual	4.43**	1.00	4.43

* $p < .05$. ** $p < .01$.

Table 6

Summary of Hierarchical Linear Modeling Analysis for Variables Predicting DAS-7 Scores, Including PTGI Summary Scores (N = 36 Couples)

Variable	Fixed Effects			
	γ	$SE(\gamma)$	df	t
Intercept	-0.29	1.30	34	-0.22
Length of time married	0.11*	0.04	69	2.49
Gender	0.86	1.30	69	0.66
Time	-0.10	1.08	69	-0.10
Gender x time	-0.79	1.43	69	-0.55
Treatment condition	-0.47	1.59	34	-0.30
Gender x treatment condition	-0.42	1.61	69	-0.26
Time x treatment condition	0.83	1.34	69	0.62
Gender x time x treatment condition	0.98	1.87	69	0.53
PTGI	-0.02	0.03	69	-0.67
Gender x PTGI	0.06	0.04	69	1.33
Time x PTGI	-0.02	0.04	69	-0.54
Gender x time x PTGI	-0.02	0.04	69	-0.53
Treatment condition x PTGI	0.01	0.04	69	0.25
Gender x treatment condition x PTGI	-0.03	0.06	69	-0.58
Time x treatment condition x PTGI	0.05	0.04	69	1.15

* $p < .05$.

Random Effects

Subject	u	$SE(u)$	z
Couple	10.13**	3.56	2.84
Individual	3.89*	2.01	1.94
(within couple)			
Residual	4.65**	1.06	4.38

* $p < .05$. ** $p < .01$.

Table 7

Summary of Hierarchical Linear Modeling Analysis for Variables Predicting DAS-7 Scores, Including PTGI Relating to Others Subscale Scores (N = 36 Couples)

Fixed Effects				
Variable	γ	SE(γ)	df	t
Intercept	-0.50	1.32	34	-0.38
Length of time married	0.11**	0.04	70	2.65
Gender	1.19	1.31	70	0.91
Time	0.28	1.15	70	0.24
Gender x time	-1.31	1.51	70	-0.86
Treatment condition	-0.22	1.60	34	-0.14
Gender x treatment condition	-1.07	1.61	70	-0.66
Time x treatment condition	0.27	1.39	70	0.19
Gender x time x treatment condition	1.91	1.98	70	0.96
PTGI-I	-0.08	0.09	70	-0.95
Gender x PTGI-I	0.16	0.13	70	1.23
Time x PTGI-I	0.01	0.11	70	0.07
Gender x time x PTGI-I	-0.11	0.13	70	-0.81
Treatment condition x PTGI-I	0.01	0.13	70	0.10
Gender x treatment condition x PTGI-I	0.04	0.17	70	0.25
Time x treatment condition x PTGI-I	0.04	0.14	70	0.30

** $p < .01$.

Random Effects

Subject	u	$SE(u)$	z
Couple	9.74**	3.35	2.90
Individual	3.36*	1.75	1.92
(within couple)			
Residual	4.83**	1.06	4.57

* $p < .05$. ** $p < .01$.

Table 8

Correlations Between Partners in Posttraumatic Growth Scores (N = 36 couples)

	Posttest	Posttest	Posttest	Change in	Change in	Change in
	BF	PTGI	PTGI-I	BF	PTGI	PTGI-I
TAU	-.03	.08	-.04	.31	.02	-.09
RE	.10	.27	.16	.23	.07	-.12

Note. TAU is an abbreviation for the treatment-as-usual control condition, and RE is an abbreviation for the relationship enhancement treatment condition. BF is an abbreviation for the Benefit Finding scale; PTGI, for the Posttraumatic Growth Inventory; and PTGI-I for the PTGI Relating to Others subscale. All values failed to attain statistical significance.

Figure 1. Trajectories of Benefit Finding scores over time.

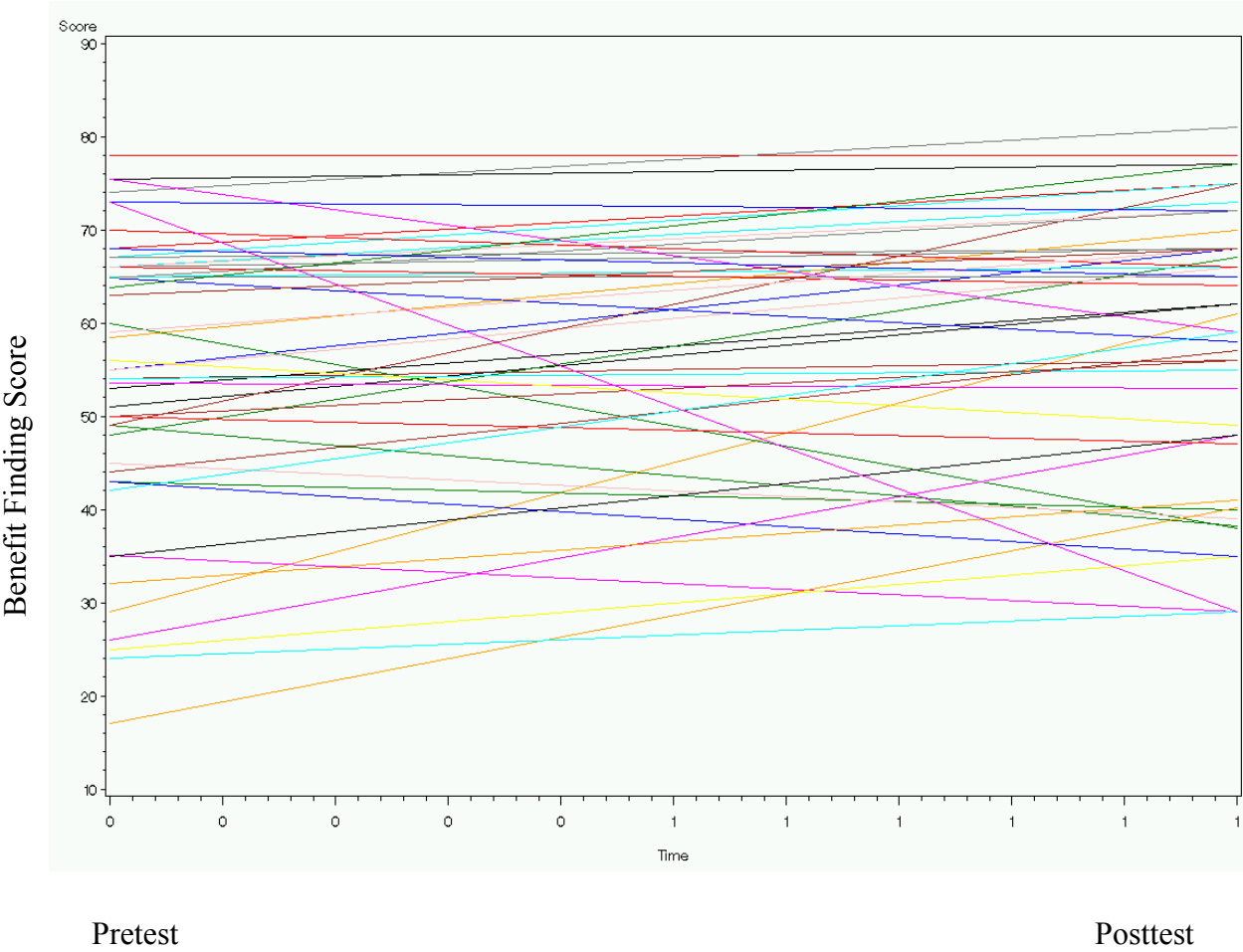


Figure 2. Trajectories of PTGI Summary scores over time.

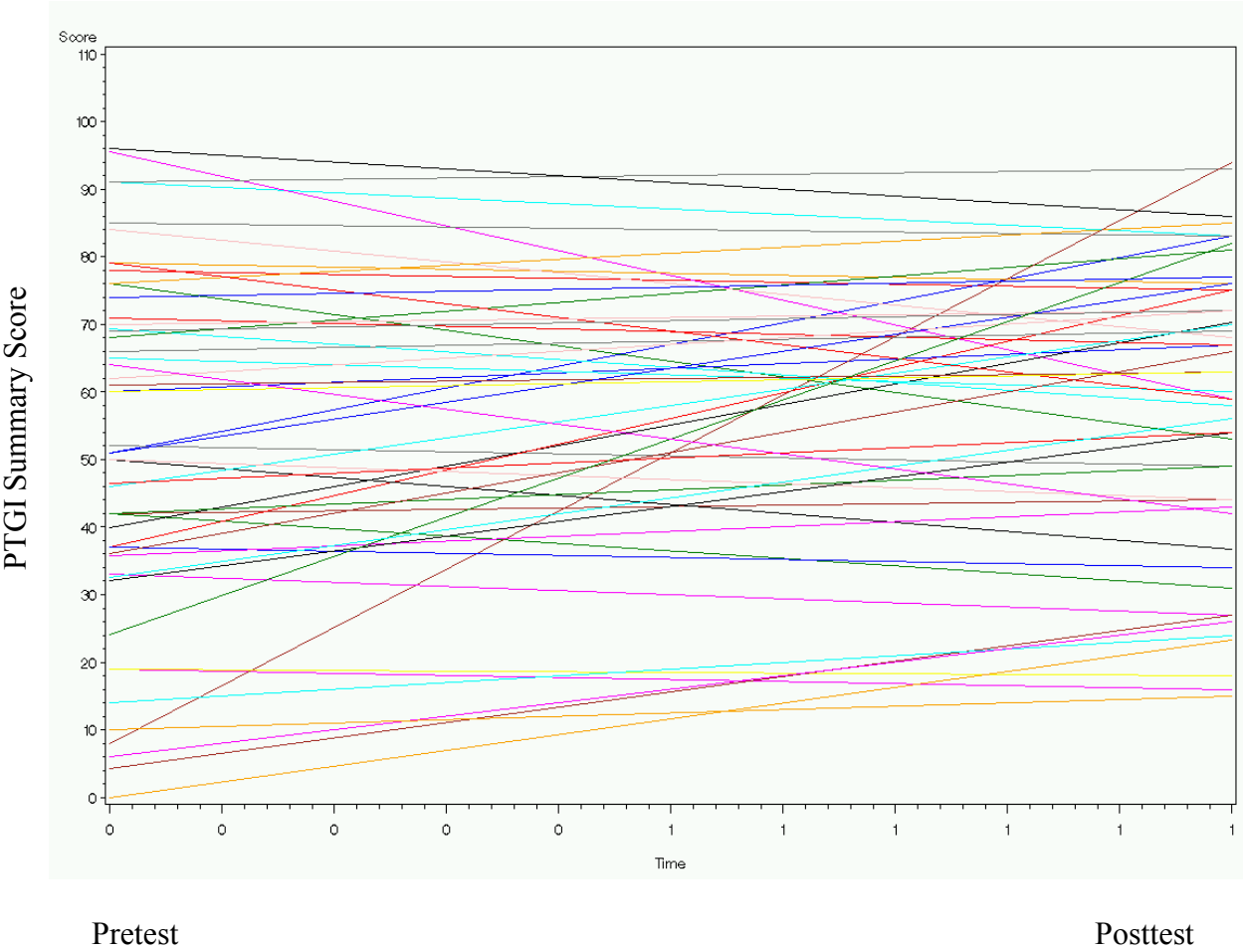


Figure 3. Trajectories of PTGI Relating to Others (PTGI-I) subscale scores over time.

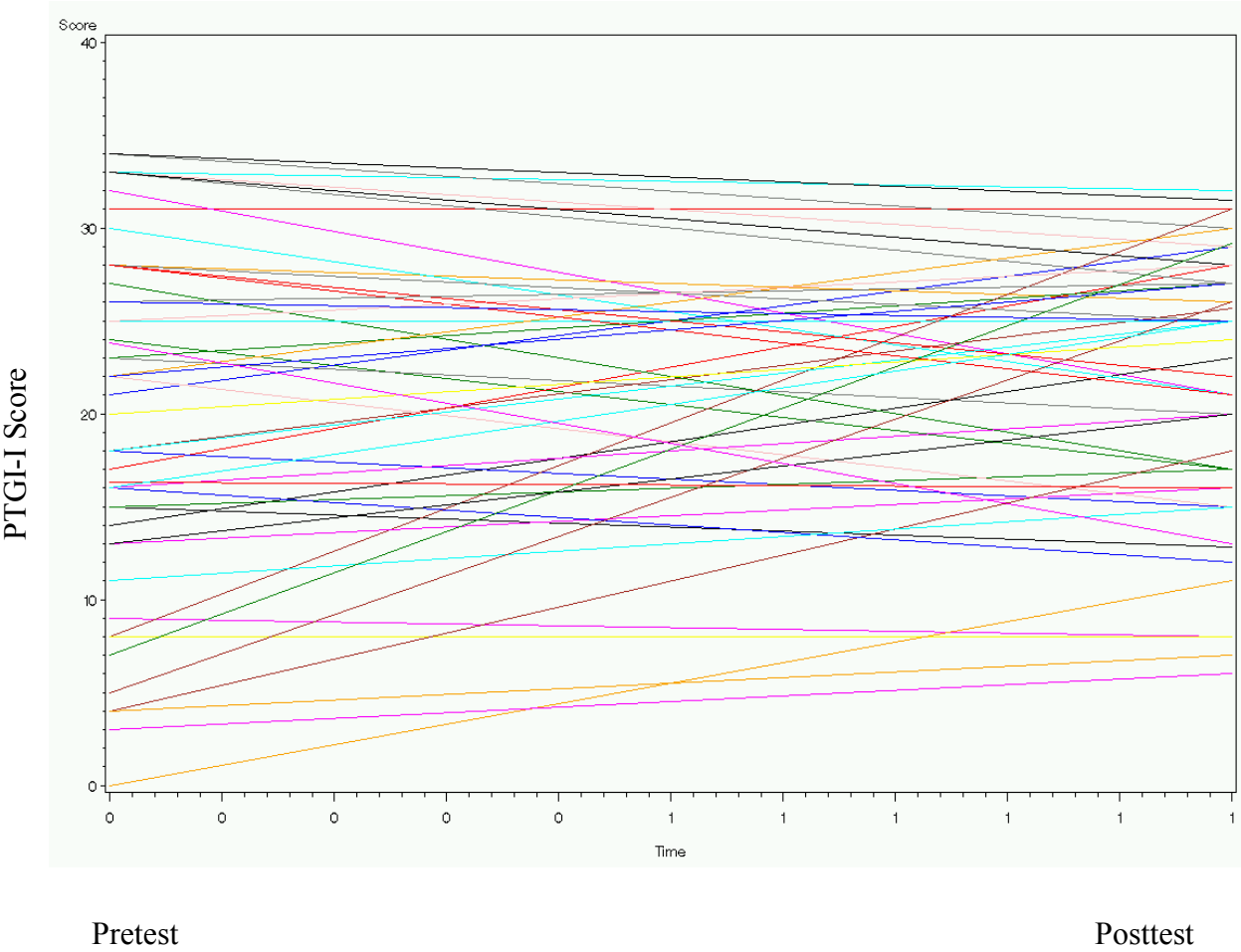


Figure 4. Trajectories of DAS-7 scores over time.

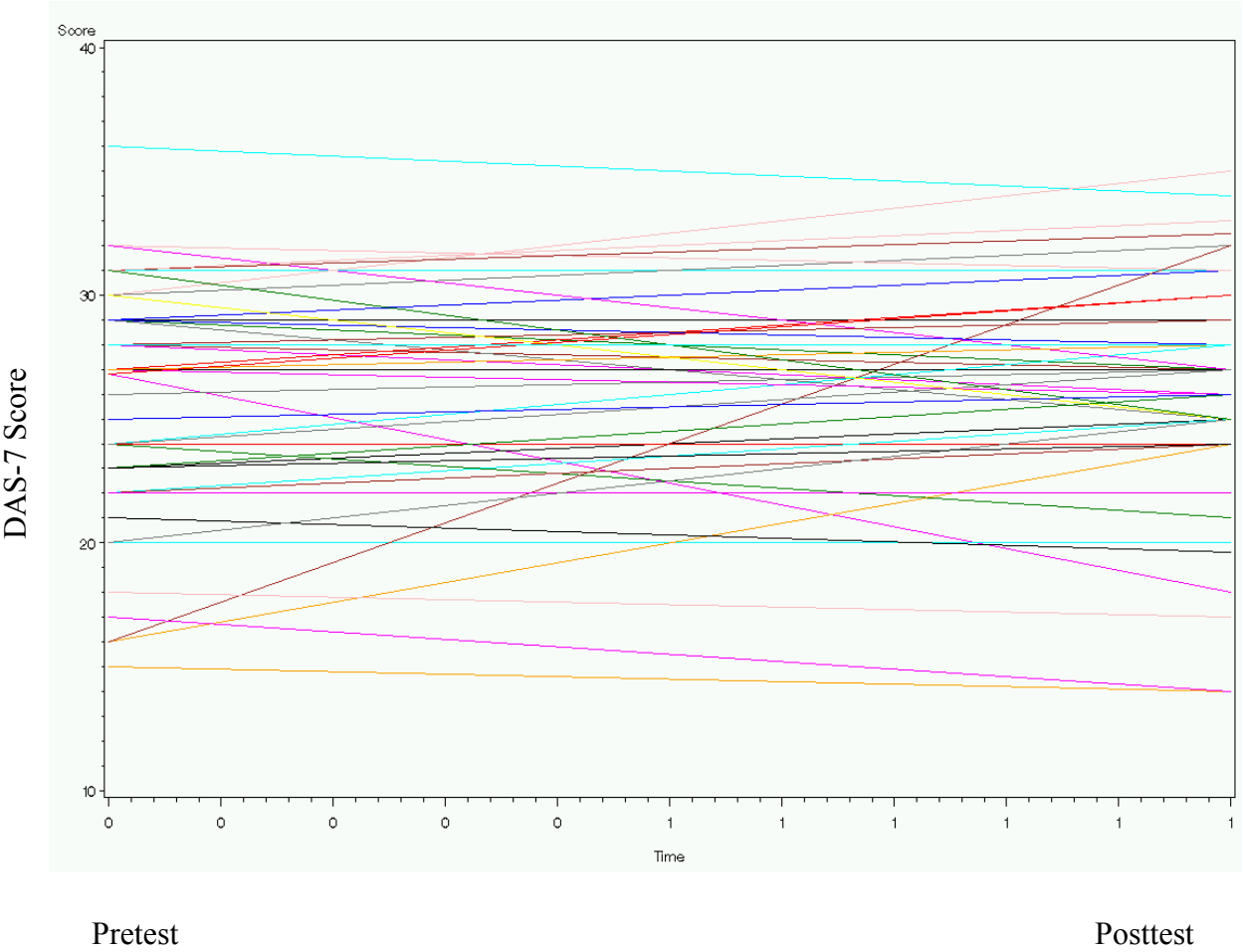


Figure 5. Gender by time by treatment interaction predicting PTGI Summary Scale scores.

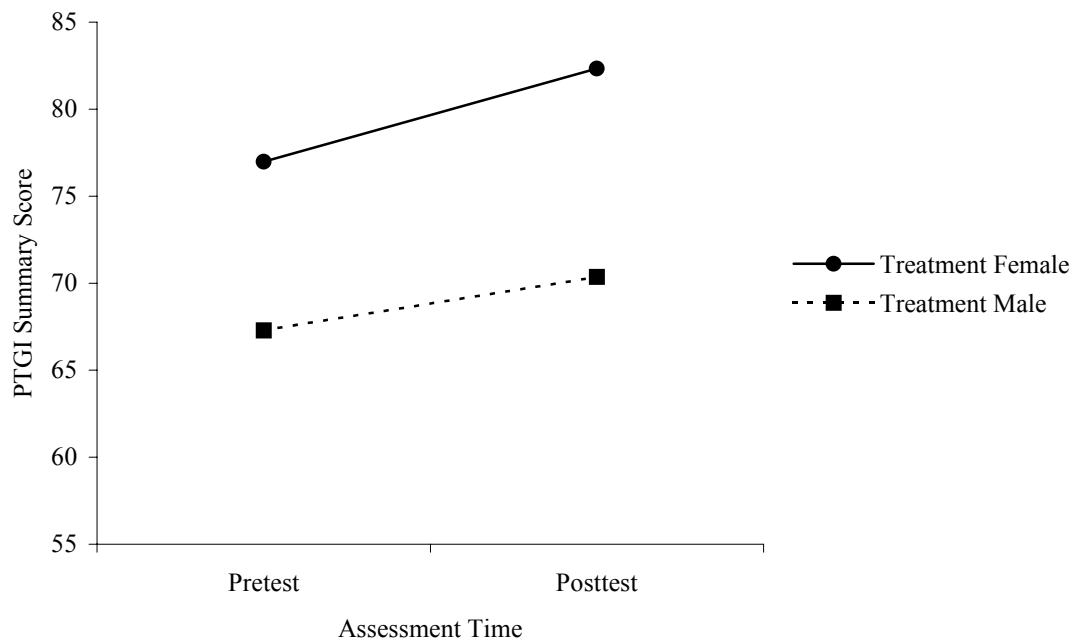
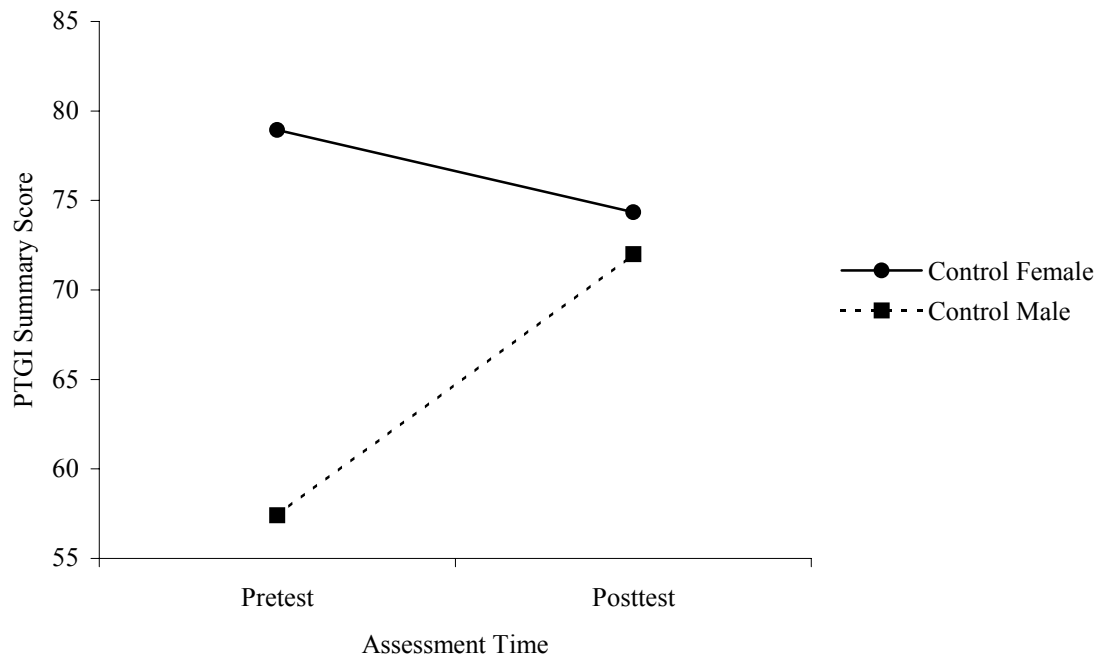
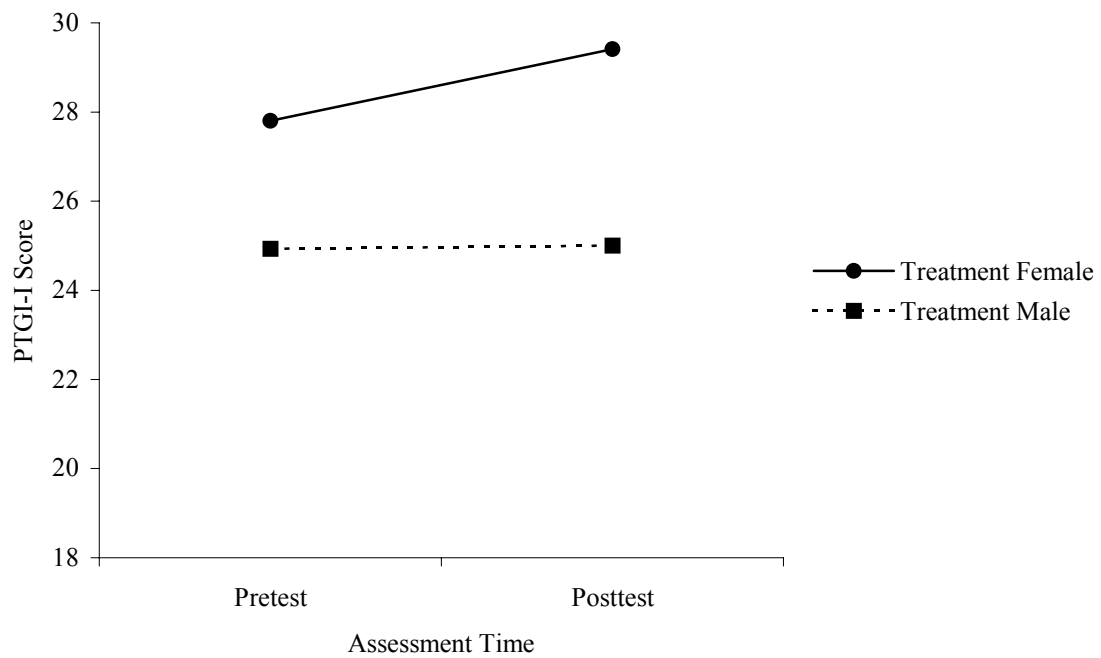
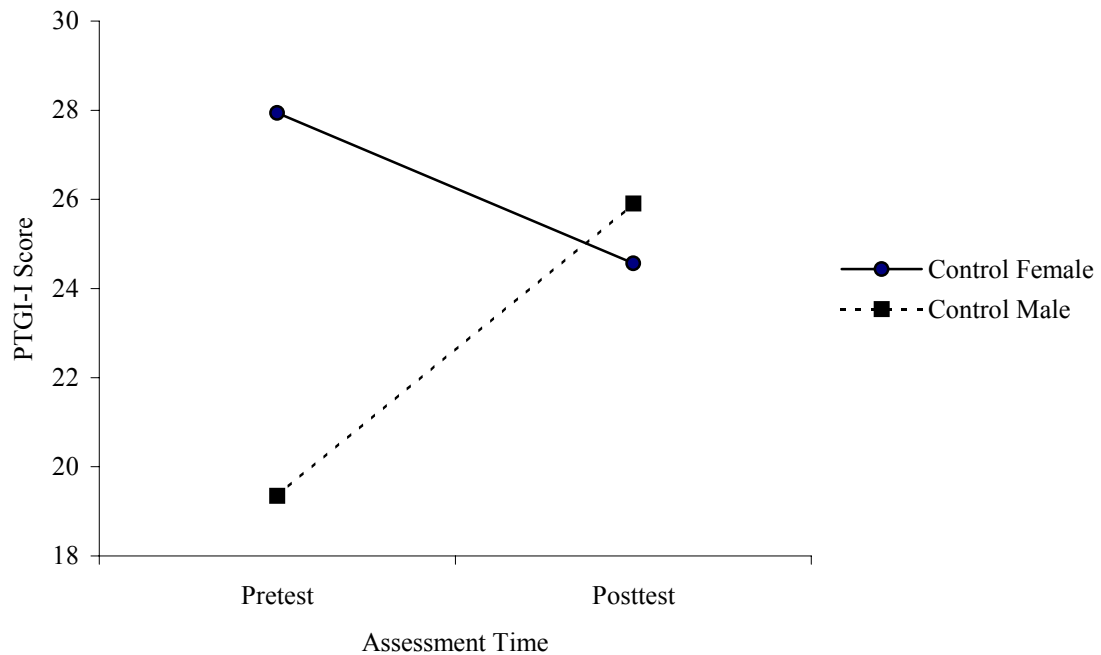


Figure 6. Gender by time by treatment interaction predicting scores on PTGI Relating to Others subscale (PTGI-I).



APPENDIX

Outline of Relationship Enhancement Intervention Sessions

Session I – Introduction to a Couple-Based Relationship Enhancement Perspective

1. Important factors in addressing breast cancer as a couple
 - a. Information
 - b. Types of support between partners
 - i. Practical assistance
 - ii. Making good decisions
 - iii. Emotional and esteem support
 - c. Areas important to address using these types of support
 - i. Changes in roles
 - ii. Sexual identity, sexuality, and sensuality
 - iii. Concerns and fears about death, future
2. Description of what this intervention will involve
3. Hearing the couple's concerns and current situation – practicing support
4. Provision of educational information about treatment and side effects

Session II – Decision-Making: Medical Decisions and Practical Assistance

1. Introduction to types of support – emotional and esteem; making good decisions; practical assistance
2. Guidelines for decision-making
3. Discussion of decision-making guidelines for the following domains
 - a. Working together to make medical and family decisions
 - b. Role transitions

- i. What is needed day-to-day to help partner
 - ii. What the partner can do and what means of assistance are needed
4. Application to important areas confronting couple

Session III – Emotional and Esteem Support

1. Guidelines for expressing feelings and thoughts and effective listening
2. Application to important areas confronting couple (e.g., worries about children, death, and future)

Session IV – Promoting a Healthy Sexual Adaptation

1. Discussion of typical areas of concern
2. Discussion of sexual side effects and worries
 - a. Discussion of tendency toward avoidance of discussion and sexual behavior
 - b. Discussion of female concerns regarding attractiveness, sexual identity
 - c. Discussion of male discomfort with female's body
 - d. Discussion of development of sexual dysfunctions
3. Addressing areas of sexual concern to couple
 - a. Sharing thoughts and feelings
 - b. Education, assignments, decision-making as needed
4. If there are not notable sexual concerns, discussion of how to enhance sexual and sensual aspects of relationship

Session V – Finding Meaning and Focusing on Positive Aspects of Life

1. Maintaining positive aspects of life
 - a. Discussion of potential tendency to let all of life be dominated by cancer and not enjoy one's blessings

- b. Discussion of what couple would like to do in daily life for fun, enjoyment, and that has meaning
- 2. Finding meaning and establishing priorities
 - a. Addressing what the couple is learning from this experience with cancer about what they truly value and want as priorities in life
 - b. Discussion of proactively building couple's life around what is important and what helps them achieve these goals
 - c. Couple discussion of what positive things have occurred or what important things they have learned or about which they have had insight during this difficult time
 - d. Couple practice in decision-making or problem-solving in this same area

Session VI – Addressing Final Concerns and Bringing Closure

- 1. Address any final issues from Sessions I-V
- 2. Review and farewell
 - a. Review of major messages from intervention
 - b. Discussion of any upcoming issues
 - c. Summary of couple's progress
 - d. Farewell and discussion of upcoming follow-up assessment

REFERENCES

- Affleck, G., & Tennen, H. (1996). Construing benefits from adversity: Adaptational significance and dispositional underpinnings. *Journal of Personality*, 64(4), 899-922.
- Affleck, G., Tennen, H., & Rowe, J. (1990). Mothers, fathers, and the crisis of newborn intensive care. *Infant mental health journal*, 11(1), 12-25.
- Aiken, L. S., & West, S. G. (1991). *Multiple Regression: Testing and interpreting interactions*. Thousand Oaks: Sage.
- American Cancer Society. (2006). *Cancer Facts and Figures 2006*. Atlanta: American Cancer Society.
- Andersen, B. L. (1985). Sexual functioning morbidity among cancer survivors: Current status and future research directions. *Cancer*, 55, 1835-1842.
- Andersen, B. L., Anderson, B., & deProse, C. (1989). Controlled prospective longitudinal study of women with cancer: II. Psychological outcomes. *Journal of Consulting and Clinical Psychology*, 57, 692-697.
- Andrykowski, M. A., Brady, M. J., & Hunt, J. W. (1993). Positive psychosocial adjustment in potential bone marrow transplant recipients: Cancer as psychosocial transition. *Psycho-Oncology*, 2, 261-276.
- Andrykowski, M. A., Curran, S. L., Studts, J. L., Cunningham, L., Carpenter, J. S., McGrath, P. C., et al. (1996). Psychosocial adjustment and quality of life in women with breast cancer and benign breast problems: A controlled comparison. *Journal of Clinical Epidemiology*, 49(8), 827-834.
- Antoni, M., Lehman, J., Kilbourn, K., Boyers, A., Culver, J., Alferi, S., et al. (2001). Cognitive-behavioral stress management intervention decreases the prevalence of depression and enhances benefit finding among women under treatment for early-stage breast cancer. *Health Psychology*, 20(1), 20-32.
- Atkins, D. C. (2005). Using multilevel models to analyze couple and family treatment data: Basic and advanced issues. *Journal of Family Psychology*, 19, 98-110.
- Baider, L., & Kaplan De-Nour, A. (1988). Adjustment to cancer: Who is the patient--the husband or the wife? *Israel Journal of Medical Sciences*, 24(9-10), 631-636.
- Baider, L., Koch, U., Esacson, R., & Kaplan De-Nour, A. (1998). Prospective study of cancer patients and their spouses: The weakness of marital strength. *Psycho-Oncology*, 7, 49-56.
- Baider, L., Perez, T., & De-Nour, A. K. (1989). Gender and adjustment to chronic disease. A study of couples with colon cancer. *General Hospital Psychiatry*, 11(1), 1-8.

- Baider, L., Walach, N., Perry, S., & Kaplan De-Nour, A. (1998). Cancer in married couples: Higher or lower distress? *Journal of Psychosomatic Research*, 45(3), 239-248.
- Baucom, D. H., Heinrichs, N., Scott, J. L., Gremore, T., Kirby, J. S., & Zimmerman, T. (2005, November). *Couple-based interventions for breast cancer: Findings from three continents*. Paper presented at the 39th Annual Convention of the Association for Behavioral and Cognitive Therapies, Washington, DC.
- Bellizzi, K. M., & Blank, T. O. (2006). Predicting posttraumatic growth in breast cancer survivors. *Health Psychology*, 25, 47-56.
- Ben-Zur, H., Gilbar, O., & S., L. (2001). Coping with breast cancer: Patient, spouse, and dyad models. *Psychosomatic Medicine*, 63(1), 32-39.
- Best, M., Streisand, R., Catania, L., & Kazak, A. E. (2001). Parental distress during pediatric leukemia and posttraumatic stress symptoms (PTSS) after treatment ends. *Journal of Pediatric Psychology*, 26(5), 299-307.
- Bloom, J. R. (2002). Surviving and thriving. *Psycho-Oncology*, 11(2), 89-92.
- Bower, J. E., Meyerowitz, B. E., Desmond, K. A., Bernaards, C. A., Rowland, J. H., & Ganz, P. A. (2005). Perceptions of positive meaning and vulnerability following breast cancer: Predictors and outcomes among long-term breast cancer survivors. *Annals of Behavioral Medicine*, 29, 236-245.
- Calhoun, L. G., & Tedeschi, R. G. (1998a). Beyond recovery from trauma: Implications for clinical practice and research. (Thriving: Broadening the paradigm beyond illness to health). *Journal of Social Issues*, 54(2), 357-371.
- Calhoun, L. G., & Tedeschi, R. G. (1998b). Posttraumatic growth: Future directions. In R. G. Tedeschi, C. L. Park & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 215-238). Mahwah, NJ: Erlbaum.
- Calhoun, L. G., & Tedeschi, R. G. (1999). *Facilitating posttraumatic growth: A clinician's guide*. Mahwah, NJ: Erlbaum.
- Calhoun, L. G., & Tedeschi, R. G. (2004). The foundations of posttraumatic growth: New considerations. *Psychological Inquiry*, 15(1), 93-102.
- Caplan, G. (1964). *Principles of preventive psychiatry*. New York: Basic Books.
- Carver, C. S., & Antoni, M. H. (2004). Finding benefit in breast cancer during the year after diagnosis predicts better adjustment 5 to 8 years after diagnosis. *Health Psychology*, 23(595-598).
- Cassileth, B. R., Lusk, E. R., Strouse, T. B., Miller, D. S., Brown, L. L., & Cross, P. A. (1985). A psychological analysis of cancer patients and their next of kin. *Cancer*, 55, 72-76.

- Chambless, D. L., & Hollon, S. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology*, 66, 7-18.
- Christensen, D. N. (1983). Postmastectomy couple counseling: An outcome study of a structured treatment protocol. *Journal of Sex and Marital Therapy*, 9(4), 266-275.
- Collins, R. L., Taylor, S. E., & Skokan, L. A. (1990). A better world or a shattered vision? Changes in life perspectives following victimization. *Social Cognition*, 8(3), 263-285.
- Cordova, M. J., Cunningham, L. L. C., Carlson, C. R., & Andrykowski, M. A. (2001a). Posttraumatic growth following breast cancer: A controlled comparison study. *Health Psychology*, 20(3), 176-185.
- Cordova, M. J., Cunningham, L. L. C., Carlson, C. R., & Andrykowski, M. A. (2001b). Social constraints, cognitive processing, and adjustment to breast cancer. *Journal of Consulting and Clinical Psychology*, 69(4), 706-711.
- Coward, D. D. (1990). The lived experience of self-transcendence in women with advanced breast cancer. *Nursing Science Quarterly*, 3, 162-169.
- Cruess, D. G., Antoni, M. H., Kumare, M., McGregor, B. A., Alferi, S., Boyers, A. E., et al. (2001). Effects of stress management on testosterone levels in women with early-stage breast cancer. *International Journal of Behavioral Medicine*, 8(3), 194-207.
- Cruess, D. G., Antoni, M. H., McGregor, B. A., Kilbourn, K. M., Boyers, A. E., Alferi, S. M., et al. (2000). Cognitive-behavioral stress management reduces serum cortisol by enhancing benefit finding among women being treated for early stage breast cancer. *Psychosomatic Medicine*, 62(3), 304-308.
- Davis, C. G., Nolen-Hoeksema, S., & Larson, J. (1998). Making sense of loss and benefiting from the experience: Two construals of meaning. *Journal of Personality and Social Psychology*, 75(2), 561-574.
- Dirksen, S. R. (1995). Search for meaning in long-term cancer survivors. *Journal of Advanced Nursing*, 21, 628-633.
- Epstein, N., & Baucom, D. H. (2002). *Enhanced cognitive-behavioral therapy for couples: A contextual approach*. Washington, DC: American Psychological Association.
- Fife, B. L. (1994). The conceptualization of meaning in illness. *Social Science and Medicine*, 38(2), 309-316.
- Folkman, S. (1997). Positive psychological states and coping with severe stress. *Social Science and Medicine*, 45(8), 1207-1221.
- Folkman, S., & Greer, S. (2000). Promoting psychological well-being in the face of serious illness; When theory, research and practice inform each other. *Psycho-Oncology*, 9, 11-19.

- Folkman, S., & Moskowitz, J. T. (2000). Positive affect and the other side of coping. *American Psychologist*, 55(6), 647-654.
- Ganz, P. A. (2000). Quality of life across the continuum of breast cancer care. *The Breast Journal*, 6(5), 324-330.
- Germino, B. B., Fife, B. L., & Funk, S. B. (1995). Cancer and the partner relationship: What is its meaning? *Seminars in Oncology Nursing*, 11(1), 43-50.
- Gilbar, O. (1999). Gender as a predictor of burden and psychological distress of elderly husbands and wives of cancer patients. *Psycho-Oncology*, 8, 287-294.
- Gotay, C. C., & Muraoka, M. Y. (1998). Quality of life in long-term survivors of adult-onset cancers. *Journal of National Cancer Institute*, 90(9), 656-667.
- Heyman, R. E., Sayers, S. L., & Bellack, A. S. (1994). Global marital satisfaction versus marital adjustment: An empirical comparison of three measures. *Journal of Family Psychology*, 8(4), 432-446.
- Ho, S. M. Y., Chan, C. L. W., & Ho, R. T. H. (2004). Posttraumatic growth in Chinese cancer survivors. *Psycho-Oncology*, 13, 377-389.
- Hox, J. (1998). Multilevel modeling: When and why? In I. Balderjahn, R. Mathar & M. Schader (Eds.), *Classification, Data Analysis, and Data Highways* (pp. 147-154). New York: Springer Verlag.
- Hunsley, J., Best, M., Lefebvre, M., & Vito, D. (2001). The seven-item short form of the Dyadic Adjustment Scale: Further evidence for construct validity. *American Journal of Family Therapy*, 29, 325-335.
- Hunsley, J., Pinsent, C., Lefebvre, M., James-Turner, S., & Vito, D. (1995). Construct validity of the short forms of the Dyadic Adjustment Scale. *Family Relations*, 44, 231-237.
- Janoff-Bulman, R. (2004). Posttraumatic growth: Three explanatory models. *Psychological Inquiry*, 15(1), 30-34.
- Jemal, A., Murray, T., Samuels, A., Ghafoor, A., Ward, E., & Thun, M. J. (2003). Cancer statistics, 2003. *CA: A Cancer Journal for Clinicians*, 53, 5-26.
- Katz, R. C., Flasher, L., Cacciapaglia, H., & Nelson, S. (2001). The psychosocial impact of cancer and lupus: A cross validation study that extends the generality of "benefit-finding" in patients with chronic disease. *Journal of Behavioral Medicine*, 24(6), 561-571.

- Kuijter, R. G., Buunk, B. P., De Jong, G. M., Ybema, J. F., & Sanderman, R. (2004). Effects of a brief intervention program for patients with cancer and their partners on feelings of inequity, relationship quality, and psychological distress. *Psycho-Oncology*, 13(5), 321-334.
- Langsley, D. G., & Kaplan, D. M. (1968). *The treatment of families in crisis*. New York: Grune & Stratton.
- Lechner, S. C., & Antoni, M. H. (2004). Posttraumatic growth and group-based interventions for persons dealing with cancer: What have we learned so far? *Psychological Inquiry*, 15(1), 35-41.
- Lechner, S. C., Zakowski, S. G., Antoni, M. H., Greenhawt, M., Block, K., & Block, P. (2003). Do sociodemographic and disease-related variables influence benefit-finding in cancer patients? *Psycho-Oncology*, 12, 491-499.
- Lepore, S. J., Silver, R. C., Wortman, C. B., & Wayment, H. A. (1996). Social constraints, intrusive thoughts, and depressive symptoms among bereaved mothers. *Journal of Personality and Social Psychology*, 70, 271-282.
- Lewis, J. A., Manne, S. L., DuHamel, K. N., Johnson Vickberg, S. M., Bovbjerg, D. H., Currie, V., et al. (2001). Social support, intrusive thoughts, and quality of life in breast cancer survivors. *Journal of Behavioral Medicine*, 24(3), 231-245.
- Lichtman, R. R., Taylor, S. E., & Wood, J. V. (1988). Social support and marital adjustment after breast cancer. *Journal of Psychosocial Oncology*, 5(3), 47-74.
- Lieberman, M. A., Golant, M., Giese-Davis, J., Winzlenberg, A., Benjamin, H., Humphreys, K., et al. (2003). Electronic support groups for breast carcinoma: A clinical trial of effectiveness. *Cancer*, 97, 920-925.
- Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress*, 17(1), 11-21.
- Luszczynska, A., Mohamed, N. E., & Schwarzer, R. (2005). Self-efficacy and social support predict benefit finding 12 months after cancer surgery: The mediating role of coping strategies. *Psychology, Health and Medicine*, 10(365-375).
- Manne, S. L., Ostroff, J., Winkel, G., Goldstein, L., Fox, K., & Grana, G. (2004). Posttraumatic growth after breast cancer: Patient, partner, and couple perspectives. *Psychosomatic Medicine*, 66, 442-454.
- McMillen, J. C. (2004). Posttraumatic growth: What's it all about? *Psychological Inquiry*, 15(1), 48-52.

- Mohr, D. C., Dick, L. P., Russo, D., Pinn, J., Boudewyn, A. C., Likosky, W., et al. (1999). The psychosocial impact of multiple sclerosis: Exploring the patient's perspective. *Health Psychology, 18*(4), 376-382.
- Moyer, A., & Salovey, P. (1996). Psychosocial sequelae of breast cancer and its treatment. *Annals of Behavioral Medicine, 18*, 110-125.
- National Cancer Institute. (2006). *Cancer trends progress report - 2005 update*. Bethesda: National Cancer Institute.
- Nelson, J. P. (1996). Struggling to gain meaning: living with the uncertainty of breast cancer. *Advances in Nursing Science, 18*(3), 59-76.
- Nijboer, C., Tempelaar, R., Sanderman, R., Triemstra, M., Spruijt, R. J., & van den Bos, G. (1998). Cancer and caregiving: The impact on the caregiver's health. *Psycho-Oncology, 7*, 3-13.
- Nolen-Hoeksema, S., & Davis, C. G. (2004). Theoretical and methodological issues in the assessment and interpretation of posttraumatic growth. *Psychological Inquiry, 15*(1), 60-64.
- Northouse, L. L., Mood, D., Templin, T., Mellon, S., & George, T. (2000). Couples' patterns of adjustment to colon cancer. *Social Science and Medicine, 50*, 271-284.
- O'Connor, A. P., Wicker, C. A., & Germino, B. B. (1990). Understanding the cancer patient's search for meaning. *Cancer Nursing, 13*(3), 167-175.
- Park, C. L. (1998). Implication of posttraumatic growth for individuals. In R. G. Tedeschi, C. L. Park & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 153-177). Mahwah, NJ: Erlbaum.
- Park, C. L. (2004). The notion of growth following stressful life experiences: Problems and prospects. *Psychological Inquiry, 15*(1), 69-76.
- Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality, 64*(1), 71-105.
- Pistrang, N., & Barker, C. (1995). The partner relationship in psychological response to breast cancer. *Social Science and Medicine, 40*(6), 789-797.
- Polatinsky, S., & Esprey, Y. (2000). An assessment of gender differences in the perception of benefit resulting from the loss of a child. *Journal of Traumatic Stress, 13*(4), 709-718.
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Samms, M. C. (1999). The husband's untold account of his wife's breast cancer: A chronologic analysis. *Oncology Nursing Forum, 26*(8), 1351-1358.

- Schaefer, J. A., & Moos, R. H. (1998). The context for posttraumatic growth: Life crises, individual and social resources, and coping. In R. G. Tedeschi, C. L. Park & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 99-125). Mahwah, NJ: Erlbaum.
- Schulz, U., & Mohamed, N. E. (2004). Turning the tide: Benefit finding after cancer surgery. *Social Science and Medicine*, 59, 653-662.
- Scott, J. L., Halford, W. K., & Ward, B. (2004). United we stand? The effects of a couple-coping intervention on adjustment to breast or gynaecological cancer. *Journal of Consulting and Clinical Psychology*, 72(6), 1122-1135.
- Sears, S. R., Stanton, A. L., & Danoff-Burg, S. (2003). The Yellow Brick Road and the Emerald City: Benefit finding, positive reappraisal coping, and posttraumatic growth in women with early-stage breast cancer. *Health Psychology*, 22(5), 487-497.
- Sharpley, C. F., & Rogers, H. J. (1984). Preliminary validation of the abbreviated Spanier Dyadic Adjustment Scale: Some psychometric data regarding a screening test of marital adjustment. *Educational and Psychological Measurement*, 44, 1045-1050.
- Stanton, A. L., Danoff-Burg, S., Sworowski, L. A., Collins, C. A., Branstetter, A. D., Rodriguez-Hanley, A., et al. (2002). Randomized, controlled trial of written emotional expression and benefit finding in breast cancer patients. *Journal of Clinical Oncology*, 20(20), 4160-4168.
- Stanton, A. L., & Low, C. A. (2004). Toward understanding posttraumatic growth: Commentary on Tedeschi and Calhoun. *Psychological Inquiry*, 15(1), 76-80.
- Taylor, E. J. (1995). Whys and wherefores: Adult patient perspectives of the meaning of cancer. *Seminars in Oncology Nursing*, 11(1), 32-40.
- Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38, 1161-1173.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103(2), 193-210.
- Taylor, S. E., Lichtman, R. R., & Wood, J. V. (1984). Attributions, beliefs about control, and adjustment to breast cancer. *Journal of Personality and Social Psychology*, 46(3), 489-502.
- Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: Growing in the aftermath of suffering*. Thousand Oaks, CA: Sage.
- Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9(3), 455-471.

- Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry*, 15(1), 1-18.
- Tedeschi, R. G., Park, C. L., & Calhoun, L. G. (1998). Posttraumatic growth: Conceptual issues. In R. G. Tedeschi, C. L. Park & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 1-22). Mahwah, NJ: Erlbaum.
- Tennen, H., & Affleck, G. (1998). Personality and transformation in the face of adversity. In R. G. Tedeschi, C. L. Park & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 65-98). Mahwah, NJ: Erlbaum.
- Thibodeau, J., & MacRae, J. (1997). Breast cancer survival: A phenomenological inquiry. *Advances in Nursing Science*, 19(4), 65-74.
- Thompson, S. C. (1985). Finding positive meaning in a stressful event and coping. *Basic and Applied Social Psychology*, 6(4), 279-295.
- Thompson, S. C., & Pitts, J. (1993). Factors relating to a person's ability to find meaning after a diagnosis of cancer. *Journal of Psychosocial Oncology*, 11(3), 1-21.
- Thornton, A. A. (2002). Perceiving benefits in the cancer experience. *Journal of Clinical Psychology in Medical Settings*, 9(2), 153-165.
- Tomich, P. L., & Helgeson, V. S. (2004). Is finding something good in the bad always good? Benefit finding among women with breast cancer. *Health Psychology*, 23, 16-23.
- Urcuyo, K. R., Boyers, A. E., Carver, C. S., & Antoni, M. H. (2005). Finding benefit in breast cancer: Relations with personality, coping, and concurrent well-being. *Psychology and Health*, 20, 175-192.
- Weiss, T. (2002). Posttraumatic growth in women with breast cancer and their husbands: An intersubjective validation study. *Journal of Psychosocial Oncology*, 20(2), 65-80.
- Weiss, T. (2004a). Correlates of posttraumatic growth in husbands of breast cancer survivors. *Psycho-Oncology*, 13, 260-268.
- Weiss, T. (2004b). Correlates of posttraumatic growth in married breast cancer survivors. *Journal of Social and Clinical Psychology*, 23, 733-746.
- Wenzel, L. B., Donnelly, J. P., Fowler, J. M., Habbal, R., Taylor, T. H., Aziz, N., et al. (2002). Resilience, reflection, and residual stress in ovarian cancer survivorship: A gynaecological oncology group study. *Psycho-Oncology*, 11, 142-153.
- Widows, M. R., Jacobsen, P. B., Booth-Jones, M., Fields, K. K. (2005). Predictors of posttraumatic growth following bone marrow transplantation for cancer. *Health Psychology*, 24, 266-273.

- Wyatt, G., Kurtz, M. E., & Liken, M. (1993). Breast cancer survivors: An exploration of quality of life issues. *Cancer Nursing, 16*(6), 440-448.
- Yaskowich, K. M. (2003). Posttraumatic growth in children and adolescents with cancer. *Dissertation Abstracts International: Section B: The Sciences and Engineering, 63*(8-B), 3948.
- Zakowski, S. G., Harris, C., Krueger, N., Laubmeier, K. K., Garrett, S., Flanigan, R., et al. (2003). Social barriers to emotional expression and their relations to distress in male and female cancer patients. *British Journal of Health Psychology, 8*, 271-286.
- Zakowski, S. G., Ramati, A., Morton, C., Johnson, P., & Flanigan, R. (2004). Written emotional disclosure buffers the effects of social constraints on distress among cancer patients. *Health Psychology, 23*(6), 555-563.
- Zemore, R., & Shepel, L. F. (1989). Effects of breast cancer and mastectomy on emotional support and adjustment. *Social Science and Medicine, 28*(1), 19-27.