

Abstract

Cummins, Rene E. An investigation of posttraumatic stress symptoms and ways of coping among cancer patients. (Under the direction of Charles Korte.)

Relationships among posttraumatic stress symptoms, ways of coping with cancer, and personal, socioenvironmental and situational background factors were examined for 60 cancer patients recruited from a large regional cancer center in NC. Measures included an adapted form of the Davidson Trauma scale, the Stress Symptoms Scale, and Ways of Coping with Cancer. Correlational and regression analyses were used to examine these relationships. Markedly high levels of posttraumatic stress symptoms were found as over half of the participants had a threshold score of 40 or higher. Cancer patients were highly flexible in their coping efforts, and a third of the participants lacked a primary coping method. The background factors accounted for 23% to 45% of the variance in levels of total, intrusive and avoidant stress symptoms; hyperarousal stress symptoms were not well predicted. The background factors explained 21% to 38% of the variance in 4 of the 5 coping methods; only behavioral escape-avoidance was not well predicted. Higher levels of total stress symptoms were associated with younger age, not being married, more recent diagnosis, and currently being in treatment. Total stress symptoms were significantly related to coping by social support, and both forms of escape-avoidance, but unrelated to distancing and positive focus. Results may inform prevention strategies and targeted interventions to strengthen or counteract the dynamics among these relationships, and may guide future research efforts concerning cancer patients.

**AN INVESTIGATION OF POSTTRAUMATIC STRESS SYMPTOMS
AND WAYS OF COPING AMONG CANCER PATIENTS**

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Dedication

This dissertation is dedicated to the memory of my brother, Randy Scott Cummins. Your bright and guiding light was extinguished far too soon. With your caring and wisdom, you would have blazed many trails before me. I hope you are proud of the work I am doing to promote social justice and civil rights. You are always in my thoughts as I move through my life with one empty space. I honor your memory.

And

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AN INVESTIGATION OF POSTTRAUMATIC STRESS SYMPTOMS AND WAYS OF COPING AMONG CANCER PATIENTS

In 1980, posttraumatic stress disorder was first included in the Diagnostic and Statistical Manual of Mental Disorders, third edition, or DSM-III (American Psychiatric Association, 1980). Recent investigations have examined posttraumatic stress disorder which resulted from war or military combat (Rubin, Feldman, & Beckham, 2004; Thabet, Abed, & Vostanis, 2004; Thompson et al., 2004), natural disasters (Bodvarsdottir & Elklit, 2004; Liao, Lee, Lee, & Huang, 2004; Shalev, Tuval-Mashiach, & Hadar, 2004), incarceration (Battle, Zlotnick, Najavtis, Gutierrez, & Winsor, 2003; Cashel, Ovaert, & Holliman, 2000; Keller et al., 2003), technological disasters (Norris et al., 2002; Weisaeth & tonnessen, 2003; Yule, 1992), airplane accidents (Carlier & Gersons, 1995; Jenike, 1995; Marks, Yule, & de Silva, 1995), terrorist acts (de Bocanegra & Brickman, 2004; Marshall & Galea, 2004; Newman, 2004; Qin et al., 2003), torture (Allodi, 1994; Sabian, Cardozo, Nackerud, Kaiser, & Varese, 2003; Thapa, Ommeren, Sharma, de Jong, & Hauff, 2003; Thompson & McGorry, 1995), crime victimization (Craig-Henderson & Sloan, 2003; Falsetti & Resick, 1995; Shaw & Pease, 2002), witnessing violence (Berton & Stabb, 1996; Brill, Fiorentino, & Grant, 2001; Buka, Stichick, Birdthistle, & Earls, 2001; Jaycox et al., 2002), physical assault (Grey, 2002; Hanson et al., 2001; Kilpatrick et al., 2003), rape (Nixon, Nishith, & Resick, 2004; Ruggiero et al., 2004), motor vehicle accidents (Blanchard et al., 2003; Silove et al., 2003; Veazey, Blanchard, Hickling, & Buckley, 2004), and chronic community violence (Foster, Kuperminc, & Price, 2004; Jaycox, Marshall, & Orlando, 2003; Scarpa, 2003). Each of

these areas of investigation represented a catastrophic event or extreme stressor which qualified for the development of posttraumatic stress disorder (American Psychiatric Association, 1987, 1994).

Medical Treatments and Procedures as Traumatic Events

Many aspects of serious illness, medical treatments, and medical procedures can be traumatic, and recent investigators have noted the occurrence of posttraumatic stress symptoms and the resulting posttraumatic stress disorder as a long-term psychological sequelae of such medical events. Common to all of these reports was the discrepancy between physical healing on the one hand and poor psychological recovery often with the avoidance of medical care or contact on the other hand.

In the treatment of Myocardial infarction, Israeli researchers (Kutz, Garb & David, 1988) noted the resemblance of reactions displayed by some patients to those of posttraumatic stress disorder from Holocaust and war survivors; their epidemiological data estimated that 15% of their patients had symptoms of chronic posttraumatic stress disorder within the first year following the myocardial infarction and an additional 5 to 10% displayed an acute form of posttraumatic stress disorder which subsided within the first year. Kutz and colleagues questioned the requirement of an external rather than an internal event in the diagnosis of posttraumatic stress disorder in myocardial infarction patients, and they advocated consideration for the interaction of the event and the response to determine the occurrence of trauma. Shalev and colleagues (1993) offered support for this position in case studies of post-myocardial infarction patients who engaged in life-threatening activities, challenged their hearts through sudden physical

efforts, avoided medical consultation and tried to repress thoughts of the illness following seemingly successful medical procedures.

The occurrence of burn injuries involves two stressor events, the trauma which caused the burns and the pain and injury associated with treatment which act as a constant reminder of the trauma (Davis & Breslau, 1994). Ptacek, Patterson, Montgomery, and Heimbach (1995) examined pain control and the relevance of the immediate reduction of suffering to outcomes in terms of quality of life, including symptoms of posttraumatic stress disorder; the authors demonstrated the utility of burn pain control beyond suffering as higher levels of pain increased the risk of poor adjustment following discharge. Patterson, Carrigan, Questad, and Robinson (1990) assessed symptoms of posttraumatic stress disorder in patients with major burn injuries during their hospitalization; total body surface area burn, length of hospitalization, being female, and lack of responsibility for the burn predicted a positive diagnosis of posttraumatic stress disorder. These authors concluded that the disorder might be preventable if these identified at-risk patients received psychological treatment soon after their injuries. Roca, Spencer, and Munster (1992) assessed 31 burn patients and found only 7% met the criteria for posttraumatic stress disorder at discharge; however, this rate more than tripled as 22% met the criteria at four months following discharge, and substantial symptoms of avoidance and numbing emerged during this time frame.

Fisch and Tadmor (1989) reported a case history of a woman who received a therapeutic abortion with severe complications, and the subsequent posttraumatic stress disorder symptoms she experienced, including avoidance behavior with respect to medical environments. The authors concluded that some medical and surgical

procedures are stressful enough to produce posttraumatic stress disorder symptoms in vulnerable patients.

Schreiber and Galai-Gat (1993) examined uncontrolled pain as the cause of posttraumatic stress disorder. The authors concluded that uncontrolled and prolonged pain can in itself be a stressor of catastrophic proportions which may result in the development of posttraumatic stress disorder.

Shalev and colleagues (1993) reported a case involving a tonsillectomy with severe complications in which the patient also avoided contact with the medical personnel who were involved in the operation. Two months following the surgical procedure, the patient met the criteria for a diagnosis of posttraumatic stress disorder.

Hocking and Kienig (1995) examined chronic illness among elderly patients and reported 10 to 20% of these patients experienced clinically significant symptoms of anxiety, including posttraumatic stress disorder. With advanced age, predisposing factors such as prior traumatic events may increase the risk of developing posttraumatic stress disorder during chronic illnesses. A higher threshold of discomfort also may exist among elderly patients such that symptoms are not reported and treatment is not sought until distress is quite significant. The authors concluded that posttraumatic stress disorder may not be accurately and adequately diagnosed among elderly patients.

Nir (1985) reported early observations concerning posttraumatic stress disorder in children with cancer. Medical advances in pediatric oncology have significantly increased the survival rate for children with cancer, but sometimes this has serious consequences for the child from prolonged and aggressive treatments and grave

consequences of the therapies. Nir reported that he and his colleagues were struck by the extent to which so many of their patients fulfilled the diagnostic criteria for posttraumatic stress disorder. He concluded that the diagnosis of childhood cancer is almost always accompanied by posttraumatic stress disorders.

Other researchers have reported posttraumatic stress disorder symptoms resulting from cancer diagnosis, treatment and care Shalev and colleagues (1993) presented a case history of a young woman following a craniotomy which resulted from an emergency room diagnosis of a brain tumor. The patient had a strong emotional reaction to the suddenness of the diagnosis and surgical procedures, which Green and colleagues (1990) identified as an important risk factor for the development of posttraumatic stress disorder. This patient reported intrusive symptoms and persistent avoidance of stimuli associated with the operation, including further medical consultations.

Devlen, Maguire, Phillips, Crowther, and Chambers (1987a) assessed patients with lymphomas; these patients have a more favorable prognosis than other patients with cancer. Psychological problems were reported to be three to five times higher than rates found in a community sample; since this was a retrospective study and subject to error of recall, the authors concluded that this rate is likely an underestimate of the true impact of treatment for lymphoma. In a prospective study, Devlen, Maguire, Phillips, and Crowther (1987b) assessed patients newly diagnosed with lymphoma. During the 12 months of follow-up, slightly over half of the patients developed psychological problems as classified in the retrospective study. Although these two studies did not

assess posttraumatic stress disorder directly, many of the anxiety symptoms assessed are criteria for posttraumatic stress disorder.

Breitbart, Bruera, Chochinov, and Lynch (1995) proposed specific recommendations concerning patients with advanced cancer, including the expansion of the focus of research to other neuropsychiatric syndromes and symptoms besides depression and delirium; the authors called for prevalence and intervention studies in several areas, including posttraumatic stress disorders among advanced cancer patients.

With pediatric leukemia survivors and their parents, severe levels of posttraumatic stress symptoms were found among survivors as well as among parents (Kazak et al., 1997; Stuber, Christakis, Houskamp, & Kazak, 1996). Pelcovitz, Goldenberg, Kaplan, and Weinblatt (1996) also found that significantly more mothers of pediatric cancer survivors were diagnosed with lifetime posttraumatic stress disorder when compared with mothers of healthy children. Parent reports of their pediatric cancer patients and off-treatment pediatric cancer survivors revealed a full constellation of posttraumatic stress disorder symptoms in children over the course of cancer treatment (Butler, Rizzi, & Handwerker, 1996). Wintgens, Boileau, and Robney (1997) noted that severe illnesses such as cancer pose a threat to life; cancer requires medical procedures that threaten the child's physical integrity; and common to the treatment of cancer are disorganized behavior periods.

In comparisons of women who are post-treatment for cancer with a matched community-based control sample, cancer survivors but no controls met the criteria for current and lifetime posttraumatic stress disorder (Alter, Axelrod, Harris, & Grobois,

1996), and posttraumatic stress disorder symptoms were negatively related to quality of life (Cordova, Andrykowski, Kenady, & McGrath, 1995).

Bone marrow transplantation in the event of cancer involves an invasive and painful medical procedure. Pronounced posttraumatic stress disorder symptoms have been reported among these patients (Butler et al., 1996; Lee, Cohen, Stuber & Nader, 1994; Stuber, Nader, Yasuda, Pynoos, & Cohen, 1991).

Clearly, catastrophic medical illness and therapeutic interventions are possible traumas for the development of posttraumatic stress disorder symptoms. Medical events represent internal stressors from which there is no escape as with external traumatic events. With the publication of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders, or DSM-IV (American Psychiatric Association, 1994), chronic illness has been recognized as an eligible stressor to meet the criterion for a traumatic event in the diagnosis of posttraumatic stress disorder. Recent studies have found that a full constellation of posttraumatic stress disorder symptoms occurs over the course of cancer treatment, and that these symptoms closely resemble those of individuals who experience other traumatic events. The need to address these posttraumatic stress symptoms is indicated during comprehensive cancer care. The present study was designed to investigate the relationship between posttraumatic stress symptoms and ways of coping among cancer patients.

A Profile of Posttraumatic Stress Symptoms and Posttraumatic Stress Disorder

Diagnosis. Posttraumatic stress disorder is characterized by the development of specific symptoms following exposure to an extreme traumatic stressor (American Psychiatric Association, 1994). The traumatic stressor may be directly experienced,

may be witnessed, or may be learned about unexpectedly; the stressor must involve actual or threatened death, serious injury, or threat to the physical integrity of oneself or another, and the response to the trauma must involve "intense fear, helplessness, or horror" (Criterion A). The pattern of characteristic symptoms required for a diagnosis of posttraumatic stress disorder consists of persistent reexperiencing of the trauma through intrusive images, thoughts, perceptions, dreams, acting or feeling as if the trauma were recurring, or psychological distress at or physiological reactivity to cues of the trauma (Criterion B), persistent avoidance of reminders of the traumatic event and numbing of responsiveness to those reminders as well as general responsiveness (Criterion C), and persistent hyperarousal including sleep difficulties, irritability, difficulty concentrating, hypervigilance, or extreme startle response (Criterion D). This pattern must be present for more than one month (Criterion E) and must cause clinically significant distress or impairment in important areas of one's life (Criterion F).

By definition, the stressor criterion (Criterion A) is the prime factor for the diagnosis of posttraumatic stress disorder. However, the revised third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) described the stressor as a major external threat or external catastrophic event which was "markedly distressing to almost anyone" but "outside the range of usual human experience" (American Psychiatric Association, 1987). This criterion was found to be vague and unreliable (Breslau & Davis, 1987; Kaplan, Sadock, & Grebb, 1994; Lindy, Green, & Grace, 1987; Ursano, 1987).

DSM-III-R made no mention of medical conditions or illnesses or of therapeutic interventions as possible stressor events for posttraumatic stress disorder (American

Psychiatric Association, 1987). In the discussion of diagnostic features which precedes the diagnostic criteria, the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSMIV) identifies a list of traumatic events which concludes with "being diagnosed with a life-threatening illness" (American Psychiatric Association, 1994). In addition to life-threatening illnesses, the emotional impact of severe illness or chronic medical conditions may be quite profound and may have much more serious consequences than generally recognized. Also, therapeutic treatments and procedures in modern medicine and surgery are often invasive, with little or no preparation for the patient, a sense of lack of control by the patient, and a perceived or actual threat to one's life. These factors were noted by Green and colleagues to be predisposing to the development of posttraumatic stress disorder among Vietnam veterans (Green, Grace, Lindy, Gleser, & Leonard, 1990).

Prevalence. DSM-IV reported the lifetime prevalence rate for posttraumatic stress disorder among community-based studies to range from 1% to 14%, with the variability related to the methods of assessment and the populations sampled. For at-risk groups, DSM-IV reported a lifetime prevalence rate from 3% to 50% (American Psychiatric Association, 1994). Kaplan and colleagues (1994) estimated the lifetime prevalence of posttraumatic stress disorder to range from 1% to 3% of the general population, although an additional 5% to 15% may experience subclinical forms, which may be classified as partial PTSD. For high-risk groups that experience traumatic events, Kaplan and colleagues estimated the lifetime prevalence rate to range from 5% to 75%; for Vietnam veterans, the authors reported a lifetime prevalence rate of about 30%, with an additional 25% in the subclinical category.

Two Epidemiological Catchment Area studies with community samples reported a lifetime prevalence rate for posttraumatic stress disorder to be 1% (Helzer, Robins, & McEvoy, 1987) and 1.3% in the general population (Davidson & Fairbank, 1993). However, Davis & Breslau (1994) noted a large discrepancy with a 9% lifetime prevalence rate among a community sample of young adults. Thirty-nine percent of the sample reported exposure to a traumatic event of the type defined as a qualifying stressor (American Psychiatric Association, 1987); among these persons, 23% developed posttraumatic stress disorder. The stressors reported in these studies of the general population were neither rare nor outside the realm of normal human experience, which was essential for DSM-III-R classification. Further, Davis and Breslau noted that different diagnostic instruments were used in the two ECA studies and in the community sample of young adults. The initial screening questionnaire used in the two ECA studies asked the following question first, which was suggestive of symptoms: "Have you experienced an event that frightened you so much that you have had one or more of the following symptoms?" Thus, the event was characterized as frightening, which excluded events that were shocking, disgusting, or disgraceful, but not frightening. In the latter study, Davis and Breslau reported a revision to this approach in which the interviewer inquired first about a history of typical posttraumatic stress disorder stressors, and then inquired about the symptoms which followed the stressors. The authors credited this revised approach with the more accurate prevalence rate of 9% in the general population.

The prevalence of posttraumatic stress disorder among medical patients is presently unknown (Shalev, Schreiber, Galai, & Melmed, 1993). The paucity of studies

which have examined medical conditions or interventions as a traumatic stressor which resulted in posttraumatic stress disorder have indicated this occurrence and more often than generally realized (see Iatrogenic Posttraumatic Stress Disorder below). Thus far, the literature has relied mostly on case reports and theoretical discussions rather than on empirical observations. In an examination of the prevalence of posttraumatic stress disorders among injured military personnel, Delimar, Korenjak, Sivik, and Delimar (1995) reported findings that seemed puzzling at first; they found a prevalence rate of 62% among non-disabling injuries that resulted from the trauma, but 33.3% for soldiers who sustained permanently-disabling injuries and 20% for controls who were not injured by the trauma. However, the study was seriously flawed since the average time interval that had elapsed since the traumatic event was only 6.9 months for the non-disabling injured group, while the elapsed time intervals for the permanently-disabled and non-injured groups were 11.9 months and 11.5 months, respectively. In spite of this methodological problem, the authors noted an important consideration in the development of posttraumatic stress disorders--the subjective response to the traumatic event (Kaplan et al., 1994). In this sample of wounded and uninjured soldiers, the badly wounded persons who became permanently disabled from their injuries also were likely to have lost consciousness immediately after the injury, and thus did not fully experience the trauma; this was not true for the group whose injuries from the trauma were ultimately non-disabling. Thus, this examination of prevalence rates for posttraumatic stress disorder supported the greater emphasis on subjective responses to a traumatic event rather than on the severity of the stressor itself.

Risk factors. Predisposing vulnerability factors play primary roles in determining whether or not posttraumatic stress disorder develops. Risk factors which have been identified include childhood traumas, previous psychopathology including borderline, paranoid, dependent, or antisocial personality disorder traits, family history, inadequate support systems, genetic or constitutional vulnerability to psychiatric illness, recent stressful life events, external locus of control, and recent alcohol-related disorders (American Psychiatric Association, 1994; Green et al., 1990; Helzer et al., 1987; Kaplan et al., 1994). In their discussion of the importance of social support to counteract the development of posttraumatic stress disorder, Green and colleagues noted that the highly stressed individual may not be able to gain access to support even if available; this observation seems especially true for many individuals who have experienced a traumatic medical event.

Course and prognosis. DSM-IV identifies the immediate aftermath of a trauma initially as Acute Stress Disorder if this occurs within one month of the trauma. Posttraumatic stress disorder is diagnosed if symptoms persist for longer than one month. The symptom pattern may vary over time, and may be most intense during periods of stress. Patients experience alternating periods of acknowledging the trauma through intrusive symptoms and blocking the trauma through avoidant symptoms, often under conditions of increased arousal symptoms. The duration of the symptoms also varies, with complete recovery occurring within three months in about 30% of patients; 40% continue to have mild symptoms, 20% continue to have moderate symptoms, and 10% remain unchanged or become worse (American Psychiatric Association, 1994; Kaplan et al., 1994). Even with no predisposing conditions, the disorder may develop

following a traumatic event, particularly when the subjective response to the stressor is especially extreme. A good prognosis is predicted by a rapid onset of symptoms, a short duration of symptoms (less than 6 months), good premorbid functioning, strong social support, and the absence of other psychopathology, medical disorders, or substance-related disorders (Kaplan et al., 1994). Of particular importance, the availability of social support may influence the development, severity, and duration of posttraumatic stress disorder symptoms; in general, patients who have good networks of social support are not likely to develop the disorder or to experience it in its severe forms.

Unresponsiveness to seemingly successful medical treatments with persistence of patient symptoms and prolonged disability should be considered an alert to the possible occurrence of posttraumatic stress disorder. Of particular note are situations in which patients have undergone medical events associated with feelings of intense and inescapable distress, lack of control, and perceived or actual threat to one's life (Green et al., 1990; Kaplan et al., 1994). The development of posttraumatic stress disorder may prompt an avoidance of medical care or of contact with medical personnel or medical settings. Often, patients with the disorder will engage in life-threatening behaviors, such as physically challenging exercise. The recognition of the possible traumatic effect of some medical interventions (iatrogenic) and the prompt preparation of patients through counseling and support may be preventative measures that might prove to be most effective to reduce the incidence of severe posttraumatic stress disorder symptoms following medical events.

Iatrogenic Posttraumatic Stress Symptoms

Myocardial infarction. As Israeli doctors, Kutz, Garb, and David (1988) were struck by the resemblance of the reactions displayed by some myocardial infarction patients to those of posttraumatic stress disorder from Holocaust survivors and from frequent wars. Their preliminary epidemiological data estimated that 15% of their post-myocardial infarction patients had symptoms of chronic posttraumatic stress disorder within the first year following the myocardial infarction; they estimated an additional 5 to 10% of their sample experienced an acute form of posttraumatic stress disorder which subsided within the first year. These authors referred to the lack of direct mention of posttraumatic stress disorder following myocardial infarction in the literature on psychological sequelae following myocardial infarction as a "conceptual blindspot." As in other instances of posttraumatic stress disorder, the authors hypothesized that rehabilitation outcomes may depend on early detection and prompt intervention. They reported four case histories in support of this hypothesis.

Case 1 was a 40-year-old construction worker who had suffered an acute myocardial infarction four months earlier. This was a sudden event with no warning signs; he awoke from a deep sleep in excruciating pain, staggered out of bed, collapsed, and regained consciousness only in the emergency ward. From that point, he was confused, agitated, and frightened, and remained sedated for several days. Upon his transfer to the medical ward, he displayed the following symptoms: sat for hours unaware of his surroundings, low threshold for noise, sleeplessness, and would not let his wife leave him. When he was released from the hospital, his symptoms worsened and included the following: detached, disinterested, marked startle response,

outbursts of extreme anger, frequent memory lapses, and lack of concentration. He also had severe sleep problems with 10 to 30 awakenings per night, and daytime drowsiness and fatigue. He would not leave the house, and would not be left alone. He continued to complain of chest pain and shortness of breath, although clinical findings did not explain these symptoms. Through psychotherapeutic intervention, the patient, who was highly hypnotizable, learned relaxation strategies, worked through his trauma with the aid of hypnosis and guided imagery, and completed contracts to increase his independence. The aim of the therapy was to experience mastery of his fears in a situation where he had experienced lack of control, and the therapy was quite successful. This patient's experience of myocardial infarction had many factors which predispose to the development of posttraumatic stress disorder, especially sudden onset, lack of control, and threat to life (Green et al., 1990; Shalev et al., 1993).

Case 2 was a previously healthy 40-year-old greengrocer who had experienced an extensive myocardial infarction seven days earlier and had arrived from the intensive care coronary unit depressed and frightened. In the medical ward, he was overtly terrified, lay in bed motionless and rigid for hours, did not communicate, and withdrew from his family and friends. He also continued to cling to his disconnected oxygen mask, and complained of chest pain. He displayed a marked startle response, poor concentration, disturbed sleep, and recurring nightmares. This patient also had no warning signs prior to his myocardial infarction, since he had awakened suddenly with intense fear and crushing chest pain and was brought semi-conscious to the hospital. Because he was too anxious for relaxation strategies, hypnosis was used to help him reexperience the emotions and feelings surrounding his traumatic event. Again, the aim

was mastery and control of his fears, and the therapy was successful. Because of the immediate onset of these symptoms, this patient more accurately displayed acute stress disorder rather than posttraumatic stress disorder (American Psychiatric Association, 1994). However, the prompt and early intervention quite likely prevented the subsequent development of posttraumatic stress disorder.

Case 3 reported a 55-year-old industrial worker who presented with an intractable cough 8 months after his second myocardial infarction. At the time of his heart attack, he experienced severe pain, a choking sensation, and severe hypertension which lasted for several days. At the time of consultation, he reported that he felt helpless, abandoned, and rejected; his sleep was so disturbed that he refused to fall asleep and would not let his wife fall asleep, so she had left their bed. His symptoms also included irritability, poor concentration, severe restlessness, outbursts of anger, low threshold for noise, recurring nightmares, and fear of falling asleep. Relaxation strategies were impossible with this patient since he had difficulty concentrating. Family intervention also failed due to intense hostility levels. Upon release from the hospital, he showed no significant symptom or behavioral change. Four months later, he was hospitalized again for his cardiac condition, and there was no change in his psychological symptoms. Therapy with this patient was not successful because of the limitation of his short hospital stays.

Case 4 was a 61-year-old poultry farmer who was a holocaust survivor. He had experienced two myocardial infarctions in the past, the first eight years and the second eleven months prior to consultation. He was hospitalized with depression two years after the first incident. He reported that he felt terrified and helpless, and his symptoms

included sleep disturbance, nightmares, mild loss of appetite, intense anxiety, and certainty that he was having another heart attack. His symptoms began after three months of excellent recovery when he attempted to go back to work. His anxiety caused him to repeatedly visit the emergency ward, where he was told there was no cardiac basis for his symptoms. He was initially treated for depression, but he continued to complain of nightmares. Further probing of the events surrounding his recent myocardial infarction revealed that the chickens huddled in the pens where the event had taken place reminded him of persons huddled in the concentration camps. Since he refused to change his work, he was taught progressive relaxation and strategies to increase mastery and prevent and control the anxiety symptoms. Through desensitization, he attempted the progressive relaxation on the spot of the recent myocardial infarction, which initially failed; but following a group therapy experience, he then tried and succeeded.

Kutz and colleagues (1988) questioned the restrictive nature of the stressor criterion in the diagnosis of posttraumatic stress disorder, especially the emphasis on an external rather than internal event. They charged that the requirements of Criterion A have impeded the diagnosis of posttraumatic stress disorder in myocardial infarction, and rather than a reliance on the traumatic event alone, consideration should be given to the interaction of the event and the response to determine the occurrence of trauma. According to these authors, interventions to address posttraumatic stress disorders following myocardial infarction would be far superior to the limited approach of pharmacotherapy, which is all too frequently used for anxiety and depression.

Shalev and colleagues (1993) also reviewed a case report concerning myocardial infarction in a 43-year-old businessman who was referred to the psychiatric clinic because of anxiety attacks which had begun three months earlier when he was released from the hospital following his cardiac arrest. He had been resuscitated in his house at the time of the heart attack, and then again in the emergency room; later, he explained that there had been no time to feel fear. While hospitalized, he underwent balloon dilatation, and was discharged one week later. On returning to work, he experienced anxiety and panic attacks. At his initial interview, he attributed his symptoms to business difficulties and did not mention his past medical problems. However, it was soon learned that he was engaging in life-threatening activities, such as climbing several flights of stairs and performing demanding physical tasks. His brush with death proved to be his core issue, and he revealed having avoided medical consultation and trying to repress thoughts of his illness. His symptoms included intrusive thoughts of death, reliving the traumatic event, recurring nightmares, estrangement from his family, and hyperalertness. Psychotherapy was successful in helping this patient to confront his fears and to cease challenging his heart. His anxiety, panic attacks, nightmares, and estrangement all subsided. However, with the improvement, the patient quickly expressed regret at his "weakness" of opening up to the therapist, and he resumed his previous life-style and discontinued psychotherapy. Since comorbidity of posttraumatic stress disorder and panic disorder is common, these authors emphasized that the diagnosis of posttraumatic stress disorder in this case oriented the therapy towards exploration and working through of a traumatic event,

specifically the myocardial infarction, rather than towards the prescription of anti-panic medication, as with a primary diagnosis of panic disorder.

Shalev and colleagues (1993) also reported a case of a 45-year old blue-collar worker with no past history of psychopathology who was referred for increasing anxiety and restlessness. Three months earlier, he had undergone an elective heart catheterization, for which he had been well prepared. Suddenly during the procedure, a dramatic change occurred, and he observed panic on the face of his cardiologist and heard him shouting; he also recalled a flat signal on the monitor, and everyone agitated and preparing to administer cardiac shock. He recalled the feel of the electrodes, the excruciating pain, and his own roar "like an animal," which caused him great emotional pain. Following the cardiac shock, he recalled his physician telling him of the great danger he had been in, but that things were now fine and he did not have to worry. During the weeks following this incident, the patient developed hyperarousal, difficulty falling asleep, flashbacks, poor concentration, restlessness, avoidance of cues related to the catheterization, frequent nightmares in which he reexperienced the entire event, and multiple dissociative states. He felt doomed, and expressed that he would rather die than be taken care of again in a catheterization room. He was also challenging his heart by sudden physical effort. An attempt at progressive desensitization resulted in an acute dissociative state and was stopped. The patient continued with supportive psychotherapy and medication; at a two-year follow-up, his symptoms have progressively lessened with occasional reactivation on anniversary dates and during medical examinations. Clearly, this case demonstrated the effect of risk factors for posttraumatic stress disorder which are inherent in many medical procedures,

specifically the sudden onset of a traumatic event, lack of control by the patient, and a threat to life.

Burns. As Davis and Breslau (1994) observed, the occurrence of burn injuries involves two stressor events--the original trauma which caused the burns, and the pain and injury associated with recovery from the burns, which are constant reminders of the trauma. Ptacek, Patterson, Montgomery, and Heimbach (1995) examined pain, coping, and posttraumatic stress among 43 burn patients whose injuries were extensive enough to require at least 5 days of daily wound treatments. Pain from burn care is typically described by patients as "excruciating" and as more severe than that experienced during the original injury. Burn team members often have reservations about the treatment of pain because of the potential side effects of opioids, which include sedation, respiratory distress, delirium, nausea, and gastrointestinal complications; some burn team members find these side effects worrisome enough to outweigh the potential benefits. In regard to this question of pain control, the authors examined the relevance of the immediate reduction of suffering to eventual outcomes in terms of quality of life, which included symptoms of posttraumatic stress disorder. While it is recognized that the stress response from burn pain can delay wound healing and prolong recovery, and that pain can maintain the cycle of shock in traumatized patients, the evidence for the early aggressive treatment of burn pain to hinder the development of subsequent complications is nonexistent in burn care. This study assessed the impact of pain level during hospitalization on reports of emotional and physical adjustment one month after discharge. Among the 43 patients, the average hospital stay was 20.34 days, with a range from 6 to 43 days. No patient had a history of

psychological disorder. For all patients, optimal opioid levels were established during the first 48 hours after admission. At one month following discharge, questionnaires were mailed to all patients to assess coping and adjustment, including a checklist of symptoms from the criteria for posttraumatic stress disorder (American Psychiatric Association, 1987). The results showed that seeking social support moderated between the level of pain and the level of posttraumatic stress. Use of wishful thinking as a coping strategy produced poorer adjustment and higher levels of posttraumatic stress disorder symptoms. For all adjustment measures, the relationship between pain and adjustment was not accounted for by psychological adjustment in the one month preceding the injury. Thus, higher levels of pain increased the risk for poor adjustment following discharge, and the utility of burn pain control beyond suffering during hospitalization was demonstrated. However, the authors proposed some limitations for this study mainly due to the small sample size, a 57% return rate on the follow-up packets, and missing data for all but 28 patients who had both complete pain data and returned follow-up packets. Unfortunately, the authors also noted, this is a problem with any longitudinal study with burn survivors.

Patterson, Carrigan, Questad, and Robinson (1990) assessed symptoms of posttraumatic stress disorder in 54 patients with major burn injuries during the course of hospitalization. Posttraumatic stress disorder symptoms were obtained through screenings based on a checklist of diagnostic criteria (American Psychiatric Association, 1987). The mean total body surface area with burns for the 54 patients was 18.1%, with a range of 1% to 60%. The mean age was 34.8 years; mean length of hospitalization was 27.5 days. Of these 54 patients, 63% showed intrusive, recurrent recollections of

the burn event. And thus met at least partial criteria for diagnosis. Sixteen, or 29.6%, met the full criteria for posttraumatic stress disorder at some point during their hospitalization; however, none had this diagnosis at the time of discharge. Of these 16 patients, only 11 were reached for follow-up interviews, which ranged from 10 to 280 days, with a median of 40 days. At follow-up, only one patient showed a recurrence of the posttraumatic stress disorder symptoms. A positive diagnosis of posttraumatic stress disorder was predicted by total body surface area burn, length of hospital stay, being female, and lack of responsibility for the burn. Although almost one-third (29.6%) of the sample had a positive diagnosis at one point during hospitalization, the authors concluded that the disorder generally resolves without intervention, but it might be preventable if at-risk patients received appropriate psychological treatment soon after their injuries. This conclusion seems quite premature in light of the very small sample size at follow-up, the variability of length of time for follow-up, the wide range of total body surface area burn, and presumably the wide range in length of hospitalization, although this range was not given. Furthermore, results reported by Roca, Spencer, and Munster (1992) clearly counter this conclusion. These authors assessed posttraumatic stress disorder symptoms among burn survivors at time of discharge and at 4 months after discharge. Of 31 patients treated in a regional burn center, only 7% met the criteria for posttraumatic stress disorder at the time of discharge. However, 22% met the criteria at 4 months following discharge. Symptoms of avoidance and emotional numbing were found to emerge after discharge, and thus many more patients met the full diagnostic criteria at follow-up. In spite of the problems inherent in

longitudinal studies with burn survivors, follow-up investigations for posttraumatic stress disorder symptoms appears to be necessary.

Abortion. Fisch and Tadmor (1989) reported a case history of a 40-year-old, single, childless woman two and one-half years after a therapeutic abortion performed in the ninth week of a pregnancy with severe complications. She also experienced post-operative complications which required further medical interventions. These procedures resulted in further complications, and she was diagnosed with fertility problems. Soon after the abortion, she began to experience posttraumatic stress disorder symptoms, including severe anxiety, depression, recurrent intrusive thoughts and images related to the abortion, insomnia, recurrent nightmares, avoidance behavior with respect to medical environments, avoidance of sexual intercourse, lack of libido, and anhedonia. A few months after the abortion, her relationship with her boyfriend ended. She could not return to work, sold her shop, and had been unemployed ever since. Her symptoms continued over the two and one-half years following the abortion without much remission. The authors concluded that some medical and surgical procedures are stressful enough to produce posttraumatic stress disorder in vulnerable patients, and obviously this woman was one of them. They also recommended careful scrutiny for symptoms of posttraumatic stress disorder so that more patients with these symptoms might be detected early and treated more effectively.

Uncontrolled pain. Schreiber and Galai-Gat (1993) presented a case history in which pain was suggested as the cause of posttraumatic stress disorder. The patient had lost an eye under traumatic circumstances, but evaluation revealed that the core-trauma was seven hours of severe uncontrolled pain while he was waiting for surgery,

rather than the moment when he lost the eye. A few weeks after his surgery, he began to experience severe incapacitating headaches and was seen frequently in the pain clinic. Eventually he was referred to the center for traumatic stress. In addition to the severe headaches, he complained of insomnia and chronic fatigue, diminished appetite, loss of libido, numbing of general responsiveness except occasional outbursts of anger, loss of interest in his job, family, and friends, avoidance of social situations, impaired concentration and memory, depressed mood, hypersensitivity to noise, irritable affect, a sense of foreshortened future, and risk-taking behavior. He presented with all the criteria for posttraumatic stress disorder but one: he did not complain of intrusive recollections of the event. The headaches, however, were described as a reexperiencing of the pain outside the operating theater. A comparison of responses to the period of uncontrolled pain and to the traumatic injury revealed far more intense reactions to the uncontrolled pain. This man's experience contained many of the factors which predispose for the development of posttraumatic stress disorder, including a sudden onset of the stressor, lack of preparation, threat to life, and traumatic loss. The authors concluded that uncontrolled and prolonged pain can in itself be a stressor of catastrophic proportions which may result in the development of posttraumatic stress disorder.

Tonsillectomy with severe complications. Shalev and colleagues (1993) reported a case history of a 30-year-old woman who presented in the emergency room with palpitations and a fear of death, and was referred to an outpatient psychiatric clinic with a suspected diagnosis of panic disorder. She had no previous history of psychopathology. Further evaluation revealed that the woman's one-year-old baby was

waiting for a liver transplant, and that the woman, who had suffered from recurrent throat infections, had undergone a tonsillectomy in order to protect the baby from an infection after the transplantation. On her last day in the hospital, the baby was brought to visit her; but just when she went to the baby, blood spurted out of her mouth all over the floor, general panic ensued, and she was rushed in a state of shock to the operating room where a bleeding artery was ligated. She recalled hearing the doctor tell her husband that "she'd had one foot in the grave." Two months after her operation, she was having intrusive thoughts and memories of the event both at night and during the day, fear that a careless move would result in bleeding, and inhibited and withdrawn feelings in her physical contact with her baby. She also complained of a burning sensation in her throat, and she repeatedly examined her saliva for signs of blood. She experienced loss of appetite, bouts of nausea, headache, dizziness, a pervasive feeling of sadness, and a sense of failure that her well-meant decision to undergo surgery had turned out so badly. She also avoided contact with the medical personnel who were involved in her operation. At the time of referral, this woman met the criteria for diagnosis of posttraumatic stress disorder. Psychotherapy provided her with validation of her feelings, controlled re-exposure to the trauma, and family support. Subsequently, she returned to her previous level of functioning, and two months later the family was scheduled for the expected liver transplantation.

Chronic illness among elderly patients. Hocking and Kienig (1995) reviewed the literature on the evaluation and treatment of anxiety symptoms among elderly patients with chronic medical illness. Ten to 20% of older patients experienced clinically significant symptoms of anxiety, which included posttraumatic stress disorder. Among

the elderly, predisposing factors such as surviving WWII or the Holocaust may increase the risk of developing posttraumatic stress disorder during chronic medical illness. A higher threshold of discomfort may exist among the elderly such that symptoms are not reported and treatment is not sought until distress is quite severe. Losses, failing health and cognition, feelings of helplessness, and loss of control are also risk factors among the elderly who experience medical events. The authors concluded that the frequency of posttraumatic stress disorder among inpatients and the potential for its development after serious medical events suggests that the disorder may not be accurately and adequately detected among elderly patients.

Posttraumatic Stress Symptoms During Cancer Diagnosis, Treatment and Care

Nir (1985) reported early observations concerning posttraumatic stress disorder in children with cancer. Medical advances in pediatric oncology have significantly increased the survival rate for children with cancer, but sometimes this has serious consequences for the child from prolonged and aggressive treatments and grave consequences of the therapies. A child who is cured from cancer, while physically well, runs a risk of remaining emotionally and psychologically damaged. Nir and colleagues attempted to assist children with cancer by exploring the nature of the psychological reactions which accompanied the illness, and by diagnosing the emotional components of the disease. Their assessment used clinical interviews and psychological testing, and they concluded that the primary psychopathology encountered in the majority of children and adolescents with cancer fell within the diagnostic criteria of posttraumatic stress disorder. Nir reported that he and his colleagues were struck by the extent to which so many of their patients fulfilled the diagnostic criteria for posttraumatic stress

disorder, but he did not report data on prevalence rates; he did conclude, however, that posttraumatic stress disorders accompanied, almost without exception, the diagnosis of childhood cancer. He also reported limited success in dealing with intrusive symptoms among children and adolescents with cancer.

Shalev and colleagues (1993) presented a case history of the development of posttraumatic stress disorder in a 23-year old woman following a craniotomy. After experiencing headaches for years and a recent deterioration of vision, the woman was seen by an ophthalmologist who immediately referred her to the hospital emergency room where the diagnosis of a brain tumor was made and immediate surgery was recommended. The woman had a strong emotional reaction to the suddenness of these events, which Green and colleagues (1990) identified as an important risk factor for the development of posttraumatic stress disorder. Prior to the operation, she was terrified, panicked, felt out of control, and had pressured speech. Following the operation, which was successful and resulted in no permanent brain damage, she remained confused and depressed. After her discharge, she made an effort to resume full functioning immediately, but collapsed after one day. At eleven months after the operation, she had not made the expected recovery, and instead was confined to her house, felt she had no support, and thought she was a burden to her family. She reported recurrent and intrusive recollections of events surrounding the operation, persistent avoidance of stimuli associated with the operation including further medical consultations, psychological numbing, and frequent nightmares from which she would awaken in terror. She was diagnosed as suffering from posttraumatic stress disorder, and her psychotherapy focused on working through the trauma of the recent medical

events. Following the treatment for her posttraumatic stress disorder, she was able to regain her previous activities.

In a retrospective study of psychological problems associated with the diagnosis and treatment of lymphomas, Devlen, Maguire, Phillips, Crowther, and Chambers (1987a) assessed 90 patients with Hodgkin's disease or non-Hodgkin's lymphoma. Patients with Hodgkin's disease and non-Hodgkin's lymphoma have a more favorable prognosis than other patients with cancer, and they may have a lower prevalence of psychological problems. Anxiety and depressive symptoms were assessed for three time periods--before diagnosis, between diagnosis and the month before the interview, and the month before the interview. For the entire assessment period, 21 patients suffered from an anxiety state or depressive illness or both, and an additional 27 patients experienced borderline anxiety or depression or both. Since retrospective data is subject to error of recall, the authors concluded that these findings are likely an underestimate of the true impact of treatment. Even at these prevalence rates, psychological problems were reported to be three to five times higher than rates found in a community sample. This finding of substantial problems in these patients prompted the authors to conduct a prospective study to examine their nature and duration.

In their prospective study, Devlen, Maguire, Phillips, and Crowther (1987b) assessed 120 patients newly diagnosed with Hodgkin's disease or non-Hodgkin's lymphoma. Patients were interviewed at diagnosis, and at 2, 6, and 12 months later. At the baseline diagnosis, symptoms of anxiety and depression were most evident, affecting 43 patients. Fifteen of these patients improved when they were informed of their diagnosis and treatment, but the other 28 continued to experience symptoms in the

following months. During the 12 months of follow-up, 61 patients developed psychological problems as classified in the retrospective study. Twenty-one had borderline depression, 5 borderline anxiety, and 4 borderline depression and anxiety combined. Nine patients had depressive illness, 8 anxiety state, and 14 depressive illness and anxiety state combined. Half of the episodes began within the first three months after the start of treatment. Although these two studies did not assess posttraumatic stress disorder directly, many of the anxiety symptoms assessed are criteria for posttraumatic stress disorder, such as irritability, restlessness, lack of concentration, early waking, delayed sleep, anxiety, loss of interest, and anxious foreboding. The authors concluded that "a substantial proportion of patients pay a high price for the prospect of long-term survival, and ways need to be found of reducing this cost."

Breitbart, Bruera, Chochinov, and Lynch (1995) proposed specific recommendations for future research on symptom control and supportive care in patients with advanced cancer. One recommendation was the expansion of the focus of research to other neuropsychiatric syndromes and symptoms besides depression and delirium, and to related issues. The authors called for prevalence and intervention studies in several areas which affect advanced cancer patients, including posttraumatic stress disorders.

In the case of pediatric leukemia survivors and their parents, severe levels of posttraumatic stress symptoms were found among survivors as well as among parents (Kazak et al., 1997; Stuber, Christakis, Houskamp, & Kazak, 1996). Pelcovitz, Goldenberg, Kaplan, and Weinblatt (1996) also found that significantly more mothers of

pediatric cancer survivors were diagnosed with lifetime posttraumatic stress disorder when compared with mothers of healthy children, and significant differences were also found in lifetime arousal, as well as current and lifetime reexperience and avoidance symptom clusters. From parent reports of their pediatric cancer patients and off-treatment pediatric cancer survivors, a full constellation of posttraumatic stress disorder symptoms was found to occur in children over the course of cancer treatment (Butler, Rizzi, & Handwerger, 1996). As noted by Wintgens, Boileau, and Robney (1997), severe illnesses such as cancer pose a threat to life; cancer requires medical procedures that threaten the child's physical integrity; and common to the treatment of cancer are disorganized behavior periods.

Among 27 female adult patients who had a history of cancer diagnosis with at least three years since diagnosis and who were receiving no active treatment, comparison with a community-based control sample matched for age and socioeconomic status revealed that one survivor but no controls met the criteria for current posttraumatic stress disorder, while six of the survivors and no controls met lifetime criteria (Alter, Axelrod, Harris, & Grobois, 1996). Among 55 women post-treatment for breast cancer, posttraumatic stress disorder symptomatology was negatively related to quality of life (Cordova, Andrykowski, Kenady, & McGrath, 1995). For patients with advanced cancer, Breitbart, Bruera, Chochinov, and Lynch (1995) have noted the need for interventions in the area of posttraumatic stress disorder.

In the event of cancer that requires bone marrow transplantation, the patient is exposed not only to a life-threat from the cancer but also to a treatment that involves a quite invasive and painful medical procedure. Stuber, Nader, Yasuda, Pynoos, and

Cohen (1991) presented preliminary findings of a one year prospective longitudinal study of six children who were between 3 years and 9 months and 6 years and 9 months of age at the time of bone marrow transplantation. During hospitalization, families and patients received supportive therapy, relaxation or guided imagery, and play therapy. Data to assess posttraumatic stress disorder were collected immediately before the transplant and at 3, 6, and 12 months after the transplant. During the assessment interviews, children were invited to play with an assortment of toys and to draw pictures and tell stories about them. Direct questions were asked covering posttraumatic stress disorder symptoms. At the initial assessment, five of the six children had fewer than 7 of the 16 possible symptoms rated while the remaining child had 9 symptoms. With the exception of this child whose symptom level remained at 9, all scores increased at the 3 month assessment, with a range from 9 to 12 symptoms. Ratings at 6 months, which ranged from 8 to 11 symptoms, and at 12 months, which ranged from 6 to 11 symptoms, were slightly but not significantly lower than at 3 months for all children. All of the children had elevated symptom levels for as long as 6 months after the transplantation, and all but one child continued in that elevated range at the 12 months assessment. Although often verbally denied, intrusive thoughts were demonstrated by all children through repeated play with medical equipment and doll play containing themes of death, mutilation, and abandonment set in hospital rooms. Common and intense symptoms were denial and avoidance of reminders of the transplantation and illness. Irritability and sleep disturbances were common but not universal, while exaggerated startle, hypervigilance, and concentration problems were rarely seen. Most of the children showed emotional constriction in their expressions of

enjoyment or loving feelings. The number of children who met criteria for diagnosis of posttraumatic stress disorder increased over time; by the 12 months assessment, three of the six children met this diagnosis, with the results reflecting changes in the distribution of symptoms rather than the number or intensity of symptoms over time. Intense denial and avoidance may have prevented an accurate assessment of all instances of posttraumatic stress disorder in this sample.

Lee, Cohen, Stuber, and Nader (1994) studied the same six children as described above to compare responsiveness by the parents with children's symptoms of posttraumatic stress disorder, both of which were assessed one week before bone marrow transplantation and at 3, 6, 12, and 24 months after transplantation. Parental responsiveness remained stable across time. However, lower parental responsiveness was found to be associated with fewer symptoms of posttraumatic stress disorder, while higher responsiveness was associated with more symptoms. The relationship between less responsive parenting and low posttraumatic stress disorder scores was explained by a lack of parental support which resulted in an underreporting of the child's symptoms. Observations during the interviews with the children clarified this relationship. In fact, the child of one of the less responsive parents was so avoidant during an interview that he went into a fetal position and refused to answer questions about posttraumatic stress disorder symptoms; thus, valid assessment was difficult for this child. For the child of the other less responsive parent, her verbal responses were inconsistent with her behavior, which probably resulted in underreporting of symptoms. For these two children, avoidance and denial masked posttraumatic stress disorder symptoms, and they had a more difficult time dealing with their distress and were

unable to express their feelings adequately. Thus, too few as well as too many symptoms may indicate that a patient is not coping or adapting well. The authors further hypothesized that the parents in this study who scored low on responsiveness may have been experiencing posttraumatic stress disorder symptoms themselves.

In a larger sample of pediatric cancer patients and survivors that contained 14 patients being prepared for bone marrow transplantation and 10 patients who had received bone marrow transplantation, Butler and colleagues (1996) found that the severity of posttraumatic stress symptoms was related to being on treatment at the time of evaluation or in the preparatory phase prior to bone marrow transplantation. For this pediatric sample, increased severity of posttraumatic stress symptoms was significantly associated with increased social incompetence, increased family discord, lack of social skills, and increased anxiety and depression. However, this study utilized an informant-response format for all measures rather than a diagnostic interview schedule.

Catastrophic Medical Illness and Therapeutic Interventions

Researchers recently have begun to examine the psychological consequences of catastrophic medical illness and therapeutic interventions as possible traumas for the development of posttraumatic stress disorder symptoms. Medical events represent internal stressors from which there is no escape as with external traumatic events. As Stuber and colleagues (1991) noted, medical events sometimes present a double life threat with both serious illness and intensive medical interventions. The above review of the relevant literature indicates that posttraumatic stress disorder symptoms occur in these circumstances and more often than has been recognized.

Shalev and colleagues (1993) offered the following signs and symptoms as suggestive of posttraumatic stress disorder in medical patients: a past history of a discrete medical or surgical event accompanied by an overwhelming experience of threat, pain, lack of control, or humiliation; an unexplained delay in recovery; persistent or distressing preoccupation with the medical event, or the opposite reaction of denying its consequences by overlooking limitations and engaging in life threatening behavior; intrusive and distressing recollections of the medical event; a persistent sense of threat to life, unjustified by the medical situation; avoidance of medical care due to apprehension or denial, or anxiety experienced on follow-up visits; loss of interest in previously enjoyable activities; nervousness, irritability, outbursts of anger, exaggerated startle response, and impaired concentration; difficulties falling or staying asleep, or frequent nightmares. These symptoms are consistent with a model of posttraumatic stress disorder, and application of this model should prove to be helpful in understanding the long-term effects of the trauma of medical illness and intensive interventions. The symptoms of avoidance and denial are especially damaging in these circumstances not only because posttraumatic stress disorder is most amenable to intervention within three to six months of the trauma (Stuber et al., 1991), but also because the trauma that is avoided may result in delays in or absences of treatments and the essential continuation of medical care and follow-up.

Rating Scales to Assess Posttraumatic Stress Symptoms

During the past few decades, different rating scales have been developed to assess posttraumatic stress symptoms and the resulting posttraumatic stress disorder. Most often, these rating scales have been clinician-administered and require the time

and expertise of a qualified interviewer and rater. Typical of these clinician-administered rating scales for posttraumatic stress disorder symptoms which are reported often in the literature are the Structured Interview for PTSD or SI-PTSD (Davidson et al., 1989), the Clinician Administered PTSD Scale or CAPS (Blake et al., 1990), and the Structured Clinical Interview for DSM-III-R or SCID (Spitzer et al., 1990),

Several self-rated scales of posttraumatic stress symptoms have been reported in the literature, including the Impact of Event Scale or IES (Horowitz et al., 1979), Mississippi Scale (Keane et al., 1988), Penn Inventory (Hammarberg, 1992), PTSD Inventory (Solomon et al., 1993), and PTSD Symptom Scale (Foa et al., 1993).

Collectively, all of the previous self-rated scales are limited because they have not demonstrated reliability and validity in widely-ranging populations. Also, none of the previous self-rated scales contains a separate measure of frequency and severity of symptoms. In addition, the IES, which pre-dates DSM-III, measures only intrusive and avoidant symptoms but does not assess hyperarousal symptoms, which constitute an important criterion in the posttraumatic stress disorder symptom complex.

Davidson and colleagues (1997) developed a self-rated scale of 17 items based on the 17 posttraumatic stress disorder symptom definitions in the DSM-IV (American Psychiatric Association, 1994). The Davidson Trauma Scale, or DTS, was designed to evaluate both frequency and severity of posttraumatic stress disorder symptoms in individuals with a history of trauma. The DTS was also designed to evaluate treatment response, such as symptom change over time, response prediction, and differences between therapy modalities. Davidson and colleagues administered the DTS to 353 participants in four separate studies; this comprehensive sample contained both

genders and four different trauma groups, including war veterans, survivors of rape, survivors of natural disasters, and a mixed trauma group which participated in a controlled treatment-trial setting. With this large comprehensive sample, the DTS demonstrated good test-retest reliability and internal consistency. Factorial analysis produced one main factor for severity; in PTSD diagnosed participants, the factor structure more closely resembled the groupings of symptoms in the DSM criteria. In evaluating concurrent validity against the SCID, the DTS demonstrated a diagnostic accuracy of 83% at a total score of 40. Good convergent and discriminant validity was obtained for the DTS, which also showed predictive validity against response to treatment and was sensitive to treatment effects. Thus, the DTS has met the standard requirements for reliability and validity in a broad range of adult trauma survivors, and has eliminated the limitations of previous self-rated posttraumatic stress symptom scales.

The Davidson Trauma Scale was not designed as a diagnostic instrument, but rather as a measure of the presence of symptoms and the evaluation of symptom severity, as well as a predictor and measure of treatment response. With a demonstrated diagnostic efficiency of 83%, the DTS should prove to be a diagnostic ally in screening for the likely diagnosis of PTSD through the use of a self-rated scale.

Since the introduction of the Davidson Trauma Scale (Davidson et al., 1997), this self-rated scale to measure posttraumatic stress symptoms has been utilized with a wide range of trauma samples. These include studies of survivors of terrorist attacks (Levav, Grinshpoon, Nobikov & Ponizovsky, 2004; Swickert, DeRoma & Saylor, 2004), earthquake survivors (Chang, Connor, Lai, Lee & Davidson, 2005; Chen, Lin, Tang,

Shen & Lu, 2001; Chen, Shen, Tan, Chou & Lu, 2003), Professional and non-professional rescue workers (Guo et al., 2004), war veterans (Butterfield, Fomeris, Feldman & Beckham, 2000; Mutck-Seler, Pivac, Jakovljevic, Sagud & Mihaljevic-Peles, 2003; Wells, Williams, Macleod & Carroll, 2003) and patients with severe burn injuries (Fauerbach, Lawrence, Munster, Palombo & Richter, 1999). In addition, the Davidson Trauma scale has been used in a comparative study of patients with pseudoseizures and with epilepsy (Fleisher et al., 2002) and the scale has been employed to evaluate treatment responses in medication trials (Brady & Clary, 2003; Davidson, 2004; Davidson, Landerman & Clary, 2004; Davidson, Landerman, Farfel & Clary, 2002; Davidson, Tharwani & Connor, 2002; Davidson et al., 2003; Marshall et al., 1998; McRae et al., 2004; Meltzer-Brody, Churchill & Davidson, 1999; Meltzer-Brody, Connor, Churchill & Davidson, 2000; Tucker et al., 2001). The Davidson trauma Scale has also been utilized in the validation of new assessment tools (Connor & Davidson, 2001; Osuch, Noll & Putnam, 1999). Recently, the scale has been included in reviews of measures for the assessment and management of post-trauma survivors (Everly & Lating, 2004; Hull, 2003; Orsillo, 2001).

Coping with the Diagnosis and Treatment of Cancer

Lazarus and Folkman (1984) defined coping in terms of the cognitive and behavioral efforts required to manage demands that one appraises as taxing or as exceeding one's resources. Coping efforts have been recognized as a function of both person and situational factors which might predispose a person to cope in various ways (Fleishman, 1984; Folkman, Lazarus, Gruen, & DeLongis, 1986; Holahan & Moos, 1987; Parkes, 1986). Further, the stress and coping literature has indicated that one

will cope differently according to the particular stressful situation involved which elicits the need for coping (Folkman & Lazarus, 1980; McCrae, 1984).

While past research in stress and coping has reported much information about coping in general, little is known about specific patterns of coping among cancer patients. Clearly, the diagnosis and treatment of cancer involves a wide variety of stressful situations with which to cope, including fear and uncertainty about prognosis, limitations as compared to before cancer, painful or frightening symptoms, and changes in social relationships (Dunkel-Schetter, 1982; Revenson & Felton, 1985). Adaptive strategies for coping would be expected to vary from one cancer-related situation to another, and the stress and coping literature emphasizes the importance of subjective appraisals of these stressful situations (Folkman, Lazarus, Dunkel-Schetter, et al., 1986; Folkman, Lazarus, Gruen & DeLongis, 1986; Hobfoll, 1989; Lazarus & Folkman, 1984).

The most widely used self-rated measure of coping in general has been the Ways of Coping Inventory (Folkman & Lazarus, 1980; Folkman, Lazarus, Dunkel-Schetter et al., 1986; Lazarus & Folkman, 1984). Dunkel-Schetter and colleagues (1992) adapted the 51 items making up eight factors in the former instrument to develop the Ways of Coping-Cancer Version in order to delineate patterns of coping behavior among cancer patients. Each item was evaluated for its applicability to cancer; after some items were dropped, others added, and a few reworded slightly, the Ways of Coping-Cancer contained 52 items. Using this instrument, Dunkel-Schetter and colleagues identified five patterns of coping in a large sample of more than six hundred cancer patients. These patterns of coping were labeled as Seek or Use Social Support, Focus on the Positive, Distancing, Cognitive Escape-Avoidance, and Behavioral

Escape-Avoidance. Seek and Use Social Support involved such items as “looked for sympathy or understanding,” “asked a friend or relative for advice,” and “tried to get professional help.” Focus on the Positive reflected such items as “found new faith,” “rediscovered what is important in life,” and “changed or grew as a person in a new way.” Distancing items included ones such as “went on as if it were not happening,” “kept others from knowing how bad things were,” and “tried to forget the whole thing.” Cognitive Escape-Avoidance focused on items such as “hoped a miracle would happen,” “wished the situation would go away or be over,” and “had fantasies/wishes about how it might turn out.” On the other hand, Behavioral Escape-Avoidance contained items such as “avoided being with people,” “tried to make myself feel better by eating, drinking, smoking, or drug use,” and “took it out on other people.” This study also yielded information on the relationship of these patterns of coping to sociodemographic characteristics, medical factors, psychotherapeutic experiences, and degree of stressfulness of cancer. Coping patterns of social support and both cognitive and behavioral escape-avoidance were related to degree of stress in this study while focusing on the positive and distancing were unrelated to degree of stress.

Purpose of the Study

The purpose of the present study was to examine the relationships among patterns of coping with cancer, degrees of posttraumatic stress symptoms among cancer patients, and various personal, socioenvironmental, and situational background variables. No experimental treatments or interventions were implemented; thus, this was a descriptive design to explore the relationships among the coping, stress, and

background variables. Correlational and multiple regression analyses were used to analyze the data.

Little is known about what personal, socioenvironmental, and situational factors predispose an individual cancer patient to experience stress to a certain degree or to cope in specific ways. In the research study by Dunkel-Schetter and colleagues (1992) to investigate patterns of coping with cancer, powerful determinants of coping were not identified. Gender was unrelated to patterns of coping. For age, only younger age was associated with coping as younger age was inversely related to seeking support, positive focus, and behavioral escape-avoidance. What levels of stress are these younger cancer patients experiencing, and do these patterns of coping show any relationships to the levels of stress? What levels of stress are experienced by older cancer patients, and do they rely on particular coping methods to manage their stress? Less education than a high school diploma was related to more distancing and more cognitive escape-avoidance; again, the question remains concerning the accompanying stress levels and the likelihood of an association with these patterns of coping. Marital status and parental status did not contribute as predictors. Living alone was related to more seeking support and more behavioral escape-avoidance; this is a striking combination of both seeking out and avoiding people for those living alone. What might be the accompanying stress levels for those living alone, and does this association continue with these seemingly contradictory patterns of coping? For medical condition variables, the cancer site or type showed that those with breast cancer were only slightly more likely to seek support than were those with other cancer sites; no further effects of site of cancer on patterns of coping were found. For time since diagnosis,

only a greater time since initial diagnosis was related to more use of behavioral escape-avoidance. This is an interesting finding in light of the expected higher levels of stress with a more recent time since diagnosis, and the combination of avoiding being with people and engaging in activities such as drinking or drug use as with this pattern of coping. What levels of stress might accompany the varying times since diagnosis? Being in treatment or in remission was not significantly related to patterns of coping. Since being in treatment poses possibilities for higher levels of stress and being in remission would likely alleviate some stress, it seems likely that cancer patients who are experiencing different levels of stress might utilize coping methods that would be particular to the differing experiences of each status.

Is there a relationship between the degree of posttraumatic stress symptoms experienced and the patterns of coping among cancer patients? Cancer diagnosis and treatment involves a wide range of stressors, including fear and uncertainty, introduction of limitations, acute pain or discomfort, and problems in social relationships. However, Dunkel-Schetter and colleagues (1992) based their assessment of the degree of stressfulness of cancer on a single item which was rated on a 5-point scale. Using this restricted range, the research team found associations between degree of stress and patterns of coping by using social support and both forms of escape-avoidance. This finding was somewhat confusing since some items reflecting seeking and using social support run counter to some items indicating behavioral escape-avoidance, such as “avoided being with people” or “took it out on other people.” Using a wide range of cancer-related stressors and the more comprehensive Stress Symptoms Scale to detect

frequency and severity of posttraumatic stress symptoms, a clearer association between degree of stress and patterns of coping may be delineated.

Does the seemingly contradictory involvement of both seeking social support and behavioral escape-avoidance indicate a relationship between the subscales of the Stress Symptoms Scale and patterns of coping with cancer? Is there a relationship between each of the three subscale scores for intrusive, avoidant, and hyperarousal posttraumatic stress symptoms and patterns of coping among cancer patients? If a particular subscale of posttraumatic stress symptoms is significantly associated with a specific pattern of coping, this information could be valuable in the process of cancer treatment and rehabilitation.

Among individuals with cancer, there is still a need to examine the personal, socioenvironmental, and situational determinants of patterns of coping with cancer-related stressors. Will one or more of the background variables contribute significantly to patterns of coping with cancer-related stressors? Will one or more of the background variables contribute significantly to the degree of posttraumatic stress symptoms experienced by cancer patients? Will one or more of the background variables contribute significantly to the degree of intrusive, avoidant, or hyperarousal symptoms among cancer patients? An examination of personal, socioenvironmental, and situational variables may either replicate or challenge previous findings, and may reveal important relationships among the background factors, patterns of coping, and degrees of posttraumatic stress symptoms among cancer patients.

An examination of the relationships among these coping, stress, and background variables may provide information to establish ways to counteract problematic or

maladaptive relationships and to strengthen relationships that contribute to favorable outcomes. Thus, an illumination of these relationships and the insights into the complexities involved with coping with the stress of the diagnosis and treatment of cancer may aid in developing prevention strategies and in targeting interventions to strengthen or counteract the dynamics among the variables.

Research Questions and Hypotheses

Will one or more of the background variables contribute significantly to the degree of posttraumatic stress symptoms experienced by cancer patients? Significant background variables were identified using correlational analysis to examine the relationship between background variables and total stress scores from the Stress Symptoms Scale; multiple regression analysis examined the contributions of these background variables to explain the variance in the total scores from the Stress Symptoms Scale. Therefore, hypothesis one read:

H₁: One or more of the background variables will contribute significantly to the total posttraumatic stress symptoms among cancer patients.

A multiple regression equation was constructed to examine the contribution of each background variable to the total posttraumatic stress symptoms scores among cancer patients. For all analyses in the present study, level of significance was equal to or less than .05.

Will one or more of the background variables contribute significantly to the degree of intrusive, avoidant, or hyperarousal symptoms among cancer patients? Again, significant background variables were identified using correlational analysis to examine the relationship between background variables and scores on the three

subscales of posttraumatic stress symptoms from the Stress Symptoms Scale; multiple regression analyses examined the contributions of these background variables to explain the variance in the three subscales of posttraumatic stress symptoms from the Stress Symptoms Scale. Therefore, hypothesis two read:

H₂: One or more of the background variables will contribute significantly to each of the three subscales of posttraumatic stress symptoms among cancer patients.

Three multiple regression equations were constructed to examine the contribution of each background variable to the three subscales of posttraumatic stress symptoms among cancer patients.

Will one or more of the background variables contribute significantly to patterns of coping with cancer-related stressors as measured by the five subscales of the Ways of Coping with Cancer Scale? Significant background variables were identified using correlational analysis to examine the relationship between background variables and the five subscales of the Ways of Coping with Cancer Scale; multiple regression analyses examined the contributions of these background variables to explain the variance in the five subscales of the Ways of Coping with Cancer Scale. Therefore, hypothesis three read:

H₃: One or more of the background variables will contribute significantly to each of the five patterns of coping among cancer patients.

Five multiple regression equations were constructed to examine the contribution of each background variable to each of the five patterns of coping among cancer patients.

Is there a relationship between the degree of posttraumatic stress symptoms as measured by the total scores on the Stress Symptoms Scale and patterns of coping

among cancer patients as measured by the five subscales of the Ways of Coping with Cancer Scale? The Stress Symptoms Scale includes frequency ratings from 0 to 4 and severity ratings from 0 to 4 for each of 17 symptoms experienced in the past week; the total posttraumatic stress score is a summation of these ratings. The Ways of Coping with Cancer Scale includes a wide range of cancer-related stressors which require coping efforts, including fear and uncertainty, introduction of limitations, acute pain or discomfort, and problems in social relationships. In attempting to manage these cancer-related stressors, respondents indicate how often they tried each coping effort in the past six months on a scale from 0 to 4; these ratings yield five subscale scores that are the five patterns of coping with cancer. Therefore, hypothesis four read:

H₄: There is a relationship between degree of total posttraumatic stress symptoms and patterns of coping among cancer patients.

Correlational analyses were utilized to examine the relationship between degree of total posttraumatic stress symptoms from the total scores on the Stress Symptoms Scale and patterns of coping among cancer patients from the five subscales of the Ways of Coping with Cancer Scale.

Is there a relationship between each of the three subscale scores for intrusive, avoidant, and hyperarousal posttraumatic stress symptoms as measured with the Stress Symptoms Scale and patterns of coping among cancer patients as measured with the Ways of Coping with Cancer Scale? Since the 17 items of the Stress Symptoms Scale are based on the 17 posttraumatic stress disorder symptom definitions in the DSM-IV (American Psychiatric Association, 1994), the totals for each of the three subscales yield measures of the three criteria of intrusive, avoidant, and hyperarousal

symptoms. If a particular subscale of posttraumatic stress symptoms is significantly associated with a specific pattern of coping, this information could be valuable in the process of cancer treatment and rehabilitation. Therefore, hypothesis five read:

H₅: There is a relationship between each of the three subscale scores for intrusive, avoidant, and hyperarousal posttraumatic stress symptoms and patterns of coping among cancer patients.

Correlational analyses were utilized to examine the relationship between each of the subscale scores for intrusive, avoidant, and hyperarousal posttraumatic stress symptoms from the Stress Symptoms Scale and patterns of coping among cancer patients from the five subscales of the Ways of Coping with Cancer Scale.

Figure 1 illustrates the relationships among the background variables, stress symptoms and ways of coping with cancer as investigated in this study.

Further Analyses

As noted previously, primary coping methods were examined using proportional coping scores. For the Dunkel-Schetter and colleagues (1992) sample, 55% of participants had no primary coping method. Among the remaining 45% who did have a primary coping method, 42% used distancing, 22% used positive focus, 19% used social support, and 17% used cognitive escape-avoidance. No one in this large sample used behavioral escape-avoidance as a primary coping method. Also, the majority of this large sample was reported to be highly flexible in utilizing the five patterns of coping; a mere 4% used only two coping patterns and only 1% reported using only one coping pattern. Similar descriptive analyses were employed in the present study.

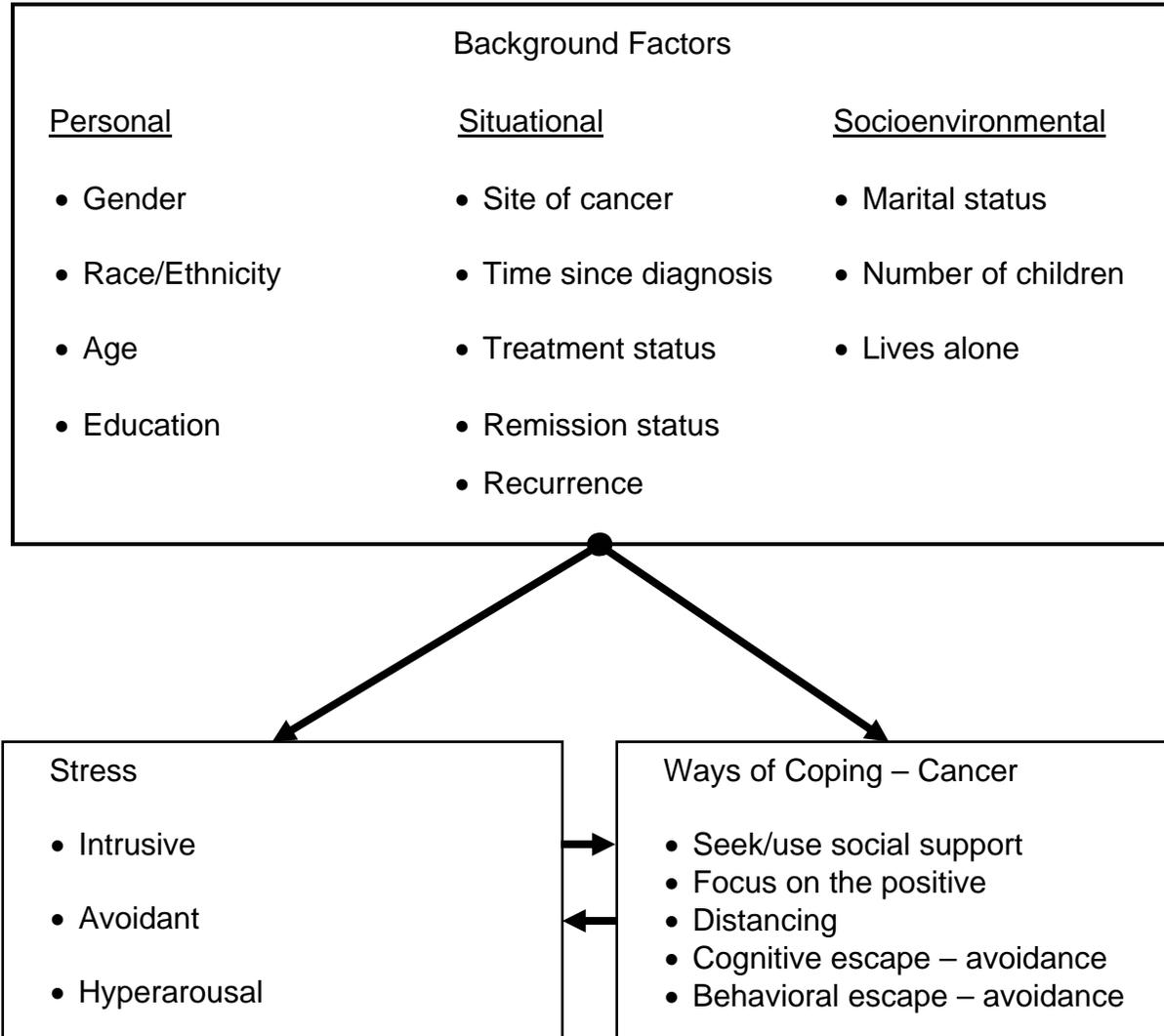


Figure 1. Relationships among the background factors, posttraumatic stress symptoms and ways of coping with cancer.

Method

Participants

Sixty participants were recruited from a large regional cancer center in North Carolina. Demographic information gathered included gender, race/ethnicity, age, and education; gender was unrelated to coping in the study by Dunkel-Schetter and colleagues (1992), but it was included as an opportunity to replicate this finding. Socioenvironmental factors regarding one's social relationships included marital status, number of children, and whether one lives alone or with others; for the Dunkel-Schetter research team, only living alone had an effect on coping. Situational factors regarding one's medical condition included site of cancer, time since initial diagnosis, and whether currently in treatment or remission and whether there had been a recurrence; Dunkel-Schetter and colleagues reported few to no effects on coping for these variables. All background information for each participant was recorded on a page preceding the two inventories utilized in this study. This background information page contained a statement of confidentiality, and a reminder that all respondents were anonymous as responses were identified only by a number code.

Participants were recruited one at a time by the researcher; administrators at the regional cancer center required that the researcher approached prospective participants only in public areas such as hallways or waiting areas, and at no time were any medical personnel involved in any way in this study. Initially, a prospective participant was asked, "Would you be willing to participate in a study of stress and coping among people who have had cancer?" If the person indicated an interest in being a participant, the researcher then asked, "Have you had a diagnosis of cancer within the last five

years or less?" This criterion was in accordance with the 5-year relative survival rate for all cancers (American Cancer society, 2005a, 2005b). If the interested participant fit this criterion, he or she was given the packet of materials and the researcher then reviewed the cover page with the following explanation of the study:

You are invited to participate in a research study. The purpose of this study is to investigate the nature of stress symptoms and ways of coping among people who have had a diagnosis of cancer. Your honest and complete responses to the questions which follow are very important in order to gather accurate information that truly reflects the experiences of people who are coping with cancer.

Your answers to the following questions will remain confidential and will be identified only with your participation number. Thus, your completion of the background information and the two surveys will be your consent to use the information that you provide. Your personal information will not be used in any way, and your answers will be used only in a group with answers from other people who are also coping with cancer.

Some of the questions about stress symptoms and ways of coping with cancer may produce feelings of discomfort; please know this is not my intent. If any of these questions cause you discomfort, you may talk with me (Rene Cummins) about this; I can be reached at 919.833.1117. If you have questions about your rights as a participant in a research study, you may contact Ms. Debra Paxton, IRB Administrator, NC State, at 919.515.4514.

After you have completed the background information and the two surveys, please return all materials to the large stamped and addressed envelope. Please seal the large envelope and mail the completed packet back to the researcher. Please remember that there are no right or wrong answers—only answers that most closely represent your own experiences. Also, remember that all of your answers will be confidential and anonymous. Thank you for completing the background information and the two surveys. Your participation in this study is greatly appreciated.

Once the participant had no further questions, the researcher left the area so that the amount of contact and information would be standardized among participants. Each participant completed the survey packet completely in confidence from the researcher.

In a few instances, the participant requested an extra packet to give to a friend or family member who also met the criteria for the study. Completed surveys indicated that many participants were actively engaged in the process as surveys contained annotations among the survey items such as the following:

Prayer has been my most powerful tool and what has put me at ease the most.

Additional tumors were found to be benign.

Knew it wouldn't! (In response to "Hoped a miracle would happen")

I don't know about bright side! (In response to "Looked for silver lining, looked on bright side")

Circled "staying asleep" in response to "'Have you had trouble falling asleep or Staying asleep?"

Circled "irritable" in response to "Have you been irritable or had outbursts of

Anger?”

Circled “easily distracted” in response to “Have you felt on edge, been easily Distracted, or had to stay on guard?”

In total, 83 packets of surveys were distributed to prospective participants. Data collection continued from the beginning of November through the end of June of the following year. When 60 completed survey packets were received by the researcher, coding and data analyses began. Two survey packets were received after the sample size was reached and were not included.

Measures

Stress Symptoms Scale

For the present study, the Davidson Trauma Scale, or DTS, was utilized with minor adaptations. The scale was given the title of Stress Symptoms Scale, or SSS, because the words “trauma scale” were deemed to be too reactionary for this population of cancer patients. The DTS asked each participant to “please identify the trauma which is most disturbing to you” and a blank was provided. For the SSS, the following directions were given to focus the attention on cancer diagnosis and treatment:

In the following items, “the event” refers to your diagnosis and treatment of cancer, and the specific cancer-related stressors that accompany the diagnosis and treatment of cancer.

For the DTS and the SSS, the directions were identical: “In the past week, how much trouble have you had with the following symptoms?” The DTS then instructed “select a number from both categories for each question”, the 0 to 4 options for Frequency and for Severity were presented, and a blank was provided at the end of each of the 17

items. For the SSS, the directions read: “For each question, please select a number from both categories using the following options” and the widely-spaced 0 to 4 options were presented for Frequency and for Severity; to focus the participant’s attention on the necessity to alternate between frequency and severity for each item, the frequency and severity options were repeated following each of the 17 questions. These minimal adaptations were judged not to affect the reliability and validity of the DTS, which is presented below.

Structure of the Stress Symptoms Scale. As with the DTS, the Stress Symptoms Scale was composed of 17 items which correspond to each of the 17 DSM-IV symptoms for posttraumatic stress disorder. These 17 items comprise three subscales which correspond to the criteria B through D in the DSM-IV as follows: items 1-4 and 17 comprise criterion B or intrusive reexperiencing; items 5-11 comprise criterion C or avoidance and numbness; items 12 –16 comprise criterion D or hyperarousal. Intrusive and avoidance items are referenced to the event, while numbing, withdrawal, and hyperarousal items are rated as present or absent without a direct link to the event; this is a slight departure from the DSM-IV which requires these symptoms to have arisen after the event. Davidson and colleagues (1997) judged that the ability of participants to make an accurate assessment in this respect after either remote trauma or chronic and persistent trauma would be difficult; support for this position is offered in a study by Solomon and Cantro (1990) which demonstrated poor reliability of patient descriptions of such symptomatology.

Each of the 17 items was rated for both frequency and severity during the previous week on a 5-point scale from 0 to 4, which yields a possible total score of 136.

For frequency, the rating options were as follows: 0 = not at all; 1 = once only; 2 = 2-3 times; 3 = 4-6 times; 4 = every day. For severity, the rating options were as follows: 0 = not at all distressing; 1 = minimally distressing; 2 = moderately distressing; 3 = markedly distressing; 4 = extremely distressing. Separate subscale scores for frequency and severity are also produced, and subscale scores for the three DSM-IV criteria can be examined.

Test-Retest Reliability. A comparison of baseline DTS total scores and total scores from two weeks later in participants from the miscellaneous traumas group (N = 21) who were rated with “no change” on the Clinical Global Impressions (CGI) Improvement scale (Guy, 1976) yielded a test-retest reliability coefficient of 0.86 ($p < 0.0001$) using the Pearson product-moment correlation (Davidson et al., 1997).

Internal Consistency. For 241 participants recruited from three studies of rape survivors, war veterans, and natural disaster survivors (Davidson et al., 1997), Cronbach’s alpha coefficients were obtained for DTS total items ($r = 0.99$), for frequency items alone ($r = 0.97$), and for severity items alone ($r = 0.98$)

Concurrent Validity. Using SCID diagnoses for 129 participants recruited from the three studies of rape survivors, war veterans, and natural disaster survivors (Davidson et al., 1997), 67 of them met criteria for a diagnosis of current PTSD. Participants with a diagnosis of current PTSD had a significantly higher DTS mean total score as compared to those who did not meet this diagnosis for current PTSD ($t = 9.37$, $p < 0.0001$).

Using all possible DTS scores relative to a SCID-based diagnosis of current PTSD as an independent variable, various threshold scores were examined and their

corresponding sensitivity (percentage with PTSD scoring at threshold or higher), specificity (percentage without PTSD scoring below threshold), predictive value of a positive test (percentage scoring at or above threshold who have PTSD), predictive value of a negative test (percentage scoring below threshold who do not have PTSD), and efficiency (percentage correctly classified as having or not having PTSD). At a DTS total score of 40, efficiency reached its highest accuracy at 83% (Davidson et al., 1997).

In the mixed trauma clinical trial study (Davidson et al., 1997), the physician-rated Global Assessment of Severity or GASP provided an independent severity measure of PTSD at five different levels. An ANOVA revealed highly significant differences in mean DTS total scores among these five GASP levels ($p < 0.0001$).

Convergent Validity. Convergent validity was obtained by comparing DTS total scores with the CAPS and the IES total scores using 102 participants from the rape survivors and the war veterans (Davidson et al., 1997). Correlations were 0.78 ($p < 0.0001$) for the CAPS and 0.64 ($p < 0.0001$) for the IES; using DTS subscale scores for the three areas of intrusion, avoidance, and hyperarousal, the IES avoidance score correlated 0.52 ($p < 0.0001$) with the DTS avoidance/numbness items and the IES intrusion score correlated 0.77 ($p < 0.0001$) with the DTS intrusion/reexperiencing items.

In a separate measure of convergent validity, 123 participants from the rape survivors and the natural disaster survivors (Davidson et al., 1997) completed the SCL-90-R (Derogatis, 1977). Significant correlations were obtained between DTS total scores and each of the SCL-90-R subscales (all p values < 0.0001), with the highest correlation obtained for the anxiety subscale ($r = 0.65$).

Discriminant Validity. As a measure of discriminant validity, the Eysenck Personality Inventory Extroversion scale (Eysenck & Eysenck, 1968) was correlated with the DTS total scores (Davidson et al., 1997). As expected, a null relationship was found between the two measures ($r = 0.04$).

Factorial validity. Exploratory factor analysis of data from three studies ($N = 241$) revealed the presence of one main factor of severity which accounted for over 20% of the variance (Davidson et al., 1997). Using only participants with a diagnosis of current PTSD ($N = 67$), six factors emerged which more closely resembled the configuration of symptoms for PTSD as defined in the DSM-IV (American Psychiatric Association, 1994).

Predictive Validity. In the mixed trauma clinical trial study ($N = 97$), baseline DTS total scores were evaluated in relation to endpoint CGI ratings to examine whether initial DTS severity predicted response to double-blind treatment (Davidson et al., 1997). Participants with CGI ratings of very much improved at endpoint ($N = 26$) had the lowest mean DTS total score while those with CGI ratings of minimally to markedly worse ($N = 12$) had the highest mean DTS total score. Regression analysis of CGI response predicted by DTS total scores at baseline revealed a significant positive relationship although the R squared value was low ($0.10, p < 0.005$).

DTS total scores of responders ($N = 50$) were compared to DTS total scores of non-responders ($N = 47$) to the double-blind medication trial to determine sensitivity to treatment effects (Davidson et al., 1997). Responders' mean DTS total scores decreased about 23 points between baseline and endpoint evaluations, while non-

responders' mean DTS total scores decreased less than one and a half points from baseline to endpoint evaluation.

At a DTS total score of 40, positive predictive value was 92%, negative predictive value was 79%, and efficiency was 83% relative to the SCID (Davidson et al., 1997). These values are comparable to the values for the Penn Inventory and for the Mississippi Scale (Hammarberg, 1992). These latter two scales have values based on more restrictive trauma samples.

Ways of Coping--Cancer Scale

The research team of Dunkel-Schetter and colleagues (1992) first adapted the Ways of Coping Inventory (Lazarus & Folkman, 1984) for use with cancer patients. The revised Ways of Coping scale (Folkman, Lazarus, Dunkel-Schetter, et al., 1986) contained 51 items which made up eight factors or patterns of coping. In the development of the Ways of Coping--Cancer Version, Dunkel-Schetter's research team evaluated each item for its applicability to cancer. Six items were deemed inappropriate for cancer patients and were dropped. Four items from the 67 items on the earlier version of the Ways of Coping scale had been dropped due to poor factor loadings when the scale was revised; these 4 items were added back in the Ways of Coping--Cancer Version due to their relevance to cancer. Also, 4 items were added based on coping behaviors reported among cancer patients (Dunkel-Schetter, 1982) but not included in the original or revised Ways of Coping versions. Finally, a few of the 49 items taken from the Ways of Coping scales were reworded slightly to improve their clarity or brevity. Thus, the Ways of Coping--Cancer Version by Dunkel-Schetter and

colleagues contained 52 items representing coping behaviors plus one open-ended item that asked if respondents used any other coping strategies not already mentioned.

For the present study, 3 of the 52 items from the Ways of Coping--Cancer Version (Dunkel-Schetter et al., 1992) were dropped due to poor factor loadings on the 5 patterns of coping. These patterns of coping were labeled as Seek or Use Social Support, Focus on the Positive, Distancing, Cognitive Escape-Avoidance, and Behavioral Escape-Avoidance. Also, the open-ended item was dropped since Dunkel-Schetter and colleagues reported that all written responses were easily coded as behaviors representing one of the five core factors and already captured in the item pool.

The original Ways of Coping (Lazarus & Folkman, 1984) asked participants to identify a stressful episode and to respond to items in reference to that stressful episode. For the Ways of Coping--Cancer Version, Dunkel-Schetter's research team (1992) provided a small set of cancer-related stressors based on prior studies (Dunkel-Schetter, 1982; Revenson & Felton, 1985) which included fear and uncertainty about prognosis, limitations as compared to before cancer, painful or frightening symptoms, and changes in social relationships. From this list, respondents were asked to select the one that had been the most stressful for them, or to identify one of their own. The purpose of this procedure was to use this stressor as the basis for the measure of perceived stressfulness of the cancer-related problem as respondents also were asked to rate this problem on a 5-point scale for degree of stress in the past 6 months. Since this single 1 to 5 rating was replaced by the more comprehensive Stress Symptoms Scale in the present study, the selection of one stressor was omitted and the list was

presented as a set of events that represent specific cancer-related stressors. This slight adaptation was judged to be negligible since Dunkel-Schetter and colleagues reported that the specific cancer-related problem was not associated with patterns of coping. Also, in spite of the instructions to select one stressor that had been the most stressful for them, 9% of the participants reported more than one problem, which may indicate that others had difficulty with this forced choice. Thus, the directions for the Ways of Coping--Cancer Scale used in this study were as follows:

When we experience stress in our lives, we usually try to manage it by trying out different ways of “coping.” Sometimes our attempts are successful in helping us solve a problem or feel better, and other times they are not. The next set of items is on the ways of coping you may have used in trying to manage the most stressful part of your cancer.

Please read each item on the following pages and indicate how often you tried this **in the past six months** in attempting to cope with a specific cancer-related stressor, such as: fear and uncertainty about the future due to cancer; limitations in physical ability, appearance, or lifestyle due to cancer; acute pain, symptoms, or discomfort from illness or treatment; or problems with family or friends related to cancer.

In responding to each item, please indicate a number from 0 to 4 using the options below:

0 = Does not apply / never

1 = Rarely

2 = Sometimes

3 = Often

4 = Very often

These directions and rating options are identical to those of Dunkel-Schetter and colleagues with the minor exception that “the specific problem circled above” was replaced by “a specific cancer-related stressor” followed by the list of possible stressors. The 5-point rating scale yields a possible total coping score of 196, but of particular importance are the subscale scores for the five patterns of coping with cancer-related stressors.

For descriptive purposes, Dunkel-Schetter and colleagues (1992) also reported proportional scores as a second means of scoring coping. The proportion of each participant’s total coping efforts was calculated for each of the five coping patterns, and a primary coping method was determined to be any method used at least 5% more often than all other methods.

Data Analysis

Significant background variables were identified using correlational analysis to examine the relationship between background variables and total stress scores as well as intrusive, avoidant and hyperarousal scores on the three subscales from the Stress Symptoms Scale; multiple regression analyses examined the contributions of these background variables to explain the variance in the total stress scores and scores on the three subscales from the Stress Symptoms Scale. With the present sample size of 60 participants, power analysis permitted 5 variables plus the error term to be entered into the model for each regression equation. For all analyses in the present study, level of significance was equal to or less than .05.

Significant background variables were identified using correlational analysis to examine the relationship between background variables and the five subscales of the Ways of Coping with Cancer Scale; multiple regression analyses examined the contributions of these background variables to explain the variance in the five subscales of the Ways of Coping with Cancer Scale.

Correlational analyses were utilized to examine the relationship between degree of total posttraumatic stress symptoms from the total scores on the Stress Symptoms Scale and patterns of coping among cancer patients from the five subscales of the Ways of Coping with Cancer Scale. Likewise, correlational analyses were utilized to examine the relationship between each of the subscale scores for intrusive, avoidant, and hyperarousal posttraumatic stress symptoms from the Stress Symptoms Scale and patterns of coping among cancer patients from the five subscales of the Ways of Coping with Cancer Scale.

As noted previously, primary coping methods were examined using proportional coping scores, and a primary coping method was operationalized as a coping method utilized at least 5% more often than all others. Flexibility of coping styles was also examined in the present study.

Results

Description of Participants

Personal Factors. Of the 60 participants in this study, 48 were female and 12 were male. Fifty participants were Caucasian, 9 were African-American, and 1 was Native American. Ages ranged from 22 years to 82 years, with a mean age of 46.18 years and a median age of 43.00 years. Among the participants in this sample, 3 were in their twenties, 17 were in their thirties, 18 were in their forties, 12 were in their fifties, 9 were in their sixties, and 1 was in her eighties. Thus, slightly more than two-thirds of the participants were below the age of 50 years. For educational level, no one reported less than a high school diploma. Thirteen participants reported having a high school diploma or GED, 18 reported having taken some college courses, 25 reported having a college degree, 1 reported some graduate study, and 3 reported a graduate degree. Personal factors for female and male participants are shown in Table 1.

Socioenvironmental Factors. Of the 60 participants in this study, 29 were married and 31 were not married. Twenty participants, or one-third of the sample, had no children. Eleven participants reported having 1 child, 14 participants reported 2 children, 6 participants reported 3 children, and 9 participants reported 4 children. Forty-two participants reported living with others while only 18 participants reported living alone. Socioenvironmental factors for female and male participants are shown in Table 2.

Situational Factors. Sixteen participants reported less than one year since the initial diagnosis of cancer. Nine participants reported from 1 year to less than

Table 1
 Personal Factors for Female and Male Participants

	<u>Female</u> n = 48	<u>Male</u> n = 12
<u>Race/Ethnicity</u>		
African-American	7	1
Caucasian	40	11
Native American	1	0
<u>Age^a</u>		
20 - 29	2 ^b	1 ^c
30 - 39	13	4
40 - 49	14	4
50 - 59	10	2
60 - 69	8	1
70 - 79	0	0
80 - 89	1	0
<u>Educational Level</u>		
High school/GED	12	1
Some college courses	16	2
College degree	16	9
Graduate study	1	0
Graduate degree	3	0

^an = 60; Range = 22 – 82; Mean = 46.18; Median = 43.00.

^bn = 48; Range = 22 – 82; Mean = 47.02; Median = 43.50.

^cn = 12; Range = 29 – 62; Mean = 42.83; Median = 41.00.

Table 2

 Socioenvironmental Factors for Female and Male Participants

	<u>Females</u>	<u>Males</u>
	n = 48	n = 12
<u>Marital Status</u>		
Married	22	7
Not Married	26	5
<u>Number of Children</u>		
0	12	8
1	10	1
2	13	1
3	6	0
4	7	2
<u>Live Alone</u>		
Alone	13	5
With Other(s)	35	7

2 years since the initial diagnosis; 11 participants reported from 2 years to less than 3 years since the initial diagnosis; 6 participants reported from 3 years to less than 4 years since the initial diagnosis; 11 participants reported from 4 years to less than 5 years since initial diagnosis; and 7 participants reported 5 years since the initial diagnosis of cancer. For the site or type of cancer, 33 participants identified breast cancer. Of the remaining 27 participants, 7 reported female reproductive cancer, 6 reported lymphoma, 4 reported male reproductive cancer, 4 reported hematological or blood cancer, 3 reported skin cancer, 1 reported lung cancer, 1 reported thyroid cancer, and 1 reported bone cancer. As with the research by Dunkel-Schetter and colleagues (1992), breast cancer was compared to all other sites for the purpose of analyses in this study. Thirty-nine participants reported currently being in treatment while 21 reported not being in treatment. Twenty-six participants reported currently being in remission while 34 reported not being in remission. Fifty-five participants reported no recurrence while only 5 participants reported that there had been a recurrence of cancer.

Situational factors for female and male participants are shown in Table 3.

Levels of Stress Among Participants

At a score of 40 on the Davidson Trauma Scale, Davidson and colleagues (1997) obtained concurrent validity with the Structured Clinical Interview for DSM-IV with an accuracy of 83% for the likely diagnosis of posttraumatic stress disorder. In the present sample of 60 participants, a total of 31 participants, or about 52%, had a Stress Symptoms Scale score of 40 or higher, with a mean SSS score of 55.97 among this group. An additional participant had a borderline SSS score of 39. For the 60

Table 3

Situational Factor for Female and Male

	<u>Females</u> n = 48	<u>Males</u> n = 12
<u>Time since diagnosis^a</u>		
4 yr.	12 ^b	4 ^c
1yr. to <2yr.	6	3
2yr. to <3yr.	9	2
3yr. to <4yr.	6	0
4yr. to <5yr.	9	2
5yr. to <6yr.	6	1
<u>Site of Cancer</u>		
Breast	33	0
Other	15	12
<u>Treatment</u>		
No	17	4
Yes	31	8
<u>Remission</u>		
No	25	9
Yes	23	3
<u>Recurrence</u>		
No	44	11
Yes	4	1

participants in this study, scores on the Stress Symptoms Scale ranged from 5 to 84.

Figure 2 shows the distribution of total scores on the SSS for the 60 participants in this study. Cronbach's alpha for the total stress scores was 0.94; for the three subscales, the coefficients were 0.86, 0.90, and 0.89.

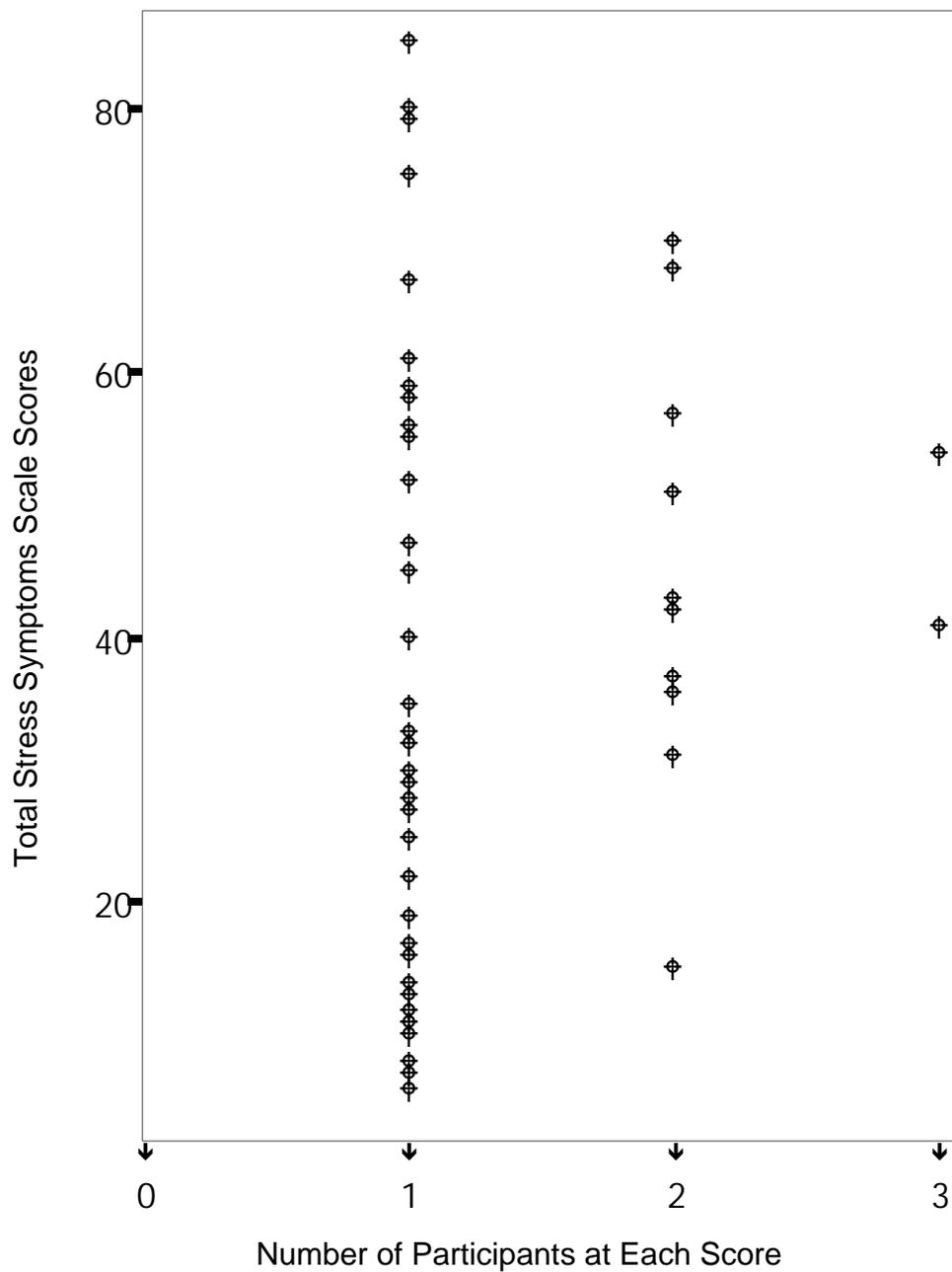


Figure 2. Distribution of total Stress Symptoms Scale scores for 60 cancer patients.

Primary Coping Methods Among Participants

Primary coping methods were examined using proportional coping scores; the proportion of each participant's total coping score was derived for each of the five patterns of coping. A primary coping method was operationalized as a method that was utilized at least 5% more often than all other methods. For the 60 participants in this study, 20 participants (33%) had no primary coping method that was utilized at least 5% more often than all other methods. Twenty-seven participants (45%) utilized Seek and Use Social Support as a primary coping method. Among the remaining participants, 9 (15%) used Distancing, 3 (5%) used Cognitive Escape-Avoidance, and 1 (2%) used Behavioral Escape-Avoidance as a primary coping method. No one in this study used Focus on the Positive as a primary coping method. In contrast, Dunkel-Schetter and colleagues (1992) found that 55% of participants had no primary coping method. Among the remaining 45% who did have a primary coping method, 42% used distancing, 22% used positive focus, 19% used social support, and 17% used cognitive escape-avoidance. No one in the large Dunkel-Schetter sample used behavioral escape-avoidance as a primary coping method. Figure 3 shows the distribution of primary coping methods among the 60 participants in this study.

Among the 20 participants who had no primary coping method that was utilized at least 5% more often than all other coping methods, nine participants had two coping methods that were utilized at the same rate and at least 5% more often than the remaining three methods; eight participants utilized both Seek and Use Social Support and Distancing at an equally strong rate while one participant utilized Distancing and Behavioral Escape-Avoidance at an equally strong rate. Three additional participants

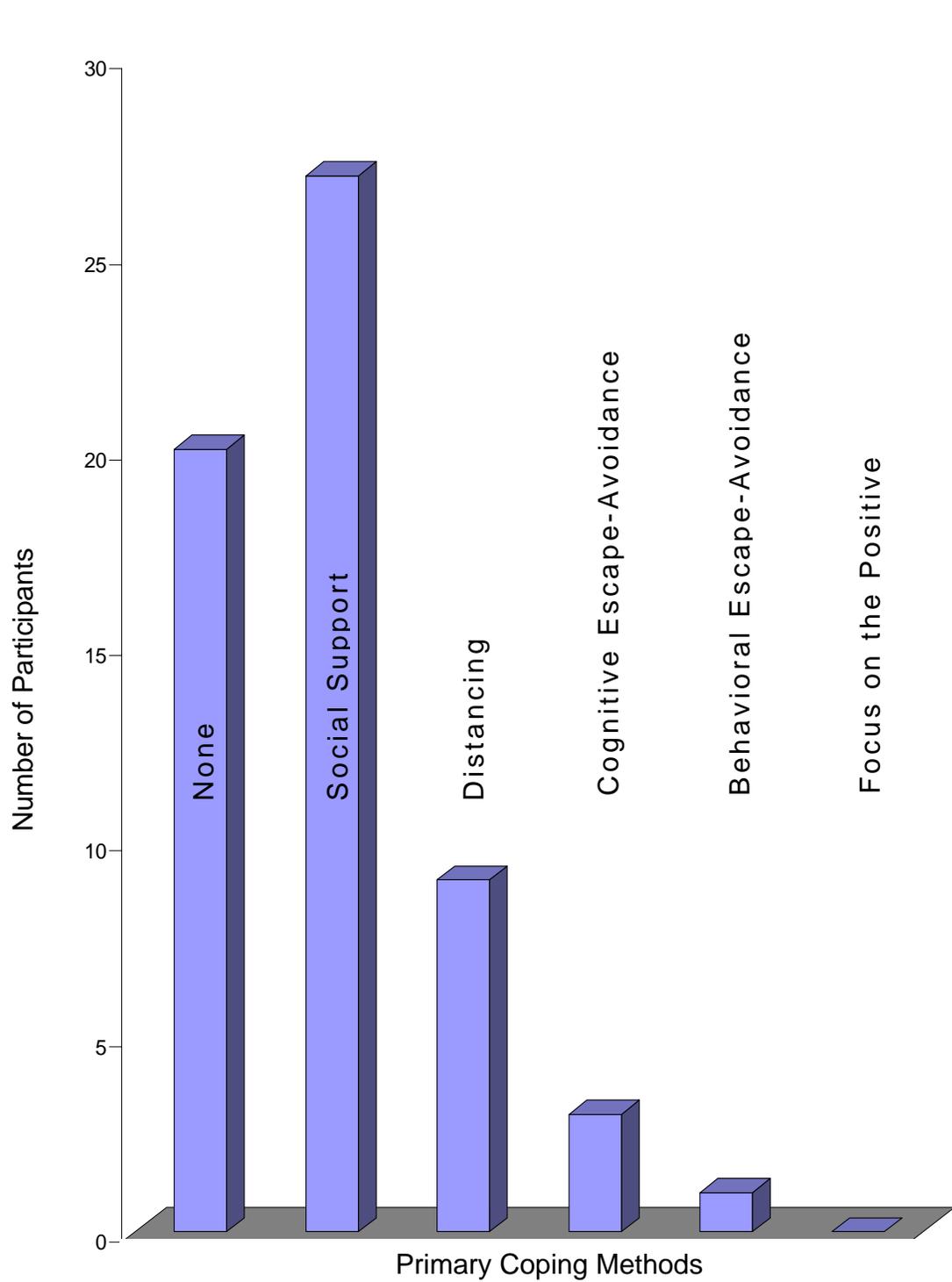


Figure 3. Distribution of primary coping methods among 60 cancer patients.

who had no primary coping method utilized three coping methods at equal rates that were at least 5% more often than the remaining two coping methods. For two participants, the coping methods utilized at equally strong rates were Seek and Use Social Support, Distancing, and Cognitive Escape-Avoidance. For the remaining participant, the coping methods utilized at equally strong rates were Seek and Use Social Support, Distancing and Focus on the Positive.

Flexibility of Coping Methods Among Participants

In the present study, 52 participants (87%) were highly flexible in their use of coping efforts as they utilized all five methods of coping to some degree. Four participants (7%) utilized four of the coping methods, and in all cases the one method that was not utilized was Focus on the Positive. Three participants (5%) utilized three coping methods each; for these three participants, the coping methods that were not utilized were Focus on the Positive and Cognitive Escape-Avoidance, Focus on the Positive and Behavioral Escape-Avoidance, and Cognitive Escape-Avoidance and Behavioral Escape-Avoidance respectively. One participant utilized only two coping methods, which were Seek and Use Social Support and Distancing. No one in this sample of participants utilized only one coping method. Thus, the participants in this study were highly flexible in their coping efforts. The majority of the large sample reported by Dunkel-Schetter and colleagues (1992) also was reported to be highly flexible in utilizing the five patterns of coping; a mere 4% used only two coping patterns and only 1% reported using only one coping pattern. As with the earlier study, the present study also found that a majority of the sample was highly flexible in utilizing methods of coping.

Relationship of Background Variables to Levels of Posttraumatic Stress

The first research question concerned whether one or more of the background variables will contribute significantly to the degree of posttraumatic stress symptoms experienced by this sample of cancer patients as measured by the total scores from the Stress Symptoms Scale. Thus, hypothesis one read:

H₁: One or more of the background variables will contribute significantly to the total posttraumatic stress symptoms among cancer patients.

Correlations between the background variables and the total scores on the Stress Symptoms Scale were computed using the Pearson correlation statistic and two-tailed levels of significance. Table 4 reports the results of this correlational analysis for the background variables and the total stress scores from the Stress Symptoms Scale.

Background variables that had significant associations with total stress symptoms scores were included in the regression model; in addition, living alone was included since power analysis permitted five variables plus the error term in the equation, and living alone showed a strong but nonsignificant association which was tested to determine a possible contribution beyond marital status. Therefore, a regression equation was constructed using age, whether married, time since diagnosis, currently in treatment, and whether living alone as predictors to explain the variance in the dependent variable of the total stress scores from the Stress Symptoms Scale. Standardized betas, adjusted R square, F statistic and p values appear in Table 5. The equation was highly significant accounting for 26% of the variance in total scores from the Stress Symptoms Scale. Younger age was significantly associated with higher

Table 4

Correlations for Background Variables and Levels of Posttraumatic Stress

<u>Background Variables</u>	<u>Total SSS</u>	<u>Intrusive</u>	<u>Avoidant</u>	<u>Arousal</u>
Gender ^a	.044	.082	-.039	.082
Race ^b	-.031	-.152	.041	.023
Age	-.534***	-.571***	-.487***	-.347**
Education ^c	.065	.018	.113	.035
Married ^d	-.268*	-.306*	-.201	-.203
Children	-.176	-.192	-.099	-.176
Living Alone ^e	-.198	-.127	-.180	-.213
Time-Diagnosis ^f	-.403***	-.444***	-.405***	-.208
Type of Cancer ^g	-.096	-.023	-.162	-.060
In treatment ^h	.253*	.532***	.135	.012
In remission ⁱ	-.163	-.296*	-.153	.018
Recurrence ^j	.011	-.025	-.006	.062

^a1 = male, 2 = female. ^b1 = African-American, 2 = Native American, 3 = Caucasian. ^c1 = high school diploma/GED, 2 = some college, 3 = college degree, 4 = graduate study, 5 = graduate degree. ^d1 = no, 2 = yes. ^e1 = live alone, 2 = with others. ^f1 = < 1 year, 2 = one to less than 2 years, 3 = 2 to less than 3 years, 4 = 3 to less than 4 years, 5 = 4 to less than 5 years, 6 = 5 to less than 6 years. ^g1 = not breast cancer, 2 = breast cancer. ^h1 = no, 2 = yes. ⁱ1 = no, 2 = yes. ^j1 = no, 2 = yes.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 5

Results of Regression Analysis on Predictors of Total Stress Symptoms

<u>Background variables</u>	<u>Standardized Beta</u>	<u>Adjusted R²</u>	<u>F</u>
Age	-.395**	.264	5.225***
Married	-.059		
Living Alone	-.076		
Time Diagnosis	-.184		
In Treatment	-.039		

n = 60.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

levels of total stress throughout this sample (see Figure 4). Therefore, hypothesis one was supported by these data.

The second research question concerned whether one or more of the background variables will contribute significantly to the degree of intrusive, avoidant, or hyperarousal symptoms experienced by this sample of cancer patients as measured by the three subscales from the Stress Symptoms Scale. Thus, hypothesis two read:

H₂: One or more of the background variables will contribute significantly to each of the three subscales of posttraumatic stress symptoms among cancer patients.

Correlations among the background variables and the three subscales of intrusive, avoidant, and hyperarousal symptoms from the Stress Symptoms Scale were computed using the Pearson correlation statistic and two-tailed levels of significance. Table 4

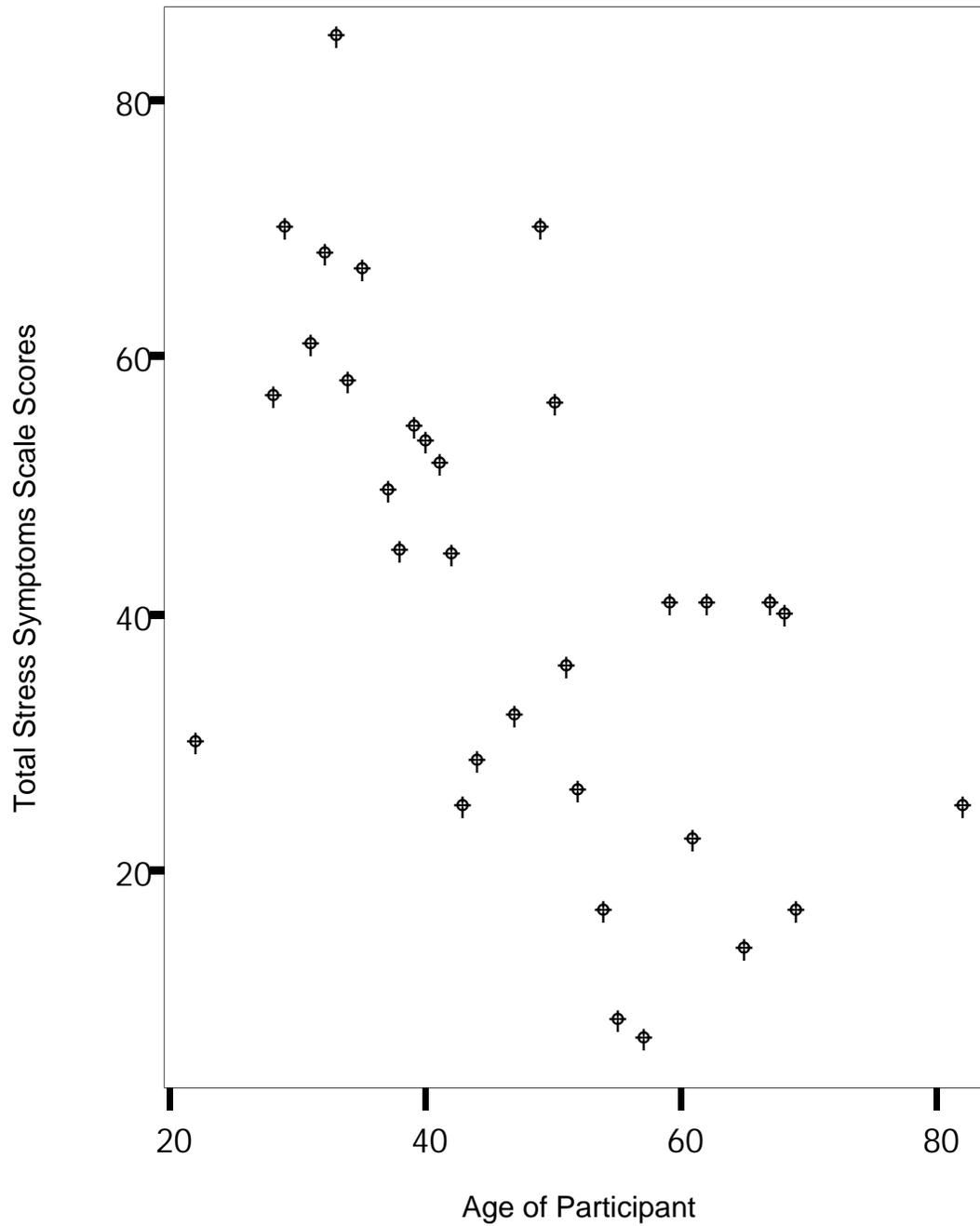


Figure 4. Relationship of age to total Stress Symptoms Scale scores.

reports the results of the correlational analyses for the background variables and the three subscales from the Stress Symptoms Scale.

Three regression equations were constructed to test the relationships among the background variables and the three subscales of intrusive, avoidant, and hyperarousal symptoms from the Stress Symptoms Scale. Background variables that had significant associations with intrusive stress symptoms scores were included in the first regression model; since power analysis permitted five variables plus the error term in the equation, all five of the significant background variables were entered into the regression model. Therefore, the first regression equation was constructed using age, whether married, time since diagnosis, currently in treatment, and currently in remission as predictors to explain the variance in the dependent variable of the scores from the intrusive subscale. Standardized betas, adjusted R square, F statistic and p values appear in Table 6. The equation was highly significant accounting for 45% of the variance in scores from the intrusive subscale. Younger age and currently being in treatment were significantly associated with higher levels of intrusive stress symptoms throughout this sample.

Background variables that had significant associations with avoidant stress symptoms scores were included in the second regression model; in addition, marital status and living alone, which had strong but nonsignificant associations, were included to test their possible contributions to explaining the variance in avoidant stress symptoms scores. Therefore, the second regression equation was constructed using age, whether married, time since diagnosis, and whether living alone as predictors to explain the variance in the dependent variable of the scores from the avoidant subscale. Standardized betas, adjusted R square, F statistic and p values appear in Table 7. The

equation was highly significant accounting for 23% of the variance in scores from the avoidant subscale. Younger age was significantly associated with higher levels of avoidant stress symptoms throughout this sample.

Table 6

Results of Regression Analysis on Predictors of Intrusive Stress Symptoms

<u>Background variables</u>	<u>Standardized Beta</u>	<u>Adjusted R²</u>	<u>F</u>
Age	-.341**	.452	10.731***
Married	-.175		
Time-Diagnosis	-.163		
In Treatment	.432***		
In Remission	.177		

n = 60.

*p ≤ .05, **p ≤ .01, ***p ≤ .001.

Table 7

Results of Regression Analysis on Predictors of Avoidant Stress Symptoms

<u>Background variables</u>	<u>Standardized Beta</u>	<u>Adjusted R²</u>	<u>F</u>
Age	-.360**	.232	5.465***
Married	.027		
Living Alone	-.110		
Time-diagnosis	-.234		

n = 60.

*p ≤ .05, **p ≤ .01, ***p ≤ .001.

Table 8

Results of Regression Analysis on Predictors of Hyperarousal Stress Symptoms

<u>Background variables</u>	<u>Standardized Beta</u>	<u>Adjusted R²</u>	<u>F</u>
Age	-.279	.081	2.302ns
Married	-.008		
Living Alone	-.145		
Time-diagnosis	-.068		

n = 60.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

For hyperarousal stress symptoms scores, the only background variable that had a significant association was age; additional background variables that showed strong but nonsignificant associations were marital status, living alone, and time since diagnosis. Therefore, the third regression equation was constructed using age, whether married, time since diagnosis, and whether living alone as predictors to explain the variance in the dependent variable of the scores from the hyperarousal subscale. Standardized betas, adjusted R square, F statistic and p values appear in Table 8. The equation was not significant at the .05 level and accounted for only 8% of the variance in scores from the hyperarousal subscale. Only age was approaching significance ($p = .066$) and indicated a tendency for younger cancer patients to be associated with higher levels of hyperarousal stress symptoms. Hyperarousal subscale scores were not well predicted by these background variables for the present sample.

Two of the three equations were highly significant, accounting for 45% of the variance in intrusive subscale scores and 23% of the variance in avoidant subscale scores. Therefore, hypothesis two was supported for the intrusive and avoidant

subscales, but not for the hyperarousal subscale which was not well predicted by these data.

Relationship of Background Variables to Patterns of Coping

The third research question concerned whether one or more of the background variables will contribute significantly to the patterns of coping with cancer-related stressors as measured by the five subscales of the Ways of coping with Cancer Scale. Thus, hypothesis three read:

H₃: One or more of the background variables will contribute significantly to each of the five patterns of coping among cancer patients.

Correlations among the background variables and the five subscales of patterns of coping with cancer from the Ways of Coping with Cancer Scale were computed using the Pearson correlation statistic and two-tailed levels of significance. Table 9 reports the results of the correlational analyses for the background variables and the five subscales from the Ways of Coping with Cancer Scale.

Five regression equations were constructed to test the relationships among the background variables and the five patterns of coping from scores on the Ways of Coping with Cancer Scale. Background variables that had significant associations with social support subscale scores were included in the first regression model; in addition, time since diagnosis, which had a strong but nonsignificant association, was included to test for a possible contribution to explaining the variance in social support subscale scores. Therefore, the first regression equation was constructed using gender, whether married, time since diagnosis, and type of cancer as predictors to explain the variance in the dependent variable of the scores from the Seek and Use Social Support

Table 9

Correlations for Background Variables and Patterns of Coping with Cancer

<u>Background Variables</u>	<u>Patterns of Coping with Cancer</u>				
	<u>Social Support</u>	<u>Cognitive Escape-Avoidance</u>	<u>Distancing</u>	<u>Focus on the Positive</u>	<u>Behavioral Escape-Avoidance</u>
Gender ^a	.545***	.259*	.173	.412***	.151
Race	-.040	-.286*	-.249	-.226	.018
Age	-.036	-.067	.470***	.088	.178
Education ^c	-.148	-.105	-.025	-.080	.166
Married ^d	-.275*	-.413***	-.116	-.222	-.050
Children	.119	.075	.174	.259*	.188
Alone ^e	-.097	-.230	-.141	-.134	-.108
Time ^f	-.234	-.081	.167	.178	-.054
Type ^g	.273*	.037	.117	.194	-.047
Treatment ^h	.134	.110	-.056	-.054	.067
Remission ⁱ	-.019	.169	.263*	.315*	.070
Recurrence ^j	-.164	-.098	-.036	-.094	-.035

^a1 = male, 2 = female. ^b1 = African-American, 2 = Native American, 3 = Caucasian. ^c1 = high school diploma/GED, 2 = some college, 3 = college degree, 4 = graduate study, 5 = graduate degree. ^d1 = no, 2 = yes. ^e1 = live alone, 2 = with others. ^f1 = < 1 year, 2 = one to less than 2 years, 3 = 2 to less than 3 years, 4 = 3 to less than 4 years, 5 = 4 to less than 5 years, 6 = 5 to less than 6 years. ^g1 = not breast cancer, 2 = breast cancer. ^h1 = no, 2 = yes. ⁱ1 = no, 2 = yes. ^j1 = no, 2 = yes.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

subscale. Standardized betas, adjusted R square, F statistic and p values appear in Table 10. The equation was highly significant accounting for 38% of the variance in scores from the Social Support subscale.

Table 10

Results of Regression Analysis on Predictors of Seek & Use Social support

<u>Background variables</u>	<u>Standardized Beta</u>	<u>Adjusted R²</u>	<u>F</u>
Gender	.506***	.385	10.248***
Married	-.187		
Time-Diagnosis	-.301**		
Type of Cancer	.108		

n = 60.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Females and those with a more recent diagnosis of cancer were associated with higher levels of social support throughout this sample. Additionally, there was a strong but not significant tendency ($p = .084$) for patients who were not married to seek and use higher levels of social support.

Background variables that had significant associations with cognitive escape-avoidance subscale scores were included in the second regression model; in addition, living alone, which had a strong but nonsignificant association, was included to test for a possible contribution to explaining the variance in cognitive escape-avoidance subscale scores. Therefore, the second regression equation was constructed using gender, race, whether married, and whether living alone as predictors to explain the variance in the dependent variable of the scores from the Cognitive Escape-Avoidance subscale. Standardized betas, adjusted R square, F statistic and p values appear in Table 11.

Table 11

Results of Regression Analysis on Predictors of Cognitive Escape-Avoidance

<u>Background variables</u>	<u>Standardized Beta</u>	<u>Adjusted R²</u>	<u>F</u>
Gender	.216	.259	6.164***
Race	-.321**		
Married	-.304*		
Living Alone	-.157		

n = 60.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

The equation was highly significant accounting for about 26% of the variance in scores from the Cognitive Escape-Avoidance subscale. Racial minority status and not being married were associated with higher levels of Cognitive Escape-Avoidance throughout this sample. Additionally, there was a strong but not significant tendency ($p = .069$) for females to use higher levels of cognitive escape-avoidance.

Background variables that had significant associations with distancing subscale scores were included in the third regression model; in addition, gender, race, and number of children, which had strong but nonsignificant associations, were included to test for a possible contribution to explaining the variance in distancing subscale scores. Therefore, the third regression equation was constructed using gender, race, age, number of children and currently in remission as predictors to explain the variance in the dependent variable of the scores from the Distancing subscale. Standardized betas,

Table 12

Results of Regression Analysis on Predictors of Distancing

<u>Background variables</u>	<u>Standardized Beta</u>	<u>Adjusted R²</u>	<u>F</u>
Gender	.099	.210	4.145**
Age	.448***		
Race	-.212		
Children	-.105		
In remission	.058		

n = 60.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

adjusted R square, F statistic and p values appear in Table 12. The equation was significant accounting for 21% of the variance in scores from the Distancing subscale. Younger patients were associated with less coping through distancing oneself from cancer-related problems while older patients were associated with more coping through distancing throughout this sample.

Background variables that had significant associations with focus on the positive subscale scores were included in the fourth regression model; in addition, race and marital status, which had strong but nonsignificant associations, were included to test for possible contributions to explaining the variance in focus on the positive subscale scores. Therefore, the fourth regression equation was constructed using gender, race, whether married, number of children, and currently in remission as predictors to explain

Table 13

Results of Regression Analysis on Predictors of Focus on the Positive

<u>Background variables</u>	<u>Standardized Beta</u>	<u>Adjusted R²</u>	<u>F</u>
Gender	.292	.255	5.036***
Race	-.089		
Married	-.290*		
Children	.221		
Children In Remission	.177		

n = 60.

*p ≤ .05, **p ≤ .01, ***p ≤ .001.

the variance in the dependent variable of the scores from the Focus on the Positive subscale. Standardized betas, adjusted R square, F statistic and p values appear in Table 13. The equation was highly significant accounting for more than 25% of the variance in scores from the Focus on the Positive subscale. Females and those who were not married were associated with higher levels of focusing on the positive throughout this sample.

For behavioral escape-avoidance subscale scores, no significant associations were found among the background variables. Five background variables showed some association, while the remaining background variables indicated little or no association with behavioral escape-avoidance subscale scores. Therefore, the fifth regression equation was constructed using gender, age, educational level, number of children, and whether living alone as predictors to explain the variance in the dependent variable of

Table 14

Results of Regression Analysis on Predictors of Behavioral Escape-Avoidance

<u>Background variables</u>	<u>Standardized Beta</u>	<u>Adjusted R²</u>	<u>F</u>
Gender	.144	.053	1.665 ns
Race	.135		
Married	.180		
Children	.182		
In Remission	-.220		

n = 60.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

the scores from the Behavioral Escape-Avoidance subscale. Standardized betas, adjusted R square, F statistic and p values appear in Table 14. The equation was not significant at the .05 level and accounted for only 5% of the variance in scores from the Behavioral Escape-Avoidance subscale. Behavioral escape-avoidance coping methods were not well predicted by these background variables in the present sample.

Four of the five equations were highly significant, accounting for 21% to 38% of the variance in patterns of coping with cancer. The exception was coping through behavioral escape-avoidance, which was poorly predicted by these background variables. Therefore, hypothesis three was supported for four of the five patterns of coping in the present sample.

Relationship of Levels of Posttraumatic Stress to Patterns of Coping

The fourth research question concerned whether there is a relationship between the degree of posttraumatic stress symptoms as measured by the total scores on the Stress Symptoms Scale and patterns of coping among cancer patients as measured by the five subscales of the Ways of Coping with Cancer Scale. Thus, hypothesis four read:

H₄: There is a relationship between degree of total posttraumatic stress symptoms and patterns of coping among cancer patients.

Correlations between the degree of total posttraumatic stress symptoms from the total scores on the Stress Symptoms Scale and patterns of coping among cancer patients from the five subscales of the Ways of Coping with Cancer Scale were computed using the Pearson correlation statistic and two-tailed levels of significance. Table 15 reports the results of the correlational analyses for the degree of posttraumatic stress symptoms as measured by the total scores on the Stress Symptoms Scale and patterns of coping among cancer patients as measured by the five subscales of the Ways of Coping with Cancer Scale.

Higher levels of total stress were significantly and positively related to greater utilization of coping methods of social support, cognitive escape-avoidance, and behavioral escape avoidance. Coping through use of distancing oneself from cancer-related problems or by focusing on the positive were not related to levels of total stress scores on the Stress Symptoms Scale. Therefore, hypothesis four was supported as a relationship was found between degree of total posttraumatic stress symptoms and

Table 15

Correlations for Total Stress Symptoms and Patterns of Coping with Cancer

<u>Patterns of Coping with Cancer</u>	<u>Total Stress Symptoms</u>
Seek & Use Social Support	.303*
Cognitive escape-Avoidance	.340**
Distancing	.050
Focus on the Positive	.076
Behavioral Escape-Avoidance	.362**

n = 60

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

patterns of coping among cancer patients.

The fifth research question concerned whether there is a relationship between each of the three subscale scores for intrusive, avoidant, and hyperarousal posttraumatic stress symptoms as measured with the Stress Symptoms Scale and patterns of coping among cancer patients as measured by the five subscales of the Ways of Coping with Cancer Scale. Thus, hypothesis five read:

H₅: There is a relationship between each of the three subscale scores for intrusive, avoidant, and hyperarousal posttraumatic stress symptoms and patterns of coping among cancer patients.

Correlations between each of the three subscale scores for intrusive, avoidant, and hyperarousal posttraumatic stress symptoms as measured with the Stress Symptoms Scale and patterns of coping among cancer patients as measured by the five subscales of the Ways of Coping with Cancer Scale were computed using the Pearson correlation statistic and two-tailed levels of significance. Table 16 reports the results of the

Table 16

Correlations for Stress Symptoms Subscales and Patterns of Coping with Cancer

<u>Patterns of Coping</u>	<u>Stress Symptoms Subscales</u>		
	<u>Intrusive</u>	<u>Avoidant</u>	<u>Arousal</u>
Social Support	.356**	.257*	.187
Cognitive Escape	.364**	.288*	.244
Distancing	.053	.025	.05
Focus on Positive	.072	.039	.092
Behavioral escape	.215	.376**	.355**

n = 60.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

correlational analyses among the three subscales of intrusive, avoidant, and hyperarousal symptoms from the Stress Symptoms Scale and patterns of coping among cancer patients as measured by the five subscales of the Ways of Coping with Cancer Scale.

Higher levels of intrusive stress symptoms were significantly and positively related to greater utilization of coping through social support and cognitive escape-avoidance. Intrusive stress symptoms were not related to coping methods of distancing, focus on the positive or behavioral escape-avoidance.

Higher levels of avoidant stress symptoms were significantly associated with greater coping through social support, cognitive escape-avoidance, and behavioral escape-avoidance. Avoidant stress symptoms were not related to distancing oneself from cancer-related problems or focusing on the positive aspects of a situation.

Higher levels of hyperarousal stress symptoms were significantly associated with greater coping through behavioral escape-avoidance. In addition, coping through cognitive escape-avoidance ($r = .244$, $p = .060$) was approaching the .05 level of significance. However, hyperarousal stress symptoms were not associated with coping methods of social support, distancing, or focus on the positive. Therefore, hypothesis five was supported as various relationships were found among the three subscale scores for intrusive, avoidant, and hyperarousal posttraumatic stress symptoms and patterns of coping among cancer patients.

Discussion

The present study examined relationships among patterns of coping with cancer, degrees of posttraumatic stress symptoms among cancer patients, and various personal, Socioenvironmental and situational background factors. Correlational and multiple regression analyses revealed various significant relationships among these variables.

The personal, Socioenvironmental and situational background factors explained 26% of the variance in the degree of total posttraumatic stress symptoms experienced by this sample of cancer patients. Younger cancer patients were associated with higher levels of total posttraumatic stress symptoms. In examining the three subscales of posttraumatic stress symptoms, these background factors explained 45% of the variance in intrusive posttraumatic stress symptoms. Younger age and currently being in treatment were associated with higher levels of intrusive posttraumatic stress symptoms. For avoidant posttraumatic stress symptoms, the background factors explained 23% of the variance. Younger cancer patients were associated with higher levels of avoidant posttraumatic stress symptoms. Hyperarousal posttraumatic stress symptoms were not well predicted by these background factors which explained only 8% of the variance for this subscale. Again, there was a strong but not significant tendency for younger cancer patients to be associated with higher levels of hyperarousal posttraumatic stress symptoms.

An examination of the relationships among the background factors and the patterns of coping revealed that these personal, socioenvironmental and situational background factors explained 38% of the variance in coping through the method of

seeking and using social support. Female cancer patients and patients with a recent diagnosis of cancer utilized higher levels of this coping method. Patients who were not married also showed a strong but not significant tendency to employ more efforts to seek and use social support. In the results reported by the Dunkel-Schetter research team (1992), gender was unrelated to coping efforts through social support. Younger age was inversely associated with this coping method in this earlier study. Also, marital status was unrelated to seeking social support, but living alone contributed to more use of this coping method. Those with breast cancer were slightly more likely to seek social support than were those with other cancer sites in the Dunkel-Schetter report, but this relationship was not found in the present study. In contrast to the present study, the Dunkel-Schetter research team found no relationship between time since initial diagnosis of cancer and use of coping through social support.

With regard to coping by cognitive escape-avoidance, these background factors explained 26% of the variance in coping efforts. Cancer patients with racial minority status, and patients who were not married showed a higher level of coping efforts through this type of avoidance. Additionally, females showed a strong but not significant tendency to use this type of coping. In the Dunkel-Schetter study (1992), none of these background factors contributed as predictors for coping by cognitive escape-avoidance. The earlier study found that less education than a high school diploma was related to more cognitive escape-avoidance; this level of education was not reported by any cancer patient in the present study.

For coping through distancing oneself from cancer-related problems, the background factors explained 21% of the variance in coping efforts. Younger cancer

patients employed less distancing while older cancer patients relied more on this method of coping. This association was not found in the Dunkel-Schetter sample of cancer patients (1992); in contrast, only having less education than a high school diploma was related to more distancing coping efforts.

More than 25% of the variance in coping efforts that utilized focusing on the positive was explained by the background factors in the present study. Females and patients who were not married were associated with greater efforts to focus on the positive. In the Dunkel-Schetter study (1992), only younger age was associated with more coping efforts through focusing on the positive.

Behavioral escape-avoidance coping methods were not well predicted by the background factors in this study as only 5% of the variance was explained by these variables. In contrast, the Dunkel-schetter researchers (1992) found that younger age and living alone were associated with more behavioral escape-avoidance efforts. Also, a greater time since initial diagnosis was related to more use of behavioral escape-avoidance.

An examination of the degree of total posttraumatic stress symptoms and patterns of coping revealed a relationship between higher levels of stress and greater utilization of social support and both types of escape-avoidance. Coping methods of distancing and focusing on the positive were not related to levels of total posttraumatic stress symptoms.

With regard to the relationship between each of the subscales of posttraumatic stress symptoms and patterns of coping among cancer patients, higher levels of intrusive posttraumatic stress symptoms were positively related to greater utilization of

both social support and cognitive escape-avoidance. Conversely, intrusive subscale symptoms were not related to distancing, focusing on the positive or behavioral escape-avoidance.

Avoidance posttraumatic stress symptoms were associated with greater coping efforts through social support, cognitive escape-avoidance and behavioral escape-avoidance. Coping methods of distancing and focusing on the positive were not related to the degree of avoidance subscale symptoms among cancer patients.

Only coping through behavioral escape-avoidance was associated with greater levels of hyperarousal posttraumatic stress symptoms. Higher levels of hyperarousal stress symptoms tended to be associated with greater cognitive escape-avoidance coping methods, although not significantly. Hyperarousal posttraumatic stress symptoms were not associated with coping methods of social support, distancing or focus on the positive.

Levels of Posttraumatic Stress Symptoms Among Cancer Patients

Of particular note was the markedly high levels of posttraumatic stress symptoms among the cancer patients in the present study. It is well recognized that cancer diagnosis and treatment involves a wide range of stressors, including fear and uncertainty, introduction of limitations, acute pain or discomfort, problems in social relationships. However, in this sample of cancer patients, fully 53% of the participants or 32 cancer patients had a total Stress Symptoms Scale score of 40 or higher, or in one case a borderline score of 39, which indicated the likely diagnosis of posttraumatic stress disorder (Davidson et al., 1997).

Changes in the distribution of posttraumatic stress symptoms over time may not be reflected in this total score but rather in fluctuations in the number or intensity of symptoms over time. The very nature of posttraumatic stress symptoms may contribute to the underreporting in areas of intrusive, avoidant or hyperarousal symptoms. For example, a 47-year-old male in this sample had a constellation of symptoms distributed as 2 on the intrusive subscale, 18 on the avoidant subscale, and 1 on the hyperarousal subscale; the high incidence of avoidance and denial quite likely may be masking the true nature of the degree of intrusive and hyperarousal symptoms. If this cancer patient has been actively avoiding thoughts, feelings, situations and reminders of his cancer-related stressors, quite likely he has underreported the intrusive symptoms which he is avoiding, and perhaps the hyperarousal symptoms that are connected with this process of avoidance and denial since avoidance may manifest itself in denial of reports of active arousal behavior.

On the other hand, a 50-year-old female in this sample had a constellation of symptoms distributed as 11 on the intrusive subscale, 2 on the avoidant subscale, and 19 on the hyperarousal subscale. Too few as well as too many symptoms may indicate that this cancer patient is not coping well. When the traumatic event is a catastrophic disease or an intensive medical treatment, denial and avoidance of reminders of the illness are common; this becomes problematic since this leads to an underreporting of the avoidant symptoms themselves. Thus, intense denial and avoidance may prevent an accurate assessment of the level of overall posttraumatic stress symptoms. The nature of avoidance and denial in posttraumatic stress symptoms may produce verbal responses that are inconsistent with behavior and observations. Of course, avoidance

and denial are especially damaging since posttraumatic stress symptoms are most amenable to intervention early in the experience with the trauma; in the case of cancer-related stressors, avoidance may result in delays or absences of treatment, essential medical care, or follow-up care and monitoring.

For the 32 cancer patients in this study who had high levels of total posttraumatic stress symptoms, responses were examined for the coping item of “tried to get professional help.” Among these 32 participants with elevated levels of stress, 12 out of 32, or 37.5%, responded that they had never tried to get professional help in the past six months. The constellation of posttraumatic stress symptoms for these 12 cancer patients who reported no coping efforts to obtain professional help revealed avoidant symptoms that ranged from 20% to 42% of their total posttraumatic stress symptoms.

A possible contribution to the markedly high levels of posttraumatic stress symptoms among the cancer patients in the present study might be the high percentage of female patients in the sample. Recent research has indicated that females report greater trauma symptoms in samples of survivors of terrorist attacks (Swickert, DeRoma, & Saylor, 2004). In the case of natural disasters, Chang et al. (2005) found that, while females were likely to experience posttraumatic stress disorder or posttraumatic stress symptoms, gender was not associated differentially with severity of posttraumatic stress symptoms once the symptoms had developed. With regard to the general population, Breslau et al. (1997) reported that 18% of women and 10% of men in the United States will develop posttraumatic stress disorder at some time in their lives. However, this observation involves posttraumatic stress symptoms in general, and not specifically posttraumatic stress symptoms resulting from medical events, much

less posttraumatic stress symptoms resulting from cancer diagnosis and treatment in particular.

Patterns of Coping Among Cancer Patients

Among the 60 participants in this study, 20 cancer patients, or one-third, had no primary coping method to manage their cancer-related stressors. Within this group of 20 cancer patients who had no primary coping method, 10 patients, or fully half, had total posttraumatic stress levels at 40 or higher, and thus eligible for a diagnosis of posttraumatic stress disorder as determined by the Davidson Trauma Scale (Davidson et al., 1997). Perhaps the lack of concentrated coping efforts is ineffective in managing high levels of cancer-related stressors.

Seek and Use Social Support was utilized as a primary coping method by 27 cancer patients in the present study. In fact, social support was utilized to one degree or another by every participant in this study, although quite minimally by some. Since social support and total posttraumatic stress symptoms were significantly and positively related in this study, questions are raised as to whether this coping method is being sought and employed in order to counteract these symptoms eventually or whether these coping efforts through social support are employed at high rates but remain ineffective. Perhaps the coping efforts are unsuccessful to some degree in light of findings from Butler and colleagues (1996) that increased severity in posttraumatic stress symptoms is associated with increased social incompetence, increased family discord, and a lack of social skills.

As noted above, the use of social support coping efforts by cancer patients who were experiencing high levels of posttraumatic stress symptoms did not often include

seeking psychological assistance. Perhaps this reliance on social support reflects more efforts in areas such as asking for advice from friends or relatives or looking for sympathy or understanding. Naturally, shaping coping responses by building or enhancing social networks is more modifiable than attempting to change attitudes among cancer patients, and interventions often reflect this approach.

Although only 9 cancer patients utilized coping through distancing oneself from cancer-related problems as a primary coping method, every participant in this study used distancing coping efforts to some degree. Under high levels of posttraumatic stress symptoms from cancer-related problems, it may not be possible to distance oneself from these stressors. Many cancer patients exercised combinations of coping both by seeking social support and distancing oneself from others. These seemingly contradictory efforts included items such as “talked to someone about my feelings: and “tried to keep my feelings to myself.” Distancing coping methods showed no association with total posttraumatic stress symptoms in the present study.

Cognitive escape-avoidance and behavioral escape-avoidance were utilized as primary coping methods by only three patients and one patient, respectively. However, since 52 of the 60 participants reported using all five coping methods to some degree, these two avoidance strategies were represented throughout this sample. Avoidance efforts through fantasies and wishful thinking or through avoiding being with people or trying to feel better by eating, drinking, smoking or drug use were utilized to cope with the ambiguity of outcomes in cancer diagnosis and the uncontrollability of intensive treatment and care. Due to the avoidance and denial nature of posttraumatic stress symptoms and the effects of social desirability, these coping efforts are likely

underreported. Both cognitive escape-avoidance and behavioral escape-avoidance were positively and significantly related to total posttraumatic stress symptoms in the present study.

In the present study, coping efforts through focusing on the positive were much less utilized than the other four coping methods. No one in this sample utilized Focus on the Positive as a primary coping method. For this sample of 60 cancer patients, focusing on positive aspects of rediscovering what is important in life or growing as a person in a new way due to the cancer-related experiences was problematic. Focusing on the positive may not be feasible for some cancer patients, and this may be further complicated by the promotion of a positive focus through media sources, self-help groups and popular literature. These messages may be misleading and even harmful if cancer patients are not able to utilize a positive stance toward managing their cancer-related stressors. As mentioned above, attempting to modify attitudes and cognitive appraisals among cancer patients is far more difficult than attempting to build or enhance social networks. For this study, coping by focusing on the positive was not related to total posttraumatic stress symptoms.

Some questions arise from the extremely high degree of flexibility in coping methods found in this sample. If coping efforts are not concentrated in a primary coping area, does this lessen the overall effectiveness of the coping efforts? Since half of the cancer patients who had no primary coping method also had high levels of posttraumatic stress symptoms, this warrants further investigation. Perhaps efforts to enhance a particular coping method would prove effective in managing cancer-related stressors; this also indicates a need for future study. A marked degree of flexibility in

coping methods rather than a reliance on a highly developed few methods may not be a desirable outcome for cancer patients.

Implications for Professionals

Medical and psychological professionals need to be especially vigilant to signs of posttraumatic stress symptoms among cancer patients, and particularly among younger patients with a more recent diagnosis of cancer and who are currently in treatment. Like other medical or surgical events, the diagnosis and treatment of cancer often is accompanied by an overwhelming experience of threat, pain, lack of control, or humiliation; efforts should be made to enhance controllability in the process of cancer care, and measures should be taken to lessen the occurrence and impact of experiences of threat, pain and humiliation. Health care professionals need to be alert to unexplained delays in recovery among those with a history of cancer. Among all cancer patients, signals of poor rehabilitation include persistent or distressing preoccupations with the cancer diagnosis and care, as well as the opposite reaction of denying its consequences by overlooking limitations and engaging in life-threatening behaviors. Cancer patients may report intrusive and distressing recollections of their diagnosis, treatment and care; they may also report a persistent sense of threat to life, unjustified by their medical progress. Medical and psychological professionals should also be alert to any signs of avoidance of medical treatments and follow-up care due to apprehension or denial, or anxiety experienced on follow-up visits. Additionally, attention should be paid to any loss of interest in previously enjoyable activities, as well as nervousness, irritability, outbursts of anger, jumpiness and exaggerated startle responses, and problems with concentration. Finally, sleep disturbances and sleep

problems, including frequent nightmares, should be noted. These symptoms are consistent with a model of posttraumatic stress disorder symptoms, and application of this model should prove to be helpful in addressing the long-term effects of cancer diagnosis, treatment and care

The well-documented evidence of the existence of posttraumatic stress symptoms among cancer patients warrants the provision of psychological assistance during comprehensive cancer care. . Medical and psychological professionals need to recognize the possible traumatic effects of necessary medical interventions, and to prepare cancer patients as much as possible through preventive measures of counseling and support. Access to counseling and support opportunities should be maintained following medical treatments and interventions.

The occurrence of posttraumatic stress symptoms among cancer patients is especially problematic for medical and psychological professionals. Professionals are required to monitor for a complex pattern of symptoms. Cancer patients may experience alternating periods of acknowledging the trauma through intrusive symptoms and blocking the trauma through avoidant symptoms. Often, both the intrusive symptoms and the avoidant symptoms are experienced under conditions of increased arousal symptoms. Naturally, the subjective responses to the same cancer diagnosis, treatments or care may vary, and for some cancer patients the responses to cancer-related stressors may be especially extreme.

For posttraumatic stress symptoms in general, a good prognosis is predicted by a rapid onset of symptoms and a short duration of the resulting symptoms (American Psychological Association 1994; Kaplan et al., 1994). In the case of an internal trauma

such as catastrophic illness or invasive medical treatment, the problem is far more complex. Comprehensive cancer care can extend over long periods of time, with the introduction of further traumatic events throughout this process. As evidence of this, high levels of posttraumatic stress symptoms were found in the present study among cancer patients after years since their initial diagnosis of cancer. As with other posttraumatic stress symptoms that result from medical events, a real danger lies in the avoidance of medical care or contact with medical professionals, medical personnel or medical settings. These circumstances as well as other activities may lead the cancer patient to engage in life-threatening behaviors.

Limitations of the Present Study

The present study was a descriptive investigation to examine the relationships among background factors, levels of posttraumatic stress symptoms and patterns of coping among cancer patients. As such, no interventions or experimental treatments were introduced.

The data was gathered by anonymous self-report inventories, and no verification by observation or informants was utilized. For this sample of cancer patients who were experiencing levels of posttraumatic stress symptoms, the method of self-report could be confounded not only by social desirability but also through avoidance and denial of actual intrusive thoughts or actual avoidant or arousal behaviors. Intrusive thoughts are often verbally denied on self-reports of posttraumatic stress symptoms. As the Stuber research team reported (1991), all childhood cancer patients in their sample verbally denied intrusive thoughts, and then demonstrated the existence of these intrusive thoughts through repeated play with medical equipment and through doll play and play

acting with themes of death, mutilation and abandonment set in hospitals and medical environments.

The sample of 60 cancer patients were all volunteers who agreed to fill out the demographic background form and the two inventories. The participants were geographically restricted to the area of a large regional cancer center in central North Carolina. The sample was also restricted in some areas of diversity which limits generalization to a larger population. Forty-eight cancer patients were female and 12 were male; however, this is comparable to the study by Dunkel-Schetter and colleagues (1992) which reported a sample of 78% females and 22% males. Racial/ethnic status was restricted as only 10 cancer patients were of a minority status. In the present study, 55% of cancer patients reported breast cancer and 45% reported other than breast cancer; the division in the Dunkel-schetter study was reversed with 42% reporting breast cancer and 58% reporting other types of cancer. However, recruitment by a specific type or types of cancer was beyond the scope of the present research.

One point of confusion in the study might be the clarifications of the status of currently being in treatment and the status of currently being in remission. While 39 cancer patients reported currently being in treatment and 21 reported not being in treatment, 26 cancer patients reported currently being in remission and 34 patients reported not being in remission. The overlap of those who report both currently being in treatment and currently being in remission may reflect the number of breast cancer patients in this sample who may be taking medications as follow-up treatments but who also cognitively appraise their status as being in remission. An opportunity to clarify this cognitive appraisal in a future research study would be advantageous.

The present sample was also restricted in the status of whether or not there had been a recurrence of cancer as only five cancer patients reported a recurrence. Therefore, the cognitive appraisal of a second introduction of a diagnosis of cancer and the potential for subsequent trauma was not adequately measured in this study.

The contributions of prior traumatic events beyond the recurrence of cancer was not possible in the present study. However, the items on the intrusive and avoidant subscales are specific to the diagnosis and treatment of cancer and the resulting symptoms experienced within the past week. This does not rule out a predisposition from a prior trauma, but the focus of the present study was to address the nature of posttraumatic stress symptoms experienced following a cancer diagnosis and during subsequent treatment and comprehensive care, no matter what the origin of the manifestation of these posttraumatic stress symptoms within this experience.

Future Research Directions

The present study furthers the basic research examining the relationships among background factors, posttraumatic stress symptoms and ways of coping among cancer patients. Since this was a descriptive study, inferences can be made about associations among these variables, but inferences cannot be made concerning causation among these variables. Future research designs should address the questions that arise from this present study and call for longitudinal experimental designs to investigate causation.

Using the information that delineates relationships among the background factors, levels of stress and ways of coping with cancer, future research efforts need to employ a longitudinal design to assess the effects of counteracting problematic or

maladaptive associations and strengthening associations that contribute to favorable outcomes. Illumination of these effects over time could foster the development of prevention strategies. In the present study, posttraumatic stress symptoms were associated with patterns of coping by seeking and using social support and by utilizing cognitive and behavioral escape-avoidance; are these types of coping effective in managing the symptoms of cancer-related stressors over time? If cancer patients with high levels of posttraumatic stress symptoms tend to employ high levels of these coping methods, is this a productive choice for them? If one or more of these coping methods proves to be successful in managing cancer-related stressors for a particular group based on the background factors, can an intervention be implemented or a treatment be manipulated to produce this effect for other groups?

In the present study, age was highly related to all types of posttraumatic stress symptoms, with younger age cancer patients experiencing high levels of stress. This finding supports the observation by Nir (1985) that posttraumatic stress symptoms almost without exception accompany the diagnosis of childhood cancer. However, since there is a high occurrence of cancer among older adults, the impact on both younger and older cancer patients warrants further research. In the present sample, only three cancer patients were in their twenties, nine were in their sixties, and one was in the eighties; thus, the younger and older age range extremes need to be better represented in future research. For patterns of coping with cancer, only distancing was related to age. Since older cancer patients tend to utilize more efforts of trying to forget, keeping their feelings to themselves, and refusing to think about cancer-related

stressors, is this method productive in managing their stress? A longitudinal approach to measure these effects over time would be enlightening in this area.

The effects of the different patterns of coping with cancer require further investigation. In the present study, coping by seeking and using social support was utilized by everyone in the sample to some degree. However, as noted previously, coping by trying to get professional help was not utilized in the past six months by more than one-third of the cancer patients who were experiencing high levels of posttraumatic stress symptoms as defined by this adapted version of the Davidson trauma Scale (Davidson et al., 1997). Questions remain as to what differentiates those who do and do not seek professional help among this group. The effectiveness of the extensive use of social support among cancer patients also needs to be investigated. Does the reliance on this coping method lead to a favorable outcome? Kaplan and colleagues (1994) have noted that a good prognosis in the development, severity, and duration of posttraumatic stress symptoms is predicted by strong social support and the availability of a social support network; questions remain as to whether a large number of these cancer patients are concentrating their coping efforts on seeking rather than utilizing social support, are they successful over time in managing their cancer-related stressors through this method, and what are their appraisals of how well their needs have been met in the area of social support?

As delineated in the present study, cancer patients experienced difficulty with employing coping efforts of focusing on the positive. This is a widely promoted form of coping through media, sources, self-help groups and popular literature, but this pattern of coping may not be feasible for patients undergoing the stressors of cancer treatment

and care. If so, these messages may be misleading and even harmful for these patients. The advisability of trying to enhance or counteract efforts in this area needs to be investigated.

Responses to the recurrence of cancer need to be further investigated. In the present study, only five cancer patients reported a recurrence of their cancer. A recurrence quite likely presents a subsequent trauma following the initial cancer diagnosis, and Kaplan and colleagues (1994) have noted the less favorable prognosis for posttraumatic stress disorder with the presence of prior medical disorders. The effects of a recurrence among cancer patients was not able to be determined in this study and still needs to be investigated.

Since the present study was conducted using self-report inventories, future research utilizing longitudinal and experimental designs could employ observations, informant reports and interviews to further examine these findings. These approaches may counteract the possibilities of underreporting of posttraumatic stress symptoms, inaccuracies in recall over time, and influences of social desirability.

Findings in the present study revealed that posttraumatic stress symptoms are a serious problem among cancer patients, and especially among younger cancer patients. More attention and more research needs to focus on the ultimate goal of developing intervention and prevention efforts to address this problem. More insight into the advisability of strengthening or counteracting dynamics among background factors, levels of stress and patterns of coping may inform the development of these strategies. As Kutz and colleagues (1988) have noted in the area of posttraumatic stress symptoms among myocardial infarction patients, there is a need to develop

interventions that address posttraumatic stress symptoms among cancer patients that will be superior to the limited approach of pharmacotherapy which is frequently used.

Conclusion

This descriptive study adds to the existing literature concerning the relationships among background factors, levels of posttraumatic stress symptoms and patterns of coping among cancer patients. Markedly high levels of posttraumatic stress symptoms resulting from this medical event which represents an internal stressor from which there is no escape were found in over half of this sample of cancer patients. Coping patterns associated with these high levels of posttraumatic stress symptoms were identified, but there remains the need to determine the effectiveness of these coping efforts to manage the cancer-related stressors. Of particular note was the lack of trying to get professional help as a coping measure among those who were experiencing high levels of posttraumatic stress symptoms. Among the sample in this study, those most at risk for high levels of posttraumatic stress symptoms were younger cancer patients, those who were not married, those with a more recent diagnosis of cancer, and those who were currently in treatment for their cancer. Among the patterns of coping, four of the five coping methods were well predicted by the background factors, which explained from 21% to 38% of the variance in coping efforts, with the exception of behavioral escape-avoidance which was not well predicted. Many research directions remain to be investigated in order to identify interventions and prevention measures that will address these posttraumatic stress symptoms and the need for effective methods of coping during comprehensive cancer care.

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APPENDICES

Appendix A:
Cover Page with Explanation of Study

STRESS SYMPTOMS AND COPING WITH CANCER

You are invited to participate in a research study. The purpose of this study is to investigate the nature of stress symptoms and ways of coping among people who have had a diagnosis of cancer. Your honest and complete responses to the questions which follow are very important in order to gather accurate information that truly reflects the experiences of people who are coping with cancer.

Your answers to the following questions will remain confidential and will be identified only with your participation number. Thus, your completion of the background information and the two surveys will be your consent to use the information that you provide. Your personal information will not be used in any way, and your answers will be used only in a group with answers from other people who are also coping with cancer.

Some of the questions about stress symptoms and ways of coping with cancer may produce feelings of discomfort; please know this is not my intent. If any of these questions cause you discomfort, you may talk with me (Rene Cummins) about this; I can be reached at 919.833.1117. If you have questions about your rights as a participant in a research study, you may contact Ms. Debra Paxton, IRB Administrator, NC State, at 919.515.4514.

After you have completed the background information and the two surveys, please return all materials to the large stamped and addressed envelope. Please seal the large envelope and mail the completed packet back to the researcher.

Please remember that there are no right or wrong answers—only answers that most closely represent your own experiences. Also, remember that all of your answers will be confidential and anonymous. Thank you for completing the background information and the two surveys. Your participation in this study is greatly appreciated.

Appendix B:
Background Information for Study

Participant # _____

Background Information for Study on
Stress Symptoms and Coping with Cancer

Following are questions regarding your background information. This information is important in order to make conclusions from this study. Remember that your answers will remain confidential and will be identified only with your participation number. Please read each question carefully and give one answer.

- | | |
|---|--|
| <p>1. What is your gender?
 <input type="checkbox"/> Female
 <input type="checkbox"/> Male</p> | <p>2. What is your race/ethnicity?
 <input type="checkbox"/> African-American
 <input type="checkbox"/> Asian American
 <input type="checkbox"/> Latino / Hispanic
 <input type="checkbox"/> Native American
 <input type="checkbox"/> White / Caucasian
 <input type="checkbox"/> Other (please write below)
 _____</p> |
| <p>3. What is your age?
 (please write number below)
 _____</p> | <p>4. What is your educational level?
 <input type="checkbox"/> less than high school diploma
 <input type="checkbox"/> high school diploma or GED
 <input type="checkbox"/> some college courses
 <input type="checkbox"/> college degree
 <input type="checkbox"/> graduate study
 <input type="checkbox"/> graduate degree</p> |
| <p>7. Do you live alone?
 <input type="checkbox"/> yes, live alone
 <input type="checkbox"/> no, live with other(s)</p> | <p>5. Are you married?
 <input type="checkbox"/> yes
 <input type="checkbox"/> no</p> <p>6. If you have children, how many?
 (please write number below)
 _____</p> |
| <p>9. What is the site (location) of
 your cancer? (please write below)
 _____</p> | <p>8. How long has it been since your
 initial diagnosis of cancer?
 (please write below)
 _____</p> |
| <p>11. Are you currently in remission?
 <input type="checkbox"/> yes
 <input type="checkbox"/> no</p> | <p>10. Are you currently in treatment?
 <input type="checkbox"/> yes
 <input type="checkbox"/> no</p> <p>12. Has there been a recurrence?
 <input type="checkbox"/> yes
 <input type="checkbox"/> no</p> |

Thank you for completing this background information.

Appendix C:
Stress Symptoms Scale

Participant # _____

STRESS SYMPTOMS SCALE

In the following items, "the event" refers to your diagnosis and treatment of cancer, and the specific cancer-related stressors that accompany the diagnosis and treatment of cancer.

In the past week, how much trouble have you had with the following symptoms? For each question, please select a number from both categories using the following options:

<p>Frequency: 0 = Not at all 1 = Once only 2 = 2-3 Times 3 = 4-6 Times 4 = Every day</p>	<p>Severity: 0 = Not at all Distressing 1 = Minimally Distressing 2 = Moderately Distressing 3 = Markedly Distressing 4 = Extremely Distressing</p>
---	--

1. Have you had painful images, memories, or thoughts of the event?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

2. Have you had distressing dreams of the event?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

3. Have you felt as though the event was re-occurring?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

Participant # _____

4. Have you been upset by something which reminded you of the event?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

5. Have you been avoiding any thoughts or feelings about the event?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

6. Have you been avoiding doing things or going into situations which remind you about the event?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

7. Have you found yourself unable to recall important parts of the event?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

8. Have you had difficulty enjoying things?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

Participant # _____

9. Have you felt distant or cut off from other people?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

10. Have you been unable to have sad or loving feelings?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

11. Have you found it hard to imagine having a long life span fulfilling your goals?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

12. Have you had trouble falling asleep or staying asleep?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

13. Have you been irritable or had outbursts of anger?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

Participant # _____

14. Have you had difficulty concentrating?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

15. Have you felt on edge, been easily distracted, or had to stay on guard?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

16. Have you been jumpy or easily startled?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

17. Have you been physically upset by reminders of the event?

Frequency	Not at all 0	Once only 1	2-3 Times 2	4-6 Times 3	Every day 4
Severity	Not at all Distressing 0	Minimally Distressing 1	Moderately Distressing 2	Markedly Distressing 3	Extremely Distressing 4

Appendix D:
Ways of Coping with Cancer

WAYS OF COPING WITH CANCER

When we experience stress in our lives, we usually try to manage it by trying out different ways of “coping.” Sometimes our attempts are successful in helping us solve a problem or feel better, and other times they are not. The next set of items is on the ways of coping you may have used in trying to manage the most stressful part of your cancer.

Please read each item on the following pages and indicate how often you tried this **in the past six months** in attempting to cope with a specific cancer-related stressor, such as: fear and uncertainty about the future due to cancer; limitations in physical ability, appearance, or lifestyle due to cancer; acute pain, symptoms, or discomfort from illness or treatment; or problems with family or friends related to cancer.

In responding to each item, please indicate a number from 0 to 4 using the options below:

- 0 = Does not apply / never
- 1 = Rarely
- 2 = Sometimes
- 3 = Often
- 4 = Very often

Participant # _____

WAYS OF COPING WITH CANCER

01. Concentrated on the next step

0 1 2 3 4

02. Did something just to do something

0 1 2 3 4

03. Talked to someone to find out more

0 1 2 3 4

04. Criticized or lectured myself

0 1 2 3 4

05. Tried not to close off options

0 1 2 3 4

06. Hoped a miracle would happen

0 1 2 3 4

07. Went along with fate

0 1 2 3 4

08. Went on as if it were not happening

0 1 2 3 4

09. Tried to keep my feelings to myself

0 1 2 3 4

10. Looked for silver lining, looked on bright side

0 1 2 3 4

11. Slept more than usual

0 1 2 3 4

Participant # _____

12. Looked for sympathy or understanding

0 1 2 3 4

13. Tried to forget the whole thing

0 1 2 3 4

14. Was inspired to be creative

0 1 2 3 4

15. Tried to get professional help

0 1 2 3 4

16. Changed or grew as a person in a new way

0 1 2 3 4

17. Waited to see what would happen before acting

0 1 2 3 4

18. Made a plan of action and followed it

0 1 2 3 4

19. Let my feelings out somehow

0 1 2 3 4

20. Came out of the experience better than before

0 1 2 3 4

21. Talked to someone who could do something

0 1 2 3 4

22. Tried to make myself feel better by eating, drinking, smoking, or drug use

0 1 2 3 4

Participant # _____

23. Took a big chance and did something risky

0 1 2 3 4

24. Tried not to act too hastily

0 1 2 3 4

25. Found new faith

0 1 2 3 4

26. Rediscovered what is important in life

0 1 2 3 4

27. Changed something so things will turn out

0 1 2 3 4

28. Avoided being with people

0 1 2 3 4

29. Didn't let it get to me; refused to think about it

0 1 2 3 4

30. Asked a friend or relative for advice

0 1 2 3 4

31. Kept others from knowing how bad things were

0 1 2 3 4

32. Made light of it; refused to get too serious

0 1 2 3 4

33. Talked to someone about my feelings

0 1 2 3 4

Participant # _____

34. Took it out on other people

0 1 2 3 4

35. Knew what had to be done, so increased efforts

0 1 2 3 4

36. Came up with different solutions

0 1 2 3 4

37. Tried to keep my feelings from interfering

0 1 2 3 4

38. Changed something about myself

0 1 2 3 4

39. Wished the situation would go away or be over

0 1 2 3 4

40. Had fantasies/wishes about how it might turn out

0 1 2 3 4

41. Prayed

0 1 2 3 4

42. Prepared for the worst

0 1 2 3 4

43. Went over in my mind what I would say or do

0 1 2 3 4

44. Thought of how a person I admire would act

0 1 2 3 4

Participant # _____

45. Reminded myself how much worse things could be

0 1 2 3 4

46. Tried to find out as much as I could

0 1 2 3 4

47. Treated the illness as a challenge

0 1 2 3 4

48. Depended mostly on others to handle things

0 1 2 3 4

49. Lived one day at a time/took one step at a time

0 1 2 3 4