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Unsupportive Social Interactions as Moderators of Adjustment in Acute Cardiac Patients

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A dissertation submitted in partial fulfillment of the requirements of the degree of Doctor of Philosophy at Virginia Commonwealth University

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ABSTRACT

UNSUPPORTIVE SOCIAL INTERACTIONS AS MODERATORS OF EMOTIONAL ADJUSTMENT IN ACUTE CARDIAC PATIENTS

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

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The purpose of the present study was to examine the impact of unsupportive social interactions, within Lazarus and Folkman's (1984) cognitive appraisal model, on individual's mood states following an acute cardiac event (i.e., myocardial infarction, percutaneous transluminal coronary angioplasty, coronary artery bypass grafting). It was hypothesized that unsupportive social interactions would exacerbate the effects of a patient's appraisals of threat secondary to an acute cardiac event. Participants in the present investigation were 67 patients from the cardiology unit of the Veterans Administration Medical Center in Richmond, Virginia. Each participant had incurred an acute cardiac event, as classified by the International Classification of Disease – 9th Edition, Clinical Modification (ICD-9-CM) requiring hospitalization. Participants received two packets of questionnaires as part of their involvement in the study. One packet was administered to them during their hospital stay, prior to discharge (Time

1), while the second packet was administered at 1-month post-discharge and was mailed to the participant (Time 2). The measures used in this study include: (a) Profile of Mood States (POMS) – short form (Shacham, 1983); (b) Social Support Questionnaire – 6 (Sarason, Sarason, Shearin, & Pierce, 1987); (c) UCLA Social Support Inventory (Dunkel-Schetter, Feinstein, & Call, 1986); (d) Threat appraisal measure (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986); and (e) the Unsupportive Social Interactions Inventory (USII) (Ingram, Betz, Mindes, Schmitt, & Smith, in press). Results indicate that unsupportive social interactions were significantly and positively related to both total mood disturbance ($\underline{r} = .56$, $\underline{p} < .01$) and depression following an acute cardiac event ($\underline{r} = .65$, $\underline{p} < .01$). Thus, individuals who were experiencing more unsupportive social interactions with members of their social network around the time of their acute cardiac event were also experiencing more intense levels of depression and overall mood disturbance. In addition, threat appraisal and unsupportive social interactions at Time 1 (hospitalization) demonstrated significant main effects on depression and total mood disturbance. However, no moderating effect of unsupportive social interactions and threat appraisal at Time 1 on depression was demonstrated. A post-hoc mediator analysis, limitations, future directions for research, and implications for intervention were discussed.

CHAPTER 1

INTRODUCTION

Acute cardiac events, such as non-surgical myocardial infarctions (MI, or heart attacks), angioplasty, and coronary artery bypass grafting (CABG) are traumatic occurrences that affect hundreds of thousands of people in the United States every year. Statistics released by the American Heart Association estimated that over 4.8 million vascular and cardiac procedures were performed in 1995 (American Heart Association, 1998). Thus, myocardial infarction (MI), percutaneous transluminal coronary angioplasty (PTCA), and coronary artery bypass grafting (CABG) are among the most frequent acute cardiac events, which lead to not only physical, but also emotional consequences.

Although the majority of cardiac patients recover very rapidly with little or no long-term psychological impairment, evidence suggests that approximately one-third of cardiac patients experience significant impairment in psychological functioning and quality of life (Croog & Levine, 1977; Lloyd & Cawley, 1983). Additionally, as many as 20% of patients experience persistent major depressive symptoms (Ladwig et al., 1992). These psychological reactions usually stem from physical pain as well as feelings of loss and uncertainty. In order to gain a better understanding of patients' psychosocial adjustment to acute cardiac events, it is important to consider the process by which individuals react to stressful life events.

Lazarus and Folkman (1984) developed a transactional model of the stress and coping process that examines individuals' interpretations of stressful life events. These perceptions of events or what Lazarus and Folkman (1984) term the "appraisals" of events influence not only the individual's emotional reactions to the stressful events but also subsequent coping efforts. In other words, how an individual interprets or appraises the stressful event (e.g., acute cardiac event) influences how the individual will react emotionally (e.g., anger, depression, acceptance) and behaviorally (e.g., adherence to cardiac rehabilitation, smoking cessation).

One construct that has been examined as a moderator of the stress process is social support. Socially supportive relationships have been found to act as a coping resource and to assist with an individual's emotional adjustment (Gottleib, 1983; Pearson, 1986; Pilisuk & Froland, 1978). Fundamentally, social support appears to facilitate the coping process by providing additional resources such as advice, information, and material services that could increase an individual's capacity to cope (Pearson, 1986). However, empirical studies examining social support and its relationship to health outcomes have not adequately distinguished the construct of social support from the mechanisms by which this construct has an impact on health and well-being. Similarly, many different theories have been used to explain empirical results.

Two models have been hypothesized to account for the positive relationship between social support and well-being that has been found in research (Cohen & Wills, 1985). The first model posits that social support has a beneficial effect on well-being regardless of whether the individual is experiencing stress. This model has been termed

the main effect model because evidence for the model is provided by a statistically significant main effect of support with no stress X support interaction (Cohen & Wills, 1985). The beneficial effect of social support is hypothesized to occur because a large social network would provide an individual with regular positive experiences and a set of stable, socially rewarded roles in which to participate. In contrast, the buffering hypothesis proposes that support is related to well-being only for individuals who are experiencing stress (Cohen & Wills, 1985). Specifically, social support buffers or protects the person from the negative effects produced in stressful situations. Cohen and Wills (1985) posited that social support might buffer the effects of stress in two ways. The first, which is most relevant to the present investigation, is that support may have an effect between the stressful event (or the expectation of the event) and the stress reaction by preventing or limiting the stress appraisal.

Research conducted with cardiac patients has suffered from the same confusions of terminology and measures as the social support research in other populations. Studies, therefore, were atheoretical in nature as researchers attempted to find some relationship between aspects of social support and recovery from cardiac events. Consequently, empirical studies examining the influence of social support on adjustment to cardiac events have focused on different components of support. Two aspects that have been frequently examined in the literature are the structural aspects of social relationships (e.g., marital status) and functional support from others. Overall, results indicate that structural and functional support are positively related to well-being in cardiac patients (Kulik & Mahler, 1993; Orth-Gomer, Rosengren, & Wilhelmsen, 1993; Wingate, 1995; Yates,

1995). In a study examining the utility of the stress and coping model with cardiac patients, Fontana, Kerns, Rosenberg, and Colonese (1989) found that emotional support dampened the perception of threat and, consequently, emotional distress in a sample of patients admitted to the hospital for an acute MI or CABG surgery.

As researchers have explored the relationship between social interactions and well-being, they have focused on examining the impact of positive social interactions (i.e., social support). However, social exchange theorists have asserted that social relationships can be a source of stress as well as support, regardless of intentionality (Rook & Pietromonaco, 1987; Thibault & Kelley, 1959).

Results from empirical studies have indicated that an inverse relationship exists between perceptions of negative interpersonal interactions and well-being (see review by Rook, 1992). These results have been demonstrated in a variety of populations, including family caregivers of persons with Alzheimer's disease (Fiore, Becker, & Coppel, 1983; Kiecolt-Glaser, Dyer, & Shuttleworth, 1988), stroke patients (Norris, Stephens, & Kinney, 1990; Stephens, Kinney, Norris, & Ritchie, 1987), and patients with rheumatoid arthritis (Kraaimaat, Van Dam-Baggen, & Bijlson, 1995; Manne & Zautra, 1989; Revenson et al., 1991). In addition, in studies that have compared positive and negative social interactions, negative interactions were more consistently related to psychological well-being than positive ones (Fiore et al., 1983; Kiecolt-Glaser et al., 1988; Rook, 1984). Although the examination of unsupportive social interactions has become more frequent (Fiore, Becker, & Coppel, 1983; Ingram et al., 1999; Manne & Zautra, 1989;

Norris, Stephens, & Kinney, 1990; Rook, 1992) in recent years, their relation to adjustment among cardiac patients has been virtually ignored.

The paucity of research that has been conducted on unsupportive social interactions and their relationship to adjustment in acute cardiac patients as well as the inverse relationship between these interactions and well-being found in other studies (e.g., Fiore, Becker & Coppel, 1983; Ingram et al., 1999; Kiecolt-Glaser, Dyer, & Shuttleworth, 1988) provides a strong rationale for their continued examination. The few empirical studies examining unsupportive social interactions and adjustment to cardiac events have focused almost exclusively on the direct effect of these interactions on adjustment (e.g., Holahan et al., 1997; Riegel & Dracup, 1992). No studies were identified that explored unsupportive social interactions as moderators of adjustment in acute cardiac patients. Exploring the moderating relationship of these interactions to well-being will provide researchers with a better understanding of the process underlying individual's reactions to stressful situations (e.g., acute cardiac events).

The purpose of the present study was to examine the impact of unsupportive social interactions, within Lazarus and Folkman's (1984) cognitive appraisal model, on individual's mood states following an acute cardiac event (i.e., MI, PTCA, CABG). It was posited that unsupportive social interactions would exacerbate the effects of a patient's appraisals of threat secondary to an acute cardiac event. This amplification effect may lead to increased levels of overall mood disturbance and, more specifically, depression. The associations between unsupportive social interactions and both total mood disturbance and depression are expected to be significant after controlling for social

support. In addition, as cardiac patients recover, it is important to examine the extent to which unsupportive social interactions affect a patient's overall mood disturbance and levels of depression over time.

CHAPTER 2

REVIEW OF LITERATURE

This chapter will describe the concepts and empirical findings related to psychosocial adjustment to acute cardiac events. First, common cardiac events and their consequences will be discussed. Second, a model of the stress process will be reviewed as a framework for examining individuals' reactions to acute cardiac events. Third, social support will be introduced as an important moderator of emotional reactions to stressful situations. Fourth, unsupportive social interactions will be discussed as another important moderator of adjustment in cardiac patients. Finally, the purpose and hypotheses of the present investigation will be stated.

Cardiac Events and Procedures

Acute cardiac events, such as coronary artery bypass grafting (CABG), angioplasty, and non-surgical myocardial infarctions (MI, or heart attacks), are traumatic occurrences that affect hundreds of thousands of people in the United States every year. Statistics released by the American Heart Association estimated that over 4.8 million vascular and cardiac procedures were performed in 1995 (American Heart Association, 1998). Although this number includes comparatively less frequent procedures such as defibrillator implantation and valve repair, bypass operations and angioplasty procedures accounted for over 900,000 procedures on approximately 768,000 patients in 1995. Thus, myocardial infarction, percutaneous transluminal coronary angioplasty (PTCA), and

coronary artery bypass grafting are among the most frequent acute cardiac events, which lead to not only physical, but also emotional consequences. It is important, however, to first gain a better understanding of these events in order to place the discussion of emotional adjustment within an appropriate context.

Myocardial infarction (MI) is a life-threatening occurrence, which can occur suddenly as a result of coronary artery thrombosis or, more simply, a blood clot within a coronary artery. Patients experiencing an MI are typically hospitalized for 7 to 10 days, and recovery can last up to 6 weeks or longer including participation in a cardiac rehabilitation program (Ell & Dunkel-Schetter, 1994). In 1999, it is estimated that 1.1 million Americans will incur a new or recurrent coronary attack (defined as MI). Approximately 650,000 of these will be first attacks, with two-thirds of those people surviving past discharge (American Heart Association, 1999). Myocardial impairment and the extent of underlying cardiovascular disease have been found to be the strongest predictors of early mortality in cardiac patients (Sanz, Castaner, Betriu, & Magria, 1982).

CABG surgery is a procedure that involves the creation of an artery "bypass" that allows blood to flow around a blocked or narrowed section of artery. Similar to MI patients, hospitalization lasts approximately 6 to 7 days with rehabilitation lasting as much as 6 months (Ell & Dunkel-Schetter, 1994). Although approximately 45% of these procedures involve at least three grafts indicating more severe disease, symptomatic improvement occurs in up to 80% of the individuals who undergo the procedure (National Heart, Lung, and Blood Institute [NHLBI], 1988).

Percutaneous transluminal coronary angioplasty (PTCA) is a procedure in which a catheter is inserted into the coronary arteries via an artery in the leg or groin. A second catheter, which is smaller and has a balloon on the end, is inserted into the first catheter. The balloon is then inflated which compresses the atherosclerotic plaque against the artery wall. Widening the coronary artery results in increased blood flow to the heart. Because this procedure is less invasive than CABG, hospitalizations usually last only 2 days with patients returning to normal activities within a week (Ell & Dunkel-Schetter, 1994). One drawback to this procedure is that 20% to 30% of patients who receive PTCA require the procedure again within 6 months (Jutzy, Berte, Alderman, Ratts, & Simpson, 1982; Kent et al., 1982).

Although these distinct types of patients encounter unique reactions to the occurrence of an acute cardiac event, there are common psychological, physical and social consequences that occur. Acute cardiac events can be considered stressful life events to which individuals must adapt. Although the majority of cardiac patients psychologically recover very rapidly with little or no long-term impairment, evidence suggests that approximately one-third of cardiac patients experience significant impairment in psychological functioning and quality of life (Croog & Levine, 1977; Lloyd & Cawley, 1983). Additionally, as many as 20% of patients experience persistent major depressive symptoms (Ladwig et al., 1992).

Physical symptoms and issues related to these symptoms can be significant contributors to patients' depression and anxiety. These symptoms and issues can take the form of physical discomfort, usually in the form of post-surgical pain, significant

weakness secondary to inactivity, further treatment decisions, and the threat of recurrence due to the continuing disease process (Ell & Dunkel-Schetter, 1994). Shaw and colleagues (1986) stated the following:

> In the case of CABG and PTCA, many patients have experienced increasing disability over an extended period of time prior to treatment and therefore may experience severe disappointment if blockage or narrowing of the artery occurs again (restenosis) or if angina or chest pain occur following initial treatment (Shaw, et al., 1986).

In fact, anxiety and depression are common occurrences following an acute cardiac event and have been found to be an important contributor to mortality (Denollet, Sys, & Brutsaert, 1995; Frasure-Smith, Lesperance, & Talajic, 1995). The impact of depression following an MI may be as great as more traditional cardiac risk factors such as previous MI and impairment of left ventricular ejection fraction (measure of heart's ability to pump blood) (Frasure-Smith, et al., 1995). Byrne, Whyte, and Butler (1981) found that patients with poorer cardiological outcome at 8 months post-MI were more likely to express concern about somatic functioning and to recognize areas of their lives that contained significantly elevated life stress.

Schleifer and colleagues (1989) conducted a study examining the occurrence of depression in cardiac patients. Interviews were conducted with 283 patients admitted for an MI within 2 weeks of the infarction and at a 3-month follow-up. Results indicated that 45% of the sample at the first timepoint were experiencing depression, with 18% of the sample meeting the criteria for major depression. In addition, those patients experiencing

major depressive symptoms demonstrated depressive symptoms at the 3-month follow-up, which affected their return to work (Schleifer et al., 1989).

Studies examining psychosocial adjustment from CABG have yielded equivocal results, in part, due to methodological limitations such as poor measures, small sample sizes, and short follow-ups (NHLBI, 1988; Wenger, 1986). Some studies demonstrate improved quality of life up to 1-year post-CABG surgery for a majority of patients (Kornfield, Heller, Frank, Wilson, & Malm, 1982; Folks et al., 1986; Jenkins et al., 1983), with small numbers of patients who have reported deterioration in psychosocial functioning (Gundle et al., 1980; Horgan, Davies, Hunt, Westlake, & Mullerworth, 1984). In addition, it has been estimated that approximately 50% of CABG patients resume household activities and that depression decreases but does not disappear entirely after one year (NHLBI, 1988).

Psychologically, patients may be struggling with issues of loss, whether real or perceived. Examples of loss can include loss of self-defining recreational activities due to restrictions of physical exertion, and loss of physical strength as a result of the cardiac event. Another loss that patients may experience is the perceived loss of affection from significant others because they are no longer the person that they were prior to the cardiac event (Ell & Dunkel-Schetter, 1994). These feelings of loss can contribute to patients' negative emotional reactions following an acute cardiac event, which can interfere with recovery and motivation to participate in rehabilitation. As noted earlier, acute cardiac events lead to psychological reactions usually stemming from physical pain as well as feelings of loss and uncertainty. In order to fully understand patients' psychosocial

adjustment to acute cardiac events, it is important to understand the process by which individuals react to stressful life events.

Theoretical Model of Stress and Coping

Since the 1960's, researchers have attempted to explore how individuals adapt to or "cope" with the occurrence of stressful life experiences. Although this line of research was initially related to work being completed on defense mechanisms, researchers began to study more conscious strategies that people use to deal with stressful experiences (Parker & Endler, 1996). Extremely stressful situations were focused upon almost exclusively in early research in this area, which led to researchers' preoccupation with situational characteristics at the expense of more predispositional (person) factors. With this shift away from predispositional factors, researchers began to examine coping as a process by examining both psychological and environmental factors that may influence coping responses. Examples of psychological factors include self-esteem and self-efficacy, with social support networks, financial resources, and education as examples of environmental influences (Parker & Endler, 1996). Lazarus and Folkman (1984) developed a transactional model of the stress and coping process that examines not only the situational characteristics of the event, but also the meaning that the event has for the individual experiencing it. Roskies (1991) defined stress according to Lazarus and Folkman's model as the following:

> Stress is the result of a judgement that a disturbance has occurred in the person-environment relationship: The individual perceives challenge/threat/harm, judges

that his or her resources may not be sufficient to manage the disruption, and considers the outcome important to his or her well-being. (p. 418)

According to this definition, people experience stress of varying intensity not because of genetic or environmental influences, but by the perceptions that they hold about the events they experience. This perception of the event or what Lazarus and Folkman (1984) term the "appraisal" of the event influences not only the individual's emotional reaction to the event but also subsequent coping efforts. In other words, how an individual interprets or appraises the stressful event (i.e., acute cardiac event) determines how the individual will react emotionally (e.g., anger, depression, acceptance) and behaviorally (e.g., adherence to cardiac rehabilitation, smoking cessation). As Brewer (1994) stated, "the fact that the injury (acute cardiac event) has occurred is considered less critical to understanding emotional reactions than is the way in which the injury is perceived (p. 90)." An individual's appraisal has been hypothesized to be influenced by personal characteristics (dispositions or personality characteristics) and situational characteristics (characteristics of the acute cardiac event and environmental factors). Individual differences in both personal and situational characteristics help account for individuals' different appraisals of the same event. For example, a cardiac patient who has access to appropriate medical care through insurance may appraise his or her medical status as more manageable and less stressful than an individual who does not have insurance, and therefore, cannot access those services.

The process begins with the occurrence of a stressful situation, in this case, an acute cardiac event (e.g., MI, PTCA, CABG). Once the individual begins to experience

the event, the individual begins the process of cognitive appraisal to determine how threatening the situation is and what are the best ways to deal with it. The stress and coping model described by Lazarus and Folkman (1984) is broken up into two processes: (1) primary appraisal and (2) secondary appraisal. Each of these processes can be summarized by key questions asked by the individual. For the primary appraisal, the individual is concerned about resources and abilities that may be at risk in this situation and asks, "what is at stake in this event?" The answer to this question contributes to the quality and intensity of the emotional reaction (Folkman & Lazarus, 1991). For example, if the individual perceives his or her physical health to be at stake, worry and fear may be expressed. Once this initial assessment is made, the secondary appraisal focuses on the evaluation of potential resources as well as the perceived options for coping. The secondary appraisal begins with the question "will I be able to deal with this situation, and, if so, how do I deal with it?" Emotional and behavioral responses to the stressful event are then generated as a result of the individual's cognitive appraisal of the situation.

It is important to note that the model developed by Lazarus and Folkman (1984) is not a linear one. The concept of reappraisal plays an important role in the process as the individual continues to appraise his or her situation and the coping strategies used to deal with it over time. In this way, appraisal is a dynamic process whereby coping strategies and their consequences influence the reappraisal of the stressful situation in a recursive manner. For example, a patient may initially appraise her acute cardiac event (e.g., PTCA, CABG, MI) as very threatening, but her effectiveness in implementing relaxation skills learned during cardiac rehabilitation may lead her to reappraise her cardiac event as

a challenge that she now has the resources to overcome. Reappraisals also influence the emotions that the individual experiences. In the previous example, the initial threatening appraisal may bring up feelings of anxiety and worry, with the more positive reappraisal (following successful acquisition of relaxation skills) potentially leading to the improvement of mood and to increases in self-esteem and self-efficacy for recovery.

Lazarus and Folkman (1984) also distinguished among three types of stress-related appraisals: 1) harm/loss; 2) threat; and 3) challenge. Harm/loss appraisals are generated after the stressful situation has occurred. However, threat and challenge appraisals can be anticipatory in nature as well as post-hoc. Threat appraisals are those that describe the extent to which the individual perceives the danger to exceed the individual's resources to effectively cope. Challenge appraisals, however, represent the extent to which the individual feels he or she has the resources to deal with the stressful event effectively (Tomaka, Blascovich, Kelsey, & Leitten, 1993). For example, a cardiac patient who feels that he or she will not be able to handle rigorous, stressful rehabilitation will feel more anxious and worried about the process. Alternatively, a patient who feels he or she is prepared to complete rehabilitation will feel challenged and more motivated to participate. Threat appraisals have been found to be more strongly associated with negative emotional reactions than challenge appraisals (Fischer, Shaver, & Carnochan, 1990; Folkman & Lazarus, 1985; Kobasa, 1982). Tomaka and colleagues (1993) conducted a series of three studies examining the relationship between cognitive appraisals (threat or challenge) and physiological reactivity. Participants were three samples of college students who performed a stressful mental arithmetic task after having

their appraisals of the upcoming task recorded. Measures of physiological reactivity (cardiac and vascular) were also recorded after the stressful task had been completed. In each of the three studies, Tomaka and colleagues (1993) found that cardiac reactivity was significantly related to threat appraisals. Participants who appraised the stressful task as more threatening, exhibited higher levels of cardiac reactivity than those who appraised the task as less threatening. Extrapolating this finding to a cardiac population, it is possible that an increase in cardiac reactivity secondary to threat appraisals following cardiac surgery could lead to complications, which could significantly delay recovery time and completeness.

Social Support

There are many variables that have been examined as moderators of individuals' reactions to stressful situations. One construct that has received a great deal of attention in the literature is social support.

Socially supportive relationships have been found to act as a coping resource and to assist with an individual's emotional adjustment (Gottleib, 1983; Pearson, 1986; Pilisuk & Froland, 1978). Fundamentally, social support appears to facilitate the coping process by providing additional resources such as advice, information, and material services that could increase an individual's coping resources (Pearson, 1986). However, empirical studies examining social support and its relationship to health outcomes have been plagued by differing conceptualizations of social support and the mechanisms by which this construct has an impact on health and well-being. This confusion is evident in published research that uses concepts such as social network and perceived social support

as interchangeable (Schaefer, Coyne & Lazarus, 1981). Similarly, many different theories have been used to explain empirical results. For example, theories such as social exchange theory and attachment theory, with their emphasis on social interaction and the power of relationships, have been used as a framework to explain the effects of social support. Epidemiologists have focused on theories of vulnerability and host resistance as an explanatory backdrop in this area. Finally, theories of stress, coping, and adaptation have also been put forth to explain empirical findings (Dracup, 1994). In the present study, a model of stress and coping will be used as a guiding framework.

Components of social support. In an effort to reduce confusion regarding the definition and measurement of social support, many investigators have attempted to create distinctions among the various components of social support. Cohen and colleagues (Cohen & Syme, 1985; Cohen & Wills, 1985) proposed that a distinction be made between structural and functional measures of social support, whereby structural measures refer to the description of the existence and interconnections between social ties (e.g., marital status, number of relationships). Alternatively, functional measures assess whether interpersonal relationships serve particular purposes (e.g., provide information, emotional intimacy, or material assistance) (Cohen, 1988). Seeman and Syme (1987) found that functional aspects of support, such as instrumental support and feelings of being loved, were more important in predicting coronary atherosclerosis than structural aspects (i.e., size of support network).

A distinction has also been made in the literature between perceived support and received support. Perceived support is usually measured by asking individuals to what

extent they believe support is available to them. Received support is assessed either by direct observation or by asking individuals whether specific supportive acts have occurred (Helgeson, 1993). In previous research, perceived support has been a better predictor of health outcomes (Cohen & Wills, 1985; Wethington & Kessler, 1986). Helgeson (1993) conducted a study comparing perceived versus received support on psychological health. Participants were 96 patients who were admitted to the hospital for a first coronary event. Patients participated in a pre-discharge interview as well as a 3-month follow-up. Social support was measured by the UCLA-Social Support Inventory (Dunkel-Schetter, Feinstein & Call, 1986). Results indicated that perceived support appeared to be a stronger predictor of adjustment than received support in this sample of cardiac patients (Helgeson, 1993).

Although researchers have placed varying importance on certain dimensions of functional social support, there has been some agreement with regard to the overall classification of dimensions. Three dimensions of functional social support have been described in the literature: (1) emotional support; (2) instrumental support; and (3) informational support (House, 1981). These dimensions, outlined by House (1981), have been used frequently in research. Emotional support has been defined as the communication to an individual that he or she is valued despite any personal faults (Cohen & Wills, 1985). In addition to enhancing self-esteem, this type of support can allow the expression of feelings, which can then lead to the reduction of distress (Helgeson & Cohen, 1996). Instrumental support has been described as the provision of financial aid, material resources, and needed services to another individual (Cohen &

Wills, 1985). The receipt of resources can increase an individual's sense of control, but can also increase feelings of dependency on others, which can erode self-efficacy (Wortman & Dunkel-Schetter, 1987). Informational support refers to assistance in defining, understanding, and coping with problematic events. Receiving information regarding a stressful situation (i.e., cardiac event) can increase an individual's perceptions of control by providing strategies for coping with the situation, and can reduce an individual's sense of confusion by providing information regarding the cause, course, and treatment of the problem (Helgeson & Cohen, 1996). For example, a cardiac patient who receives information concerning the bypass procedure may feel more prepared for the surgery and post-surgical consequences.

Studies have been conducted examining the effects of the various components of social support. Dunkel-Schetter (1984) examined perceptions of helpful and unhelpful behaviors and their sources in a sample of 79 breast and colorectal cancer patients. Emotional support was identified most frequently as helpful, while instrumental support was identified least often as helpful. When the source of support was considered, emotional and instrumental support were helpful from any source, while informational support was found to be helpful only from a health care professional (Dunkel-Schetter, 1984). These results have been replicated in subsequent studies (Dakof & Taylor, 1990; Neuling & Winefield, 1988). Although these results may not generalize to other medical populations (i.e., cardiac patients), they underscore the importance of the stressor-support specificity model which states that the most effective form of support depends on the demands of the specific situation (Cohen & McKay, 1984; Cohen & Wills, 1985;

Cutrona, 1990). Therefore, with regard to cardiac patients, it is important to examine the relative importance of particular components of social support for cardiac patients at particular times in their recovery (e.g., admission, discharge, follow-up).

The different dimensions of functional social support (i.e., emotional, instrumental, informational) were also examined in the study conducted by Helgeson (1993). In the study's sample of patients who experienced a first cardiac event, perceived emotional support was found to be related to increased life satisfaction for patients and their spouses. Emotional support, in this study, was seen as having a health-enhancing function. However, when psychological distress was examined, informational support was more important for patients, with the perceived availability of informational support associated with a decrease in distress. In this way, informational support was seen as a stress-reducing influence. Therefore, the process by which support has an effect on well-being may depend on the kind of support being offered (Helgeson, 1993).

Hypothesized mechanisms of action. Two models have been hypothesized to account for the positive relationship between social support and well-being that has been found in research (Cohen & Wills, 1985). The first model posits that social support has a beneficial effect on well-being regardless of whether the individual is experiencing stress. This model has been termed the main effect model because evidence for the model is provided by a statistically significant main effect of support with no stress X support interaction (Cohen & Wills, 1985). The beneficial effect of social support is hypothesized to occur because a large social network would provide an individual with regular positive experiences and a set of stable, socially rewarded roles in which to

participate. Cohen and Wills (1985) hypothesized that a sense of predictability, positive affect, and a recognition of self-worth would be generated by the regular positive experiences with the social network, which would ultimately improve an individual's well-being. Thus, representative main effect studies include social integration or social network studies, which have focused on the presence and/or size of an individual's network.

In contrast, the buffering hypothesis proposes that support is related to well-being only for individuals who are experiencing stress (Cohen & Wills, 1985). Specifically, social support buffers or protects the person from the negative effects produced in stressful situations. Cohen and Wills (1985) posited that social support might buffer the effects of stress in two ways. The first, which is most relevant to the present investigation, is that support may have an effect between the stressful event (or the expectation of the event) and the stress reaction by preventing or limiting the stress appraisal. For example, a person being supported during the occurrence of a mild heart attack may appraise the event as less threatening than if he or she had to experience the heart attack without support in place. Second, support may intervene between the experience of the stressful event and the pathological outcome (i.e., illness) by eliminating the stress reaction or by directly influencing physiological reactions (Cohen & Wills, 1985).

Social support and cardiac events. Research conducted with cardiac patients has suffered from the same confusions of terminology and measures as the social support research in other populations. Studies, therefore, were atheoretical in nature as

researchers attempted to find some relationship between aspects of social support and recovery from cardiac events. Consequently, empirical studies examining the influence of social support on adjustment to cardiac events have focused on different components of support. Two aspects that have been frequently examined in the literature are the structural aspects of social relationships (i.e., marital status) and emotional support from others.

Structural support and cardiac patients. Within the cardiac literature, structural aspects of support (i.e., marital status) have frequently been used as a measure of social support. Large, representative samples were measured with regard to their social resources, health, and well-being. This epidemiological approach rarely included measures of stress, but focused on the effect of social networks on outcomes such as mortality (Dunkel-Schetter, 1984).

There have been several studies examining the relationship between social integration and mortality following acute cardiac events. Kawachi and colleagues (1996) examined the relationship between social networks and total and specific-cause mortality. Male health professionals from the United States (n = 32,624), who were free from coronary heart disease, stroke, and cancer at baseline, were studied for 4 years. The main outcome measure was total mortality, although this was categorized into specific causes including cardiovascular disease. Social connection was determined by assessing marital status, frequency of social contacts, church group membership, and membership in other community organizations. Results indicated that socially isolated men were at increased risk for cardiovascular disease mortality. More specifically, men who were not married,

had fewer than six friends or relatives, and had no membership in church or other organizations were 1.9 times more likely to die from cardiovascular disease than men higher in social connection (Kawachi et al., 1996).

Farmer and colleagues (1996) conducted a similar study examining the effect of social support on survival following acute myocardial infarction. The authors used social integration (i.e., presence of a supportive individual) as their measure of social support. Social integration, in this study, was assessed by a scale which contained individual items on marital status, current living situation (i.e., living alone), and whether the individual was advised to seek help regarding his or her medical condition. Mexican Americans ($\underline{n}$ = 292) and non-Hispanic whites ($\underline{n}$ = 304) who had survived an MI for more than 28 days were given an in-hospital interview. Results indicated that individuals with high or medium levels of social support had greater survival rates than those participants with low social support. The relative risk of death for individuals with low social support was 1.89 times greater than the risk for individuals with medium or high support (95% CI, 1.20 – 2.97) (Farmer et al., 1996). In both the Farmer et al. (1996) study and the Kawachi et al. (1996) study, it was hypothesized that social support improved survival by buffering the effects of stress and reducing the threat of the cardiac event. Results from both studies are representative of past findings in that individuals with social ties were found to live longer than those without such ties (Berkman & Syme, 1979; House, Robbins, & Metzner, 1982; Williams et al., 1992).

Structural measures of support provide only an indirect assessment of the availability of support resources for an individual. Studies examining both global

perceptions of available support and specific types of functional support (e.g., emotional support) with regard to adjustment following cardiac events have provided a more complete examination of the relationship between social support and adjustment.

Global perceptions of available support and cardiac patients. There is evidence suggesting that people's appraisal of available support may be more important than the social interactions that actually take place (Antonucci & Israel, 1986). Sarason, Sarason, Shearin, and Pierce (1987) noted that individuals who perceived having relationships with people who love and value them were less depressed and were more satisfied with their current relationships. Sarason and colleagues (1987) suggested that this global perception of having love and caring available from others is central to the concept of social support, and that functional classifications are too narrowly focused for research in this field.

Research on global perceptions of available support has been conducted with cardiac patients. Orth-Gomer and colleagues (1993) examined the association between an individual's perceived lack of available support and the incidence of coronary heart disease (CHD). It was hypothesized that the risk associated with lack of support would be the same magnitude as the risk of smoking. Participants were 736 men born in 1933 in Gothenborg, Sweden who were found to be free of heart disease. Social support, or perceived lack thereof, was assessed by the Interview Schedule for Social Interaction (Henderson, Duncan-Jones, & Byrne, 1980), which yields two scales. One scale refers to the availability of deep emotional relationships or "attachments," and the other scale describes the availability of more peripheral contacts in the individual's social network. The researchers utilized the full scale score yielded by both subscales, and considered

each subscale independently. A perceived lack of support was found to be associated with future increased risk of CHD development and its consequences (i.e., MI). Lack of support remained a significant predictor despite controlling for standard risk factors such as hypertension, physical inactivity, and diabetes (Orth-Gomer, Rosengren, & Wilhelmsen, 1993).

Wingate (1995) examined a selection of variables including social support to determine their relationships with quality of life following MI. Social support was viewed as perceptions of satisfaction with available support and was measured by the "satisfaction" subscale of the Social Support Questionnaire (SSQ) (Sarason, Levine, Basham, & Sarason, 1983). Results suggested a significant relationship between social support and quality of life in the sample of 96 women with a diagnosis of MI who had not undergone cardiac surgery. Simply put, women who had higher levels of satisfaction with available support reported higher levels of quality of life following their MI. This evidence linking global perceptions of available support to well-being in cardiac patients provides a rationale for including measures such as the SSQ (Sarason et al., 1983) in future research.

Emotional support and cardiac patients. Despite the importance that researchers have placed on global perceptions of available support as an important factor in recovery from acute cardiac events (Wingate, 1995), researchers have also examined the impact of specific types of functional support (e.g., emotional support) on various outcomes, including depressive symptoms, quality of life, and threat appraisals.

With depression being a frequent emotional manifestation following acute cardiac events (Frasure-Smith, Lesperance, & Talajic, 1995), several studies have been generated examining the influence of social support on depressive symptoms within a cardiac patient population. Yates (1995) conducted a study examining the relationships among received social support and short- and long-term outcomes in men with coronary heart disease. To determine this relationship, 93 patients were interviewed 2 months after an acute cardiac event (e.g., MI, PTCA, CABG). A 100-mm visual analog scale for social support was used in order to provide a more sensitive measure of support than other methods of scaling (Coward, 1989). Questions were adapted from the Perceived Support Network Inventory (PSNI) (Oritt, Paul, & Behrman, 1985) which asks participants to rate both the extent to which different types of support (e.g., informational, emotional, instrumental) were provided by a significant other, and the individuals' overall satisfaction with that provided support. Depression was assessed using the Center for Epidemiological Studies' Depression Scale (CES-D) (Radloff, 1977). Results indicated that emotional support from one's spouse and overall satisfaction with spousal support were significantly related to decreased levels of depression at both 2 months and 1-year post-cardiac event.

Elizur and Hirsh (1999) examined the resources related to cardiac patients' sense of self, marital quality, and social support and how these resources were related to psychological adjustment following coronary artery bypass grafting (CABG). Participants were six female and 45 male Israeli cardiac patients who were assessed 1 week prior to and 8 – 10 weeks after the bypass operation. Social support in this study

was assessed by the Norbeck Social Support Questionnaire (NSSQ) (Norbeck, Lindsey, & Carriery, 1981), which focuses on an individual's perceptions of received emotional and instrumental support from each significant person in the individual's life. The Kansas Maital Satisfaction Scale (KMSS) (Schumn et al., 1985) was included as a global measure of marital satisfaction. Psychosocial adjustment was assessed using multiple measures including the Mental Health Inventory (MHI) (Veit & Ware, 1983) and the Psychosocial Adjustment to Illness Scale – Self Report (PAIS – SR) (Derogatis & Lopez, 1983). The MHI is a 38-item measure of mental health that yields two inversely correlated dimensions of psychological distress and well-being. The PAIS – SR is a 46-item measure that assesses the adjustment of medical patients to their illness. The measure is composed of seven subscales: health care orientation, vocational environment, domestic environment, sexual relationship, extended family relationships, social environment, and psychosocial distress. Marital satisfaction was found to be a significant predictor of adjustment following CABG in Elizur and Hirsh's sample, but nonmarital sources of support were not. The authors suggested that nonmarital support was not a significant predictor of adjustment because, shortly after the operation, support from friends and co-workers becomes of peripheral importance (Elizur & Hirsh, 1999).

Kulik and Mahler (1993) examined emotional support as a moderator of adjustment and compliance after coronary artery bypass grafting (CABG). Participants were 85 post-CABG men who were assessed 1, 4, and 13 months after hospital discharge. Emotional support was measured by individual items that assessed four supportive aspects – the extent to which the patients: (1) had received emotional support; (2) felt

there were people to talk to about problems; (3) felt that their romantic relationships were satisfying; and (4) felt loved and wanted. Items assessing anxiety and depression were taken from the Mental-Health Inventory (Veit & Ware, 1983) and the Zung Depression Inventory (Zung, 1965). Greater levels of social support were significantly related to less emotional upset, compliance with behavioral recommendations (e.g., decreased smoking, increased exercise), and a better perceived quality of life over the year following surgery (Kulik & Mahler, 1993).

The studies discussed in this section provide evidence for the value of different aspects of social support (e.g., structural, functional) in relation to various health outcomes (e.g., depression, quality of life, mortality). However, they have been largely atheoretical in nature. The stress and coping model, described in a previous section, has been used to interpret empirical data, albeit, in a post-hoc fashion (Kulik & Mahler, 1993; Moser, 1994; Wingate, 1995).

One study was identified which tested the utility of the stress and coping model (Lazarus & Folkman, 1984) as an explanatory framework for the relationship between social support and psychological distress. Fontana, Kerns, Rosenberg, and Colonese (1989) examined social support and its relationship to cardiac patients' appraisals of threat secondary to their acute cardiac event (e.g., MI, CABG). Results were generated based on data from 90 consecutive male patients admitted for an acute MI or CABG surgery. Stress was measured as a composite index of three threat appraisals due to the cardiac event: (1) the likelihood of experiencing a recurrence of symptoms; (2) the likelihood of dying suddenly; and (3) the likelihood of not making a full recovery.

Support was measured by the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980) scored in reverse. Items represent perceptions of available intimacy (emotional support) in the individual's life. The use of this measure is consistent with Lazarus and Fokman's (1984) model in that support is conceptualized as the perception that aspects of social relationships are helpful. Psychological distress was measured by the global symptom index of the Symptom Checklist – 90 Revised (Derogatis, 1977), which has been used extensively as a measure of emotional upset in nonpsychiatric and psychiatric populations. Emotional support was found to dampen the perception of threat and, consequently, emotional distress, which moderated the impact of those variables on cardiac symptoms. In other words, cardiac patients who had higher levels of support perceived their medical condition as less threatening than patients who were lower in support. Fontana and colleagues (1989) hypothesized that the moderating effects of support could be due to two potential factors: (1) a desensitizing effect on the interpretation of sensations as symptoms; and/or (2) a calming effect on the sympathetic nervous system. These results provide evidence for the appraisal process as a mechanism by which social support exerts an influence on adjustment following an acute cardiac event.

Unsupportive Social Interactions

As researchers have explored the relationship between social interactions and well-being, they have focused on examining the impact of positive social interactions (i.e., social support) (see previous section). However, social exchange theorists have asserted that social relationships can be a source of stress as well as support, regardless of

intentionality (Rook & Pietromonaco, 1987; Thibault & Kelley, 1959). Studies that operationally defined high levels of support as frequent interactions with friends and family (e.g., Connor, Powers, & Bultena, 1979; Lowenthal & Robinson, 1976) seemed to ignore the potential presence of upsetting social interactions. Rook (1984) stated that "the possibility that such interaction might occasionally involve disputes, embarrassment, envy, invasion of privacy, or other negative outcomes is not addressed" (p. 1097). Negative social interactions have been defined by Rook (1992), as "actions by a member of a person's social network that cause the person to experience psychological distress and at least some reservations about the relationship itself" (p. 157).

Results from empirical studies have indicated that an inverse relationship exists between perceptions of negative interpersonal interactions and well-being (see review by Rook, 1992). These results have been demonstrated in a variety of populations, including family caregivers of persons with Alzheimer's disease (Fiore, Becker, & Coppel, 1983; Kiecolt-Glaser, Dyer, & Shuttleworth, 1988), stroke patients (Norris, Stephens, & Kinney, 1990; Stephens, Kinney, Norris, & Ritchie, 1987), and patients with rheumatoid arthritis (Kraaimaat, Van Dam-Baggen, & Bijlsma, 1995; Manne & Zautra, 1989; Revenson et al., 1991). In addition, in studies that have compared positive and negative social interactions, negative interactions were more consistently related to psychological well-being than positive ones (Fiore et al., 1983; Kiecolt-Glaser et al., 1988; Rook, 1984). It is thought that negative interactions are more rare and more salient than positive interactions (Rook, 1984; Rook & Pietromonaco, 1987). In addition, researchers have found that positive and negative interpersonal interactions are relatively independent

constructs (Finch et al., 1989; Ingram, Betz, Mindes, Schmitt, & Smith, 1999; Rook, 1984; Ruehlman & Karoly, 1991). These results necessitate the inclusion of measures of positive and negative support in studies examining the role of social interactions in adjustment.

Research examining negative social interactions has followed three different strategies (Rook, 1992): (1) contrasting the effects of positive and negative exchanges on various aspects of emotional health and well-being (Finch, Okun, Barrera, Zautra, & Reich, 1989; Fiore, Becker, & Coppel, 1983; Rook, 1984; Stephens, Kinney, Norris, & Ritchie, 1987); (2) conceptualizing negative exchanges as stressors and comparing the impact of interpersonal versus non-interpersonal stressors (Bolger, DeLongis, Kessler, & Schilling, 1989); and (3) comparing positive and negative social interactions as moderators of adaptation to stress (Kiecolt-Glaser, Dyer, & Shuttleworth, 1988; Okun, Melichar, & Martin, 1990). Because the third strategy is theoretically congruent with the present study, findings from studies representing this strategy will be reviewed.

Results of studies that examined the role of negative social interactions as a moderator of adaptation to stress have been equivocal. Okun and colleagues (1990) examined the relationships of positive and negative social interactions to psychological distress. Positive and negative interactions were assessed as part of a structured interview adapted from the Children's Inventory of Social Support (CISS) (Wolchik, Sanbdler, & Braver, 1987). Participants were asked to list the names of people who provided certain specific types of support (i.e, emotional, informational, instrumental) as well as the names of individuals who were perceived as being unsupportive. In addition, participants were

asked to rate their enjoyment of interaction with each network member. Two scores were then derived from the interview. First, an average of participant ratings of enjoyment with each network member was calculated. Second, a proportion was calculated by dividing the number of network members with whom the participant had negative social interactions by the total number of members in the individual's network (Okun et al., 1990). In a sample of 110 older adults, results indicated a significant main effect of negative social interactions. In other words, individuals who experienced higher levels of negative social interactions reported higher levels of distress regardless of whether they were experiencing daily stress. However, Kiecolt-Glaser and colleagues (1988) found that negative social interactions predicted depression only in those individuals who were experiencing the stress of caring for a person with Alzheimer's disease. Participants were 34 family caregivers of Alzheimer's Disease patients and 34 comparison persons (non-caregivers). Information that was collected regarding social interactions included frequency of contacts, perceived closeness of the relationships, and ratings of the perceived helpfulness (positive interactions) and upset (negative interactions) associated with the relationships. Participants listed up to 10 network members , and then rated the degree to which those relationships were both helpful and upsetting across five support categories: socializing, tangible assistance, cognitive guidance, emotional support, and self-disclosure. Neither positive nor negative interactions were related to depression levels for individuals who were not experiencing life stress (control group). Although the results from the Okun et al. (1990) and Kiecolt-Glaser et al. (1988) studies are conflicting and difficult to reconcile, it has been posited they can be attributed to the dissimilar

nature of the stressors in each study (Rook, 1992). This underscores the importance of assessing both positive and negative interactions within various populations to determine their differential effect on adjustment.

As the importance of examining specific types of support (i.e., informational, emotional, instrumental) in a particular stressful situation has grown (Cohen & McKay, 1984; Cohen & Wills, 1985; Cutrona, 1990), researchers have attempted to categorize the types of negative social interactions that individuals can experience. Ingram and colleagues (1999) developed the Unsupportive Social Interactions Inventory to measure unsupportive or upsetting responses that an individual receives from others concerning a particular stressful experience. Ingram et al. (1999) identified four types of unsupportive interactions: distancing, bumbling, minimizing, and blaming. Distancing refers to behavioral or emotional attempts made by individuals in the support network to disengage from the relationship as a result of the stressful situation. Interactions classified as bumbling are those that represent awkward, inappropriate interactions aimed at trying to "fix" the person. Minimizing interactions focus on forced optimism and the intentional downplaying of the person's concerns. Blaming interactions refer to interactions that are perceived as criticisms against the person experiencing the stressful event (Ingram et al., 1999). These categories are similar to others that have been described in the literature (Rook & Pietromonaco, 1987; Ruehlman & Karoly, 1991).

An additional type of unsupportive interaction that has been examined in a relatively small body of literature is emotional overinvolvement. The concept of overinvolvement has been examined in a variety of populations, including chronic pain

patients (Mohamed, Weisz, & Waring, 1978), hemodialysis patients (Reiss, Gonzalez, & Kramer, 1986), and adults hospitalized for schizophrenia and depression (Vaughn & Leff, 1976). Coyne and DeLongis (1986) stated that overinvolvement occurs when "family members have become worrisome, overprotective, intrusive, and excessively indulgent and self-sacrificing in a way that burdens the patient and discourages autonomy and personal responsibility for self-care" (p. 457). Thus, although the interactions are well intentioned by individuals in the social network, they are perceived as a source of distress and a threat to autonomy by the person experiencing the stressful event. Empirical studies have found that overinvolvement is positively associated with psychological distress (Pearce, LeBow, & Orchard, 1981; Vaughn & Leff, 1976).

Little is known concerning the different types of unsupportive social interactions and their potential effects on adjustment following stressful events. Therefore, empirical research examining the role of unsupportive social interactions in adjustment should assess the aforementioned types of unsupportive exchanges that can occur in various populations (e.g., cardiac patients).

Unsupportive social interactions and cardiac events. Although the examination of unsupportive social interactions has become more frequent (Fiore, Becker, & Coppel, 1983; Ingram et al., 1999; Manne & Zautra, 1989; Norris, Stephens, & Kinney, 1990; Rook, 1992) in recent years, their relation to adjustment among cardiac patients has been virtually ignored.

Holahan and colleagues (Holahan, Moos, Holahan, & Brennan, 1997) conducted a study examining positive and negative aspects of social relationships and adjustment in

183 cardiac patients. Variables of interest included level of support, level of stress from spouse and children, depressive symptoms, and a coping measure. Holahan et al. used four measures of support (family support, family stressors, extrafamily support, and extrafamily stressors), tapping both positive and negative aspects of relationships, derived from the Life Stressors and Social Resources Inventory (LISRES) (Moos & Moos, 1994). However, it is important to note that Holahan and colleagues used a general measure of negative social interactions, rather than a stressor-specific measure. In other words, family and extrafamily stressor items used in the Holahan et al. study (1997) focused on stressors in relationships across a variety of situations rather than stressful interactions occurring in one particular situation (e.g., acute cardiac event). Examples of items used in the Holahan et al. (1997) study to assess general negative interactions with family and friends included (a) "Does your spouse get angry and lose his or her temper with you?", (b) "Is your spouse critical and disapproving of you?", and (c) "Does your supervisor criticize you over minor things?" Participants were followed over a 4-year follow-up time period. Results indicated that positive and negative social interactions were separate predictors of adjustment. In addition, negative interpersonal interactions were as strongly related to adjustment and coping efforts as positive interactions (Holahan et al., 1997). Similar to studies in other populations (e.g., Rook, 1984; Rook & Pietromonaco, 1987), negative interactions were reported as less frequent than positive ones, re-emphasizing the power of unsupportive interactions and their importance as a construct to be explored empirically.

Although different types of unsupportive social interactions (e.g., distancing, bumbling, minimizing, blaming, overprotecting) have been discussed in the literature (e.g., Ingram et al., 1999; Rook & Pietromonaco, 1987; Ruehlman & Karoly, 1991; Vaughn & Leff, 1976), only overprotection or emotional overinvolvement has been explored relative to cardiac patients' adjustment. Overall, results have been equivocal with regard to the impact of overprotection on cardiac patients' adjustment following an acute cardiac event (i.e., myocardial infarction).

Riegel and Dracup (1992) conducted a study to determine if overprotection from family members and friends contributed to the development of cardiac invalidism after an acute MI. Cardiac invalidism was conceptualized as a multifaceted psychosocial outcome and operationalized as low self-esteem, emotional distress, negative health perceptions, and increased interpersonal dependency after an acute MI (Riegel & Dracup, 1992). Participants were 111 patients who had experienced a first acute MI, 81 of whom felt that they were overprotected by family members and friends. Overprotection was defined as receiving more social support from family and friends than desired and was measured by the UCLA Social Support Inventory (Dunkel-Schetter, Feinstein, & Call, 1986). Overprotection was determined by subtracting the "support desired" subscale from the "support received" subscale. Participants with a positive difference score, which indicated the receipt of more support than desired, were classified as overprotected. The researchers found that overprotection by family and friends had a beneficial effect on patients' emotional reactions to the MI (e.g., anxiety, depression, anger, confusion, vigor). Overprotected patients recovered more quickly than those who felt they were not

adequately supported (Riegel & Dracup, 1992). These results conflict with a study of cardiac patients conducted by Wiklund and colleagues (1984).

Wiklund and colleagues (1984) examined several psychological outcomes 1 year following individual's first MI. Participants in this study were 177 consecutive men admitted to the hospital with a first MI. Participants completed questionnaires and a brief interview focusing on psychological outcomes including emotional instability, health preoccupation, and overprotection. Overprotection was assessed by a qualitative question during the interview: "how are you treated by your family and friends compared to before the MI?" Results indicate that overprotection was significantly related to emotional instability, a preoccupation on health, and self-reported chest pain.

One explanation for the difference in results between the Wiklund et al. (1984) study and the Reigel and Dracup (1992) study may be in how overprotection was identified (Reigel & Dracup, 1992). For example, Reigel and Dracup defined overprotection as receiving more support than desired, but did not examine participants' interpretations of the support they received. In addition, the definition of overprotection in the Wiklund et al. study included aspects of support from others that could be interpreted by participants as negative. Participants were asked whether they felt "treated in a different way after the MI" or " protected from physical activity."

The paucity of research that has been conducted on unsupportive social interactions and their relationship to adjustment in acute cardiac patients and the inverse relationship between these interactions and well-being found in other studies (e.g., Fiore

et al., 1983; Ingram et al., 1999; Kiecolt-Glaser et al., 1988) provides a strong rationale for their continued examination.

Gender and Adjustment to Cardiac Events

Historically, cardiac events have been mistakenly thought to be a problem only for men. However, as women approach the age of menopause, they may begin to lose the protective effects of estrogen, and, therefore, be at increased risk for heart disease and other cardiac difficulties. Over 500,000 females die each year from cardiovascular diseases, which makes it the number one killer of women (American Heart Association, 1998). In fact, of the over 6 million cardiac patients discharged from the hospital in 1996, approximately 50% were female (3,034,000 females) (American Heart Association, 1998). Because cardiac events occur as frequently in females as in males, it becomes important to explore potential gender differences in individuals' adjustment. However, research on adjustment to cardiac events has typically used only male participants. Very little research has been conducted examining the influence of gender in recovery from acute cardiac events.

Overall, results have been equivocal regarding any gender differences in adjustment to cardiac events. Many of these studies, however, have been plagued by poor sample sizes (Brezinka & Kittel, 1995). In studies conducted by Bass et al. (1987) and Sokol et al., (1987), female cardiac patients had higher levels of anxiety and depression than male cardiac patients. Riegel and Gocka (1995) found that both men and women demonstrated improved adjustment within 4 months following an acute MI, with the main difference being that women accessed their social support network earlier than men

(Riegel & Gocka, 1995). Given the lack of clarity and consistency with which gender has been explored in studies of adjustment following acute cardiac events, consideration of gender as an influence on adjustment is warranted.

Statement of the Problem

The few empirical studies examining unsupportive social interactions and adjustment to cardiac events have focused almost exclusively on the direct effect of these interactions on adjustment (e.g., Holahan et al., 1997; Riegel & Dracup, 1992). No studies were identified that explored unsupportive social interactions as moderators of adjustment in acute cardiac patients. Exploring the moderating (or stress-amplifying) relationship of these interactions to well-being will provide researchers with a better understanding of the process underlying how individuals react to stressful situations such as acute cardiac events. Lazarus and Folkman's (1984) model of the stress and coping process has been used as an explanatory framework in social support research (e.g., Kulik & Mahler, 1993; Moser, 1994; Wingate, 1995). One parallel identified between social support research and negative social interactions research is the importance of understanding the specific process(es) by which supportive and unsupportive social interactions affect well-being (Rook, 1992). The examination of unsupportive social interactions within Lazarus and Folkman's (1984) stress and coping model will test the utility of cognitive appraisal as a mechanism by which unsupportive and supportive social interactions influence adjustment following an acute stressful event (i.e, MI, PTCA, CABG). Thus, the purpose of the present study was to examine the impact of unsupportive social interactions, within Lazarus and Folkman's cognitive appraisal

model, on individuals' mood states following an acute cardiac event. Specifically, the extent to which unsupportive social interactions moderate or exacerbate the effects of threat appraisals was examined in the present study.

Hypothesis One

Unsupportive social interactions have been researched in a variety of populations, and an inverse relationship has been found between unsupportive interactions and well-being (see review by Rook, 1992). Therefore, the first hypothesis for the present study was that unsupportive social interactions around the time of the acute cardiac event (Time 1) would have a significant positive relationship with overall mood disturbance and depression.

Hypothesis Two

Several studies comparing positive and negative interactions indicate that negative interactions are more consistently related to well-being than positive ones (Fiore et al., 1983; Kiecolt-Glaser et al., 1988; Rook, 1984). Researchers have also found that positive and negative social interactions are relatively independent constructs (Finch et al., 1989; Ingram et al., 1999; Rook, 1984; Ruehlman & Karoly, 1991). Therefore, it was expected that measures of positive and negative interactions at Time 1 would correlate only moderately. Based on these findings, the second hypothesis for the present study was that unsupportive social interactions at Time 1 would explain a significant amount of unique variance in mood over and above positive social support at Time 1.

Hypothesis Three

No studies have been identified that examined unsupportive social interactions as moderators of the effects of threat appraisal in cardiac patients. In a related study, Fontana and colleagues (1989) examined the relationship between threat appraisal and positive social support. Results indicate that perceived support had an ameliorative effect on threat and distress in a sample of cardiac patients. Given the negative relationship between unsupportive social interactions and well-being (Rook, 1992), the third hypothesis was that unsupportive social interactions at Time 1 would exacerbate the influence of threat appraisals on patients' overall mood disturbance and levels of depression at Time 1.

Hypothesis Four

To better understand the dynamic relationship between unsupportive social interactions and mood disturbance, it is important to examine this relationship over time. Fontana and colleagues (1989) suggested that threat may become more activated as time goes on. Once the patient is beyond the concerns of immediate survival, threats of future harm and disability become more prominent (Fontana et al., 1989). Therefore, the fourth hypothesis was that higher levels of unsupportive social interactions at Time 1 would predict higher levels of mood disturbance at Time 2.

Summary of Hypotheses

The hypotheses for the present study were: (1) unsupportive social interactions at Time 1 would have a significant positive relationship to overall mood disturbance and depression; (2) unsupportive social interactions at Time 1 would explain a unique amount of the variance in mood over and above positive social support at Time 1; (3)

unsupportive social interactions at Time 1 would exacerbate the influence of threat appraisals on patients' overall mood disturbance and levels of depression at Time 1; and (4) higher levels of unsupportive social interactions at Time 1 would predict higher levels of mood disturbance at Time 2.

CHAPTER 3

METHOD

The purpose of the present investigation was to examine the impact of unsupportive social interactions on individuals' mood states following an acute cardiac event (i.e., MI, PTCA, CABG). To accomplish this purpose, a series of paper-and-pencil inventories was administered to a sample of patients from a Richmond, Virginia-based Veterans Administration Medical Center. Details concerning the participants, instrumentation, and data collection procedures are provided in the remainder of this chapter.

Participants

Participants in the present investigation were 67 male patients from the cardiology and cardiac surgery units of the Hunter-Holmes McGuire Veterans Administration Medical Center (VAMC) in Richmond, Virginia. The age range of the sample was 44 to 78 years, with a mean age of 60.63 (SD = 9.52). The racial/ethnic composition of the sample was 61% Caucasian/White, 21% African American/Black, 6% Native American, and 9% multi-ethnic or other. There was diversity in the sample with regard to education level with 23% having some high school education, 37% having graduated from high school, and 28% having completed some college coursework. Four percent of the sample reported graduating from college. Sixty-nine percent of the sample reported being retired, with 21% currently employed (19% full-time and 2% part-time). Sixty-two percent of the

sample reported being in a committed relationship. Seventy percent of the sample reported a previous history of cardiac problems requiring hospitalization. At the time of participant recruitment, each participant had incurred an acute cardiac event, as defined by the International Classification of Diseases – 9th Edition (ICD-9-CM) that required hospitalization and treatment (code numbers 410 and 411). Determination of participants' inclusion in the study protocol was made jointly with physicians from the participating departments at the VAMC. Medical complications as a result of the acute cardiac event, such as significant cognitive disturbance or loss of upper extremity motor ability, were evaluated by the medical staff as a basis for exclusion from the sample. Two patients who were recruited for the study could not participate because of an inability to read and comprehend the informed consent form and questionnaire packet.

The longitudinal design of the current study allowed for the examination of differences between those participants who completed questionnaire packets at both timepoints and those participants who only completed the Time 1 packet. Comparisons between participants who completed both questionnaires (completers) ($\underline{n} = 45$) versus those participants who only completed the Time 1 packet (non-completers) ($\underline{n} = 67$) were made on the demographic characteristics and the main dependent variables of the current study.

For the demographic characteristics (e.g., age, race, marital status), only one variable significantly differentiated between completers and non-completers: marital status. A chi square analysis was calculated comparing status of packet completion (completer versus non-completer) and relationship status. The multiple response

categories for relationship status were collapsed into two categories (presence of significant other and no presence of significant other). The response categories were collapsed in order to avoid problems with the number of expected values per cell. The chi square results indicate that participants who were in a committed relationship at the time of hospitalization were more likely to complete both questionnaire packets during the course of the study ($\chi^2 = 4.86$, $p < .05$).

With regard to the main dependent variables in the present investigation, the only significant difference between completers and non-completers was that completers reported significantly fewer unsupportive social interactions at Time 1 than those participants who only completed the Time 1 packet ($t = -3.25$, $p < .01$).

Measures

Profile of Mood States (POMS) – short form. The POMS-short form (McNair et al., 1992) is a 37-item measure of mood states with six subscales: tension, anger, depression, confusion, fatigue, and vigor (See Appendix A). The POMS is an adjective checklist that requires participants to rate the extent to which they experienced a particular emotion during the previous week. Participants respond on a 5-point Likert scale that ranges from 0 = not at all to 4 = extremely. A total mood disturbance score can be calculated in addition to the subscale scores. Internal consistency for each subscale of the short form ranged from .80 (Tension - Anxiety) to .91 (Depression – Dejection). Correlations between the short form subscales and the original POMS subscales ranged from .95 (Tension – Anxiety) to .98 (Fatigue – Inertia). Test-retest reliability coefficients for the six subscales were calculated in a sample of 100 psychiatric outpatients for the

time period spanning from their intake to immediately prior to their first therapy session (median time = 20 days, range from 3 to 110 days). The test-retest reliability coefficient was .74 for the depression subscale (McNair et al., 1992). The POMS has been used in many clinical populations and has demonstrated adequate reliability and validity across many domains such as cancer research (Spiegel, Bloom, & Yalom, 1981; Taylor et al., 1985), and research on responses to emotion-inducing conditions (Pillard & Fisher, 1967; Pillard, Atkinson, & Fisher, 1967). For the sample in the present study, Cronbach's alpha for the total mood disturbance subscale was .89 at Time 1 and .93 at Time 2. Cronbach's alpha for the depression subscale was .81 for Time 1 and .91 at Time 2.

Social Support Questionnaire – 6 (SSQ-6). The SSQ-6 is a 6-item measure of global social support that assesses perceived available social support along two dimensions: (1) the number of individuals that a person feels is supportive in various situations; and (2) the satisfaction that the individual has with that perceived available support (See Appendix B). For the first part of each item, participants list the number of available others the individual feels he or she can turn to in a variety of situations. Examples of situations include: "Whom can you count on to distract you from your worries when you feel under stress?" and "Whom can you count on to care about you, regardless of what is happening to you?" For the second part of each item, participants rate their satisfaction with the perceived support available in the particular situation on a 6-point Likert scale from "1 = very dissatisfied" to 6 = very satisfied." Internal consistency for the SSQ-6 ranged from .90 to .93 for both the Number and Satisfaction subscales (Sarason et al., 1987). The SSQ has been used with many populations and has

demonstrated adequate reliability and validity (Lindner, 1982; Sarason et al., 1983; Sarason, Sarason, Potter, & Antoni, 1985). An adapted version of the SSQ-6 was used in the present investigation, in which respondents were asked to report only the number of people in their network who provide support in particular situations. For the sample in the current study, Cronbach's alpha for the Number subscale was .53 at Time 1 and .93 at Time 2. The Cronbach's alpha in the current sample for the Satisfaction subscale was .96 for Time 1 and .95 for Time 2.

UCLA Social Support Inventory. The UCLA Social Support Inventory (UCLA-SSI; Dunkel-Schetter et al., 1986) assesses the receipt of three different types of social support from three different sources (See Appendix C). The three kinds of support are emotional, informational, and instrumental. The three sources of support can be tailored to the specific population being studied and spouse, close family member, and physician were used in the present study. For example, the receipt of informational support is assessed with the item: "In the past 3 months, how often did your (spouse, family member, physician) give you information or advice about health-related concerns, for example, how to take care of your health and how to prevent health problems, whether you wanted it or not?" Participants respond on a 5-point Likert scale, ranging from 0 = not at all to 4 = very much. Perceived availability of the type of support is also assessed. For example, perceived availability of informational support is assessed with the item: "To what extent do you feel you can turn to your (spouse, family member, physician) for information or advice regarding your health?" Again, participants respond on a 5-point Likert scale, ranging from 0 = not at all to 4 = very much. The UCLA-SSI also has a

negative interactions subscale, which is assessed by the item: "Within the past 3 months, how often have you been disappointed by (spouse, family member, physician)?" Participants respond on a 5-point Likert scale ranging from 0 = never to 4 = very often. In the present study, the time period for items on the UCLA-SSI was adjusted for the Time 2 packet to reflect received support and negative interactions over the past month. Scores for receipt and perceived availability of each of the three types (emotional, informational, and instrumental) are calculated by collapsing across the three sources. An index of negative social interactions can be calculated by summing across the three sources (Helgeson, 1993). The Need Emotional Support subscale and the Total Emotional Support Received subscales were used in the present study. The Cronbach's alpha for the Need Emotional Support subscale was .71 at Time 1 and .85 at Time 2 in the current sample. The Cronbach's alpha for the Total Emotional Support Received subscale was .93 at Time 1 and .90 at Time 2.

Threat Appraisal. A measure of threat appraisal was developed by Folkman and colleagues (1986a) and is composed of 13 items that describe various stakes involved in a stressful event (See Appendix D). These items were derived from responses to open-ended questions in a previous study conducted by Folkman and Lazarus (1980), and are consistent with their concept of primary appraisal. Participants indicate on a 5-point Likert scale (1 = does not apply to 5 = applies a great deal) the extent to which each stake is involved in the stressful event the individual is experiencing (i.e., acute cardiac event). The measure of threat appraisal is made up of two factors: (1) threats to self-esteem; and (2) threats to a loved one's well-being. Internal consistency for the self-esteem appraisal

subscale was calculated to be .78, with internal consistency for the threat to loved one's well-being subscale calculated to be .76. The threat to self-esteem factor was used in the present study. The Cronbach's alpha for the threat to self-esteem subscale was .90 at Time 1 and .84 at Time 2.

Unsupportive Social Interactions Inventory (USII). The USII is a 24-item measure of unsupportive or upsetting responses that an individual receives from other people regarding a particular stressful event (See Appendix E). For the current study, the scale referred to unsupportive social interactions that could occur with individuals recovering from an acute cardiac event. The USII assesses four types of unsupportive social interactions: (1) distancing; (2) bumbling; (3) minimizing; and (4) blaming. For each USII item, participants rate "how much of this I received" (0 = none to 4 = a lot). The USII is scored by calculating the mean rating across the items. Internal consistency was calculated to be .86 for the total scale, .78 for distancing subscale, .73 for bumbling subscale, .76 for minimizing subscale, and .85 for the blaming subscale (Ingram et al., 1999). Significant correlations were found between the USII and various symptom and stress scales, providing evidence for construct validity. The total score of the USII was used in the present investigation and the Cronbach's alpha for the scale was .91 for Time 1 and .90 for Time 2.

Demographic questionnaire. This questionnaire was designed by the researcher to gather information concerning relevant demographic characteristics. Examples of these include: age, ethnicity, gender, educational background, relationship status, number of people living in the household, and nature of cardiac event (See Appendix F).

Left ventricular ejection fraction (LVEF). Left ventricular ejection fraction is a measure of the amount of oxygenated blood that is pumped out of the left ventricle to the body, and is considered a good indicator of cardiac function (Kulik & Mahler, 1993). LVEF has been used in several studies to represent the extent of cardiac damage secondary to the acute cardiac event (Detre, Takaro, Hultgren, & Peduzzi, 1985; Kulik & Mahler, 1993; Schleifer et al., 1989). This information is usually contained in the patient's cardiac catheterization reports and an ejection fraction less than 50% typically represents impairment (Detre, Takaro, Hultgren, & Peduzzi, 1985).

Procedure

The study proposal was submitted to the Virginia Commonwealth University Committee on the Conduct of Human Research and the Institutional Review Board of the VAMC for approval before data collection proceeded. Once approval was obtained, the researcher met with the appropriate administrative and medical staff of the VAMC to explain the nature and procedures of the study, as well as the role of the staff members in the data collection process. Benefits of the study for patients, as well as the center, such as a better understanding of the psychological impact of acute cardiac events and an understanding of various factors that may affect an individual's psychological state after the cardiac event were discussed. In addition, the Chief of Cardiology from the VAMC provided recommendations for inclusion criteria based on ICD-9-CM diagnostic guidelines. The recommendations for inclusion criteria were that patients at the VAMC who were diagnosed on admission with an acute form of ischemic heart disease (code numbers 410 and 411 in ICD-9-CM) be recruited to participate. Diagnoses within this

large category include acute myocardial infarction, postmyocardial infarction syndrome, impending infarction, and unstable angina.

In an effort to minimize the responsibilities of cardiac team members, it was proposed that the administration of the discharge (Time 1) packet of questionnaires be incorporated into the discharge planning process for patients who meet the inclusion criteria. The administrative staff person who coordinated the patient's discharge would approach the patient once he or she was deemed medically stable by the medical staff. The staff person would explain that the study concerns the experiences and well-being of cardiac patients, and would outline the procedures of the study. The staff person emphasized that information provided to the researcher would be kept confidential, and that a patient's decision about whether or not to participate would have no impact on his or her receipt of services from the VAMC. Patients who chose to participate were given the Time 1 packet of questionnaires to be filled out prior to discharge. The Time 1 packet included an informed consent form which was created by the researcher to notify the participant of the responsibilities, rights, and benefits accorded to him as a participant in the study (See Appendix H). Information contained in the form included: the purpose of the present study, timetable of packet administration (discharge and one-month post-discharge), list of potential risks and benefits, and contact information of the researcher in the event the participant had questions or wished to withdraw from the investigation. In addition, informed consent for the release of medical information to the researcher was contained in this form. The consent regarding access to the patients' medical records was limited to information concerning left ventricular ejection fraction. Contact information

was also needed for the administration of the follow-up packet of questionnaires (i.e., address, phone number), and was contained in this form. The informed consent form was included in the first packet and needed to be signed before the participant could be included in the sample.

Completed discharge packets were collected by members of the medical team and placed in a "drop box" where research assistants could retrieve them at a specific interval (e.g., daily, weekly). Data collection procedures for the discharge packet was adapted to ensure the least amount of disruption to staff schedules and procedures.

The second packet was administered at one-month post-discharge, and mailed to the participant with a stamped, addressed envelope to facilitate completion and return to the researcher. Follow-up phone calls were made to all study participants one week after the second packet of questionnaires was mailed as an additional strategy to facilitate a satisfactory return rate. The return rate of completed Time 2 packets was adequate with 67% of the packets returned ($\underline{n} = 45$).

All information collected from the participants was kept confidential. Each patient was assigned a participant number that represented his or her data throughout the course of the study by the distribution of numbered packets. Patients' contact information was kept separate from the data that was collected, and access was restricted to the primary researchers on the project.

The Time 1 (discharge) packet contained the informed consent form, and measures in the following order: the POMS-short form, SSQ-6, UCLA – SSI, threat appraisal measure, USII, and the demographic questionnaire. The Time 2 packet

included the POMS – short form, SSQ-6, UCLA – SSI, threat appraisal measure, and the USII.

Data Analyses

Missing data. All data were checked for missing values, and participants who did not complete at least 80% of a particular measure were excluded from analyses that included that scale. For example, participant A completed only 50% of the items for the SSQ-6, but fully completed the remainder of the questionnaires. As a result, participant A's data would be included in all analyses except those that required the SSQ-6 data. For those analyses requiring the SSQ-6 data, participant A's data would be excluded.

For measures where at least 80% of the items were completed, the calculation of scale scores was adapted depending on whether the scales are scored by computing the mean or the sum of items. For scales that are scored by computing the mean, the mean was calculated for the completed items. For scales that are scored by computing the sum, the mean of the completed items was multiplied by the number of items in the scale.

Descriptive statistics. Means (M) and standard deviations (SD) were calculated for all continuous variables, and frequencies were calculated for all categorical variables (e.g., gender, ethnicity). In addition, Cronbach's alpha was calculated for each scale used in the investigation as a measure of internal consistency.

Preliminary analyses. Prior to conducting statistical analyses, all data was rechecked against the actual questionnaires completed by the participants after being entered as a way to control for data entry errors.

Several covariates have been associated with emotional distress in previous investigations of cardiac patients: gender (Bass et al., 1987; Brezinka & Kittel, 1995; Riegel & Gocka, 1995), age (Everson, et al., 1997; McColl & Friedland, 1994), and severity of cardiac damage (Ahern et al., 1990; Williams et al., 1992). Severity of cardiac damage is typically represented by left ventricular ejection fraction (amount of oxygenated blood pumped out of left ventricle to the body).

These potential covariates were analyzed to test for significant associations with overall mood disturbance and depression. Pearson correlations were calculated to test for a significant relationship of age and left ventricular ejection fraction to mood. A one-way ANOVA was calculated to test for a significant association between gender and mood. Separate correlations for overall mood disturbance and depression were calculated for each covariate.

Hypothesis one. The first hypothesis states that unsupportive social interactions at Time 1 (hospitalization) will have a significant positive relationship with overall mood disturbance and depression at Time 1. This hypothesis was tested by calculating bivariate correlations between the total scale score of the Unsupportive Social Interactions Inventory (USII) (Ingram et al., 1999) and the total mood disturbance score and the depression subscale score of the Profile of Mood States Inventory – short form (POMS) (Shacham, 1983).

Hypothesis two. The second hypothesis states that unsupportive social interactions at Time 1 will explain a significant amount of unique variance in mood over and above positive support at Time 1. Hierarchical regression analyses was used with the

positive social support measures entered into the first step of the regression model, and the total score of the USII entered in the second step of the model. The purpose of these analyses was to determine whether unsupportive interactions will account for a significant portion of the variance in well-being after positive social support has been partialed out. As noted earlier in this section, separate analyses were conducted using total mood disturbance and depression as the criterion variable.

Hypothesis three. The third hypothesis states that unsupportive social interactions at Time 1 would exacerbate the influence of threat appraisals on patients' overall mood disturbance and levels of depression. Again, hierarchical regression analyses was conducted to examine the interaction between threat appraisals and unsupportive social interactions. The threat to self-esteem subscale score from the threat appraisal measure (Folkman et al., 1986a) was entered in the first step of the regression equation, with the mean total score of the USII (Ingram et al., 1999) entered in the second step. The interaction between threat appraisal and unsupportive social interactions was entered in the third step of the regression model. A significant interaction term in the regression equation would support the hypothesis. The scores for each measure were "centered" (Pedhazur, 1997). This was done by subtracting the sample mean for the relevant scales (i.e., threat appraisal, USII) from each individual's scores for those scales, which yielded deviation scores. The rationale for centering the scores for each measure is to minimize collinearity, or the correlation between independent variables. The presence of collinearity can lead to imprecise estimates of regression coefficients, which can lead to

incorrect interpretations of the data (Pedhazur, 1997). Again, separate regression analyses were conducted for total mood disturbance and depression.

Hypothesis four. The fourth hypothesis states that higher levels of unsupportive social interactions at Time 1 would predict higher levels of depression and total mood disturbance at Time 2. To test this hypothesis, hierarchical regression was used with Time 1 depression entered in the first step of the equation to control for baseline mood disturbance. The total score of the USII for Time 1 was entered in the second step of the equation. Time 2 depression was the criterion variable for this regression model, and separate analyses were conducted for total mood disturbance and depression.

CHAPTER 4

RESULTS

Multiple regression and correlational statistical methods were used to test this study's hypotheses, which were outlined in the previous chapter. Measures of internal consistency for the inventories were also calculated to ensure adequate reliability for this sample of cardiac patients. The following sections of this chapter present a more detailed description of the results yielded in the present investigation.

Data Analyses

Missing data. As described in the previous section, all data were checked for missing values. Participants who completed at least 80% of the items for each measure were included in analyses that used those measures. As stated previously, for measures where at least 80% of the items were completed, the calculation of scale scores was adapted depending on whether the scales are scored by computing the mean or the sum of items. For scales that are scored by computing the mean, the mean was calculated for the completed items. For scales that are scored by computing the sum, the mean of the completed items was multiplied by the number of items in the scale. Participants who completed less than 80% of the items for a particular scale were excluded from any subsequent analyses that included that scale.

For the Profile of Mood States Inventory (McNair et al., 1992) depression subscale, all 67 participants (100%) completed enough of the items at Time 1 to be

included in the analyses. However, data from 3 participants (7%) were excluded from the longitudinal analyses (Time 2) due to missing values. For the total mood disturbance subscale, 1 participant's data (2% of sample) was excluded from the analyses because the requisite number of items was not completed. Similar to the depression subscale, 3 participants (7%) were excluded from the longitudinal analyses due to missing items.

For the USII, 6 participants (9%) did not complete enough items to be included in the relevant Time 1 hypotheses, with 1 participant (2%) having his data excluded from the Time 2 analyses due to missing values.

For the SSQ – 6 number subscale, data from 4 participants (6%) were excluded from the relevant Time 1 analyses, and no participants' data were excluded from the Time 2 analyses. The amount of missing data for the satisfaction subscale of the SSQ – 6 was similar with data from 4 participants (6%) being excluded from the Time 1 analyses, and 1 participant (2%) being excluded from the Time 2 analyses due to missing data.

For the Need Emotional Support subscale of the UCLA – SSI, data from 4 participants (6%) were excluded from the Time 1 analyses, and 3 participants (7%) had their data excluded from the Time 2 analyses. For the Total Emotional Support Received subscale of the UCLA – SSI, data from 5 participants (8%) were excluded from the relevant Time 1 analyses, and data from 4 participants (9%) were excluded from the Time 2 analyses because of missing items.

The threat appraisal scale had 4 participants (6%) who did not complete the requisite number of items to be included in the Time 1 analyses, and 2 participants (4%) whose data were not included in the Time 2 hypotheses.

Table 1

Means and Standard Deviations of Inventories for Time 1 and 2

	Time 1			Time 2			
Measure	M	SD	n	M	SD	n	t
Threat Appraisal	2.22	1.20	63	1.92	1.04	44	1.29
USII	1.96	.70	61	1.88	.71	45	-.91
SSQ – 6 (NUM)	4.47	6.65	63	2.81	2.26	46	1.65
SSQ – 6 (SAT)	5.44	1.01	63	5.46	.89	45	.96
POMS (DEP)	4.55	3.89	67	4.09	4.57	43	.68
POMS (TMD)	21.43	17.39	66	22.50	20.66	43	-1.08
UCLA – SSI	15.31	3.51	63	14.98	3.90	43	.34

Note. USII = Unsupportive Social Interactions Inventory; SSQ – 6 (NUM) = Social Support Questionnaire – 6 Number subscale; SSQ – 6 (SAT) = Social Support Questionnaire – 6 Satisfaction subscale; POMS (DEP) = Profile of Mood State Inventory – Short Form (Depression subscale); POMS (TMD) = Profile of Mood State Inventory – Short Form (Total Mood Disturbance subscale); UCLA-SSI = UCLA Social Support Inventory (Need Emotional Support subscale). Potential range of scores for each inventory are as follows: Threat appraisal (1 – 5); USII (1 – 5); SSQ-6 (SAT) (1 – 6); POMS (DEP) (0 – 20); POMS (TMD) (-20 – 120); UCLA-SSI (5 – 25).

Descriptive statistics. Means and standard deviations at both timepoints for each of the measures are presented in Table 1. There are two situations that make it difficult to compare means from this study to those of other studies. First, the inventories used in the present investigation have rarely, if ever, been administered to cardiac patients. Second, studies of other populations (e.g., cancer patients, individuals with HIV) have utilized particular subscale scores or have combined scores with other measures, which complicate any attempts to descriptively compare means across studies. Despite these difficulties, several of the measures used in the present investigation can be descriptively compared to studies from other populations.

Left ventricular ejection fraction scores ranged from 19% to 81% (M = 47.66, SD = 13.53), with 57% of the sample having ejection fraction scores that indicated impairment. As noted earlier, LVEF scores below 50% typically represents impairment (Detre et al., 1985).

No published studies could be identified in which the threat appraisal measure (Folkman et al., 1986) was used with cardiac patients. In the present investigation, mean threat appraisal scores for both timepoints were relatively low (M = 2.22, SD = 1.20 at Time 1; M = 1.92, SD = 1.04 at Time 2) compared to threat appraisal scores in a previous study using this measure with a population other than cardiac patients (Folkman et al., 1986b), where the mean was 10.12 (SD = 3.29) (Folkman et al., 1986b). Folkman and colleagues utilized this measure in a sample of 85 married couples who were primarily Caucasian with at least an eighth grade education. Approximately 70% of the current

sample of cardiac patients had a previous acute cardiac event, which may explain the relatively low threat scores.

The USII is a recently developed measure, and therefore, has not been administered to cardiac patients previously. However, this inventory has been used in populations of women who have experienced fertility problems (Mindes, 1998). Mean scores on the USII were higher in the current sample of cardiac patients (M = 1.96, SD = .70 at Time 1) than in Mindes' sample of women with fertility problems (M = 1.22, SD = .86). Additionally, only 3% (n = 2) of the current sample at Time 1 reported not experiencing any unsupportive social interactions with members of their social network. Fifty-seven percent of the sample of the present study, however, had a mean USII score of below 2 (range = 1 to 5) at Time 1. At Time 2, approximately 9% (n = 4) of the current sample reported not experiencing unsupportive social interactions with others.

The Social Support Questionnaire – 6 (Sarason et al., 1987) has been used in previous studies, although not with cardiac patients (Allen & Stoltenberg, 1995; Kronenberger & Thompson, 1992). In a study examining psychological separation of older adolescents from their parents (Allen & Stoltenberg, 1995), mean satisfaction with support scores were lower (M = 4.91, SD = 1.06) than scores for the cardiac patients in the present study (M = 5.44, SD = 1.01 at Time 1, and M = 5.46, SD = .89 at Time 2). In addition, mean satisfaction scores in this study were similar to scores obtained in a sample of mothers of children with spina bifida (Kronenberger & Thompson, 1992). With regard to the number of people available to support patients in the current study, only 3% of patients (n = 2) at Time 1 reported not having anyone in their life who is

available to be supportive. At Time 2, the results were similar with 3% (n = 2) of the sample reporting that they did not have anyone available to be supportive in their lives.

There has been a great deal of normative data generated on the Profile of Mood States Inventory (POMS) (McNair et al., 1971), albeit in populations other than cardiac patients. Depression scores for the cardiac patients in the present study are lower than those for a sample of college students, an adult normative sample, and samples of individuals receiving outpatient psychological treatment where means have ranged from 8.97 (SD = 11.12) to 13.1 (SD = 10.5) (McNair et al., 1992). In addition, total mood disturbance scores in the current investigation were lower than scores obtained in a college student sample, outpatient samples of men and women, and an adult smoker sample. Means for these normed samples ranged from 30.4 (SD = 34.8) to 81.5 (SD = 44) (McNair et al., 1992).

No normative data could be obtained for the UCLA Social Support Inventory subscales used in the present study (Dunkel-Schetter et al., 1986). This is not surprising given that the inventory's design lends itself to be altered to accommodate the research domain, testing environment, or characteristics of the participants. For example, the three sources of support assessed in the current study (i.e., spouse, friend, and physician) may be different in other populations (e.g., college students).

Preliminary Analyses

The hypothesized covariates of left ventricular ejection fraction (LVEF), age, and race were investigated to determine the extent of their relationship to the dependent

variables of depression and total mood disturbance. Bivariate correlations were calculated to examine the relationship of LVEF and age to depression and total mood disturbance. A one-way ANOVA was calculated to assess the relationship of race to depression and total mood disturbance. A negative trend between age and depression that approached significance was found, with younger participants reporting more depression with the occurrence of their acute cardiac event than older patients ($r = -.24$, $p = .056$). Despite this trend, no significant relationships were found between any of the hypothesized covariates and depression or total mood disturbance. As a result, no covariates were included in any of the subsequent regression analyses.

An additional procedure that was conducted was to check for outliers in all the regression models that were calculated. Cook's distance was used in order to identify any influential observations on either the independent or dependent variables (Pedhazur, 1997). No outliers were found for any of the regression models used in testing the study's hypotheses.

Correlations. Correlations among the key variables are presented in Table 2. As predicted, cardiac patients who reported more unsupportive social interactions at Time 1 also reported higher levels of depression and total mood disturbance. In addition, levels of unsupportive social interactions were also significantly related to threat appraisal. In other words, cardiac patients who reported higher levels of unsupportive social interactions endorsed appraisal items reflecting increased levels of threat associated with their acute cardiac event.

Table 2

Correlations Among the Key Variables at Timepoints 1 and 2

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. POMS (DEP) 1	---																	
2. POMS (DEP) 2	.61**	---																
3. POMS (TMD) 1	.80**	.56**	---															
4. POMS (TMD) 2	.52**	.88**	.51**	---														
5. USII 1	.40**	.25	.39**	.19	---													
6. USII 2	.42**	.65**	.44**	.67*	.47**	---												
7. SSQ – 6 (NUM) 1	-.02	-.08	-.07	-.13	-.11	-.22	---											
8. SSQ – 6 (NUM) 2	-.14	-.08	-.13	-.17	-.16	-.14	.52**	---										
9. SSQ – 6 (SAT) 1	-.48**	-.61**	-.43*	-.64**	-.03	-.41**	.18	.26	---									
10. SSQ – 6 (SAT) 2	-.43**	-.60**	-.37**	-.59*	-.09	-.63**	.13	.20	.72**	---								
11. UCLA – SSI 1	.04	-.09	.05	-.20	.23	-.09	.09	.10	.25	.41*	---							
12. UCLA – SSI 2	.16	-.06	.18	-.08	.10	-.07	-.14	.00	.06	.33*	.37*	---						
13. Threat Appraisal 1	.37**	.15	.35**	.05	.46*	.27	.00	-.07	-.13	-.11	.26*	.30	---					

(table continues)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
14. Threat Appraisal 2	.43**	.64**	.51*	.58**	.38	.60**	-.21	-.13	-.47**	-.43**	.06	.14	.58**	---				
15. Race	-.09	-.05	-.24	-.08	.32*	.09	-.12	-.14	.19	.12	.16	.16	.03	-.22	---			
16. First Cardiac Event	.06	.23	.06	.29	.04	.04	.02	-.02	-.18	-.06	-.01	.22	-.21	.00	.03	---		
17. Age	-.24	-.12	-.15	-.32*	-.31*	-.24	.24	.30*	.19	.06	.07	.22	-.11	-.17	-.24	-.03	---	
18. LVEF	.07	-.01	.05	.00	.04	.00	-.14	.01	-.10	.08	-.12	.01	-.15	-.09	.12	.00	-.01	---

Note. POMS (DEP) 1 = Profile of Mood States Inventory (Depression subscale) – Time 1; POMS (DEP) 2 = Profile of Mood States Inventory (Depression subscale) – Time 2; POMS (TMD) 1 = Profile of Mood States Inventory (Total Mood Disturbance subscale) – Time 1; POMS (TMD) 2 = Profile of Mood States Inventory (Total Mood Disturbance subscale) – Time 2; USII 1 = Unsupportive Social Interactions Inventory – Time 1; USII 2 = Unsupportive Social Interactions Inventory – Time 2; SSQ – 6 (NUM) 1 = Social Support Questionnaire – 6 (Number subscale) – Time 1; SSQ – 6 (NUM) 2 = Social Support Questionnaire – 6 (Number subscale) – Time 2; UCLA – SSI 1 = UCLA Social Support Inventory (Need Emotional Support subscale) – Time 1; UCLA – SSI 2 = UCLA Social Support Inventory (Need Emotional Support subscale) – Time 2; LVEF = Left Ventricular Ejection Fraction; Race = variable coded as White = 1 and non-White = 2; First Cardiac Event = variable coded as yes = 1 and no = 2.

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

Satisfaction with social support in this sample of cardiac patients was inversely related to depression, total mood disturbance, and unsupportive social interactions, which is consistent with previous research (Cohen & Wills, 1985; Helgeson, 1993; Ingram et al., 1999; Yates, 1995). Satisfaction with support was significantly related to threat appraisal, but only perceptions of threat 1 month following hospitalization.

In comparing patients who were experiencing their first cardiac event with those patients who had prior events, there was no significant relationship between whether or not this was the patient's first cardiac event and any of the variables in the present study, including threat and reported frequency of unsupportive social interactions.

Hypothesis One. The first hypothesis stated that unsupportive social interactions at Time 1 would be significantly positively related to both depression and total mood disturbance. Bivariate correlations were calculated using the total mean score of the USII and the depression and total mood disturbance subscales of the POMS. Unsupportive social interactions were found to be significantly related to depression ($r = .40$; $p < .01$) in this sample of acute cardiac patients. In addition, unsupportive social interactions were also found to be significantly related to total mood disturbance ($r = .39$; $p < .01$). Thus, patients who reported increased levels of unsupportive social interactions also reported higher levels of depression and total mood disturbance.

Hypothesis Two. Hierarchical multiple regression was used in order to assess the extent to which unsupportive social interactions at Time 1 accounted for a significant portion of the variance in both depression and mood disturbance above and beyond the variance accounted for by the positive social support measures. In the regression model,

three measures of positive support were entered into the first step of the equation: (a) the UCLA Social Support Inventory -- Total Emotional Support Received subscale, (b) the Social Support Questionnaire – 6 -- Mean Number subscale, and (c) the Social Support Questionnaire – 6 -- Mean Satisfaction subscale. The total mean score of the USII at Time 1 was entered into the second step of the regression equation.

The results of the regression model for depression are depicted in Table 3. As hypothesized, the overall regression model for depression was significant ($F = 7.00$, $R^2 = .38$, $p < .01$). In addition, unsupportive social interactions at Time 1 accounted for a significant portion of unique variance in depression. More specifically, unsupportive social interactions accounted for approximately 11% of the variance in depression above and beyond the 27% of the variance already accounted for by positive social support ($R^2\Delta = .11$, $p < .01$).

The regression model for total mood disturbance was also significant ($F = 6.65$, $R^2 = .38$, $p < .01$). The results for total mood disturbance (see Table 4) were similar with unsupportive social interactions at Time 1 also accounting for approximately 11% of the variance in total mood disturbance above and beyond that accounted for by positive social support ($R^2\Delta = .11$, $p < .01$). These results indicate that both positive forms of social support as well as unsupportive social interactions account for a significant portion of the variance in these mood indices for this cross-sectional sample of cardiac patients. These results also underscore the importance of assessing both positive support and

Table 3

Hierarchical Multiple Regression Model for the Prediction of Depression at Time 1 from Positive Social Support and Unsupportive Social Interactions at Time 1

Step and Variable	df	B	SE B	β	R^2	$R^2\Delta$	ΔF
Step 1							
UCLA – SSI	3, 46	-.04	.05	-.12[a]	.27	.27	5.66**
SSQ – 6 (NUM)		.06	.07	.10[a]			
SSQ – 6 (SAT)		-2.12	.67	-.46[a]**			
Step 2							
USII	4, 45	1.99	.69	.34[b]**	.38	.11	8.31*

Note. Overall $F(4, 45) = 7.00^{**}$. UCLA – SSI = UCLA Social Support Inventory; SSQ – 6 (NUM) = Social Support Questionnaire – 6 (Number subscale); SSQ – 6 (SAT) = Social Support Questionnaire – 6 (Satisfaction subscale); USII = Unsupportive Social Interactions Inventory.

[a] Beta weight taken from Step 1 of regression model. [b] Beta weight taken from Step 2 of the regression model.

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

Table 4

Hierarchical Multiple Regression Model for the Prediction of Total Mood Disturbance at Time 1 from Positive Social Support and Unsupportive Social Interactions at Time 1

Step and Variable	df	B	SE B	β	R^2	$R^2\Delta$	ΔF
Step 1							
UCLA – SSI	3, 45	-.18	.22	-.12[a]	.26	.26	5.38**
SSQ – 6 (NUM)		.11	.33	.04[a]			
SSQ – 6 (SAT)		-9.15	2.97	-.45[a]**			
Step 2							
USII	4, 44	8.71	3.09	.34[b]**	.38	.11	7.95**

Note. Overall $F(4, 44) = 6.65^{**}$. UCLA – SSI = UCLA Social Support Inventory; SSQ – 6 (NUM) = Social Support Questionnaire – 6 (Number subscale); SSQ – 6 (SAT) = Social Support Questionnaire – 6 (Satisfaction subscale); USII = Unsupportive Social Interactions Inventory.

[a] Beta weight taken from Step 1 of the regression model. [b] Beta weight taken from Step 2 of the regression model.

** $p < .01$.

unsupportive interactions when examining emotional adjustment following an acute cardiac event.

Hypothesis Three. The third hypothesis stated that unsupportive social interactions at Time 1 would exacerbate the influence of patients' threat appraisals on their overall levels of depression and total mood disturbance. To test this hypothesis, hierarchical multiple regression was used with the threat to self subscale of the threat appraisal measure (Folkman et al., 1986) and the mean total score of the USII (Ingram et al., 1999). As noted previously, the scores from the two measures were "centered" or transformed into deviation scores by subtracting the sample mean from each participant's score. In addition, separate regression models were conducted for depression and total mood disturbance (see Tables 5 and 6). The centered threat appraisal score at Time 1 was entered into the first step of each regression model, with the centered total mean score of the USII at Time 1 entered into the second step. An interaction term between these two centered variables was created and entered into the third step of the model to assess for a potential moderating relationship.

The overall regression model for depression was significant ($F = 5.04$, $R^2 = .22$, $p < .01$) (see Table 5). Both threat appraisal ($R^2\Delta = .13$, $p < .01$) and unsupportive social interactions ($R^2\Delta = .07$, $p < .05$) explained a significant portion of the variance in depression. Results indicated that the interaction term for threat appraisal and unsupportive social interactions was not significant, suggesting that, in this cross-sectional sample, unsupportive social interactions around the time of the acute cardiac event do not moderate the influence of threat appraisal on depression.

Table 5

Hierarchical Multiple Regression Model for the Prediction of Depression at Time 1 from Threat Appraisal and Unsupportive Social Interactions at Time 1

Step and Variable	df	B	SE B	β	R^2	$R^2\Delta$	ΔF
Step 1							
Threat Appraisal	1, 57	1.18	.40	.37[a]**	.13	.13	8.86**
Step 2							
USII	2, 56	1.69	.75	.30[b]*	.21	.07	5.13*
Step 3							
Threat Appraisal X							
USII	3, 55	.51	.66	.10[c]	.22	.01	.61

Note. Overall $F(3, 55) = 5.04^{**}$. USII = Unsupportive Social Interactions Inventory.

[a] Beta weight taken from Step 1 of the regression model. [b] Beta weight taken from Step 2 of the regression model. [c] Beta weight taken from Step 3 of the regression model.

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

Table 6

Hierarchical Regression Model for the Prediction of Total Mood Disturbance at Time 1 from Threat Appraisal and Unsupportive Social Interactions at Time 1

Step and Variable	df	B	SE B	β	R^2	$R^2\Delta$	ΔF
Step 1							
Threat Appraisal	1, 56	5.40	1.80	.37[a]**	.14	.14	8.99**
Step 2							
USII	2, 55	6.87	3.40	.28[b]*	.20	.06	4.09*
Step 3							
Threat Appraisal X USII	3, 54	3.24	2.97	.14[c]	.22	.02	1.19

Note. Overall $F(3, 54) = 4.94^{**}$. USII = Unsupportive Social Interactions Inventory.

[a] Beta weight taken from Step 1 of regression model. [b] Beta weight taken from Step 2 of regression model. [c] Beta weight taken from Step 3 of regression model.

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

The regression model for total mood disturbance was also significant ($F = 4.94$, $R^2 = .22$, $p < .01$). The results of the regression model for total mood disturbance are similar to those for depression (see Table 6). More specifically, both threat appraisal ($R^2\Delta = .14$, $p < .01$) and unsupportive social interactions ($R^2\Delta = .06$, $p < .05$) accounted for a significant portion of unique variance in total mood disturbance. As with the regression model for depression, the interaction term of threat appraisal and unsupportive social interactions was not found to be a significant predictor of total mood disturbance in this sample of cardiac patients.

These results suggest that threat appraisal and unsupportive social interactions at Time 1 have significant main effects on depression and total mood disturbance in this sample of cardiac patients. However, there was no evidence of a moderating relationship for these independent variables on depression and total mood disturbance.

Hypothesis Four. The fourth hypothesis stated that higher levels of unsupportive social interactions at Time 1 would predict higher levels of distress at Time 2. In this regression model predicting depression at Time 2, depression at Time 1 was entered in the first step of the equation to control for baseline depressive symptoms. The total mean score of the USII for Time 1 was entered in the second step of the equation. The regression model predicting total mood disturbance at Time 2 was identical, except that total mood disturbance at Time 1 was entered as the distress measure in the first step of the equation. Separate hierarchical regression models were calculated using depression at time 2 and total mood disturbance at Time 2 as the criterion variable.

The overall regression model predicting depression at Time 2 was significant (see Table 7) ($F = 10.82$, $R^2 = .36$, $p < .01$). Depression at Time 1 accounted for approximately 36% of the variance ($R^2\Delta = .36$, $p < .01$), which suggests that the extent of patients' depression at Time 1 is a significant predictor of their levels of depression one month later. The mean total score of the USII at Time 1, however, was not a significant predictor after depression at Time 1 was controlled for in the regression model ($R^2\Delta = .00$, $p > .05$). This suggests that unsupportive social interactions that occur when the acute cardiac event occurs, are not significant predictors of depression after the first month of recovery. It is important to note, however, that although the regression model was not significant, a significant bivariate correlation was found between

The results of the regression model predicting total mood disturbance at Time 2 were similar with the overall model being significant (see Table 8) ($F = 5.95$, $R^2 = .24$, $p < .01$). Total mood disturbance at Time 1 was a significant predictor of mood disturbance at Time 2 ($R^2\Delta = .24$, $p < .01$). Comparable to the regression model for depression, the total mean score of the USII at Time 1 was also not a significant predictor of total mood disturbance at Time 2 ($R^2\Delta = .00$, $p > .05$). These results indicate that unsupportive social interactions that occurred around the time of the acute cardiac event were not significant predictors of total mood disturbance one month later.

Post-hoc Analyses

As discussed in a previous section, the cognitive appraisal model (Lazarus & Folkman, 1984) posits that personality and situational characteristics (e.g., social

Table 7

Hierarchical Regression Model for the Prediction of Depression at Time 2 from Unsupportive Social Interactions at Time 1

Step and Variable	df	B	SE B	β	R^2	$R^2\Delta$	ΔF
Step 1							
POMS (DEP) 1	1, 39	.69	.15	.60[a**]	.36	.36	22.18**
Step 2							
USII 1	2, 38	.15	1.11	.02[b]	.36	.00	.02

Note. Overall F (2, 38) = 10.82**. POMS (DEP) 1 = Profile of Mood States Inventory (Depression subscale) – Time 1; USII 1 = Unsupportive Social Interactions Inventory – Time 1.

[a] Beta weight taken from Step 1 of regression model. [b] Beta weight taken from Step 2 of regression model.

** $p < .01$.

Table 8

Hierarchical Regression Model for the Prediction of Total Mood Disturbance at Time 2 from Unsupportive Social Interactions at Time 1

Step and Variable	df	B	SE B	β	R^2	$R^2\Delta$	ΔF
Step 1							
POMS (TMD) 1	1, 38	.60	.17	.49[a]**	.24	.24	12.09**
Step 2							
USII 1	2, 37	1.59	5.27	.05[b]	.24	.00	.09

Note. Overall $F(2, 37) = 5.95^{**}$. POMS (TMD) 1 = Profile of Mood States Inventory (Total Mood Disturbance subscale) – Time 1; USII 1 = Unsupportive Social Interactions Inventory – Time 1.

[a] Beta weight taken from Step 1 of regression model. [b] Beta weight taken from Step 2 of regression model.

** $p < .01$.

interactions) moderate the relationship between individuals' appraisals of a stressful event and subsequent emotional reactions. Based on this premise, it was hypothesized in the present investigation that unsupportive social interactions would moderate the relationship between threat appraisal and emotional distress (i.e., depression, total mood disturbance).

However, a non-significant interaction of unsupportive social interactions and threat appraisal was found, suggesting that unsupportive social interactions were not a moderator of threat appraisal on depression with this sample of cardiac patients. In addition, Baron and Kenny (1986) stated that "it is desirable that the moderator variable be uncorrelated with both the predictor [threat appraisal] and the criterion [depression] (p. 1174)." In this sample, however, unsupportive social interactions at both timepoints were significantly related to threat appraisal, depression, and total mood disturbance (see Table 2). The significant relationships among these variables in the present study follow more closely Baron and Kenny's recommendation for the appropriateness of mediation, where they state that "mediation ... is best done in the case of a strong relation between the predictor and the criterion variable (p. 1178)." Because of the lack of a moderating relationship, the significant relationship between threat appraisal (predictor) and emotional distress (criterion variable), and the significant relationship between unsupportive social interactions and both the predictor and criterion variables, a post-hoc mediator analysis was conducted.

Baron and Kenny (1986) outlined four conditions, which must be met to establish mediation. These conditions can be tested through multiple regression analysis and, as

applied to the current investigation, are: (a) threat appraisal (the independent variable) must be significantly associated with emotional distress (i.e., depression, total mood disturbance) (the dependent variable), (b) threat appraisal must be significantly associated with unsupportive social interactions (the mediator), (c) unsupportive social interactions must be significantly associated with emotional distress, and (d) after controlling for the effects of unsupportive social interactions, the magnitude of the relationship between threat appraisal and emotional distress must be substantially reduced. Separate regression analyses were conducted for depression and total mood disturbance.

Threat appraisal at Time 1 was a significant predictor of depression at Time 1 (β = .37, $p < .01$). Threat appraisal was also a significant predictor of unsupportive social interactions at Time 1 ($\beta = .46$, $p < .01$), which in turn was a significant predictor of depression at Time 1 ($\beta = .40$, $p < .01$). After controlling for unsupportive social interactions at Time 1, the magnitude of the relationship between threat appraisal and depression at Time 1 was substantially reduced and was not significant ($\Delta R^2 = .04$, β = .23, $p > .05$). Thus, these findings suggest that the relationship between threat appraisal and depression is partially mediated by unsupportive social interactions.

The results of the mediator regressions for total mood disturbance were similar to the models for depression. Threat appraisal at Time 1 was initially a significant predictor of total mood disturbance at Time 1 ($\beta = .35$, $p < .01$), and was already found to be a significant predictor of unsupportive social interactions in the previous regression

equations (β = .46, p < .01). Unsupportive social interactions were also a significant predictor of total mood disturbance at Time 1 (β = .39, p < .01). Similar to the models for depression, after controlling for unsupportive social interactions at Time 1, the magnitude of the relationship between threat appraisal and total mood disturbance was reduced substantially and was not significant (ΔR^2 = .05, β = .24, p > .05). Therefore, these results suggest that unsupportive social interactions also appear to partially mediate the relationship between threat appraisal and total mood disturbance.

Chapter 5

DISCUSSION

The purpose of the present study was to examine the extent to which unsupportive social interactions were moderators of depression and total mood disturbance in patients who had experienced an acute cardiac event. The main findings of the present investigation will be discussed in terms of related empirical and conceptual work. In addition, limitations for this study will be outlined as well as directions for future research. Lastly, implications for intervention will be discussed given the results of the current investigation.

Unsupportive Social Interactions and Mood

Cross-sectional relationship between unsupportive social interactions and mood.

Research examining unsupportive social interactions in medical populations has found that these encounters with individuals in a person's social network are negatively related to well-being (Fiore et al., 1983; Kiecolt-Glaser et al., 1988; Manne & Zautra, 1989; Norris et al., 1990; Rook, 1992). Within the cardiac literature, little empirical work has been conducted on unsupportive social interactions. Results from previous research indicate that cardiac patients' negative interactions with family and friends adversely affected their emotional adjustment (Holahan et al., 1997).

The results of the present investigation provide further evidence of a significant relationship between unsupportive social interactions and mood. More specifically, in

this sample of acute cardiac patients, perceptions of unsupportive social interactions occurring around the time of their acute cardiac event were significantly related to levels of depression and total mood disturbance at the time of hospitalization. Cardiac patients who reported experiencing higher levels of unsupportive social interactions also reported higher levels of depression and total mood disturbance. The significant negative relationship demonstrated between unsupportive social interactions and mood in this sample suggests that these behaviors may inhibit an individual's emotional adjustment. Overall, these results reinforce the conclusion that unsupportive social interactions are an important variable to consider when examining emotional adjustment following acute cardiac events.

Longitudinal examination of unsupportive social interactions and mood. In order to develop a better understanding of cardiac patients' emotional adjustment, it is important to examine their recovery over time. In the current sample, results indicate that unsupportive social interactions occurring at the time of hospitalization did not predict depression or total mood disturbance 1 month later. This result runs contrary to a previous study by Holahan and colleagues (1997) who found that, in a sample of cardiac patients, the social context of the patient at hospitalization was significantly related to depressive symptoms 4 years later. It is important to note that in the model that Holahan et al. (1997) tested, the exogenous variable representing the patient's social context at hospitalization was composed of positive support and stressful experiences from family and extrafamily members. Therefore, it is difficult to determine the extent to which

stressful experiences from family and friends influenced patients' levels of depression over time.

There are several potential contributors to the difference in results found between the Holahan et al. (1997) study and the current investigation. First, the sample of cardiac patients in the present study is smaller than the sample in the Holahan et al. (1997) study, and depressive symptoms were assessed at different timepoints.

A second explanation is that Holahan and colleagues (1997) examined general negative interactions that patients experienced rather than stressor-specific unsupportive social interactions. Whereas the items in the Holahan et al. (1997) study assessed general negative social interactions with network members (e.g., "Are any of your friends critical or disapproving of you?"), the purpose of the current study was to examine unsupportive social interactions that pertained to the acute cardiac event. For example, items from the USII (Ingram et al., 1999) adapted specifically for cardiac patients in the current study included (a) "Someone felt I should stop worrying about having a heart problem and just forget about it," (b) Someone tried to cheer me up when I was not ready to cheer up about having a heart problem," and (c) "Someone felt I was over-reacting to my having a heart problem." In this way, the specificity with which unsupportive social interactions were measured may have contributed to the difference between the results found in the present study and those reported by Holahan and colleagues (1997).

Third, for the current sample of cardiac patients, the negative emotions generated from unsupportive social interactions may have lasted for only a short period of time and left no lasting emotional impact on individual patients. An alternative explanation is that

the effects of unsupportive social interactions on mood state could not be seen after only one-month post-hospitalization. Continued longitudinal examination is necessary, nonetheless, to gain a better understanding of unsupportive social interactions and their relationship to mood over the course of recovery.

Positive and negative social interactions and mood. Recent investigations have examined both supportive and unsupportive interactions in relation to well-being and mood following particular stressors including infection with HIV (Ingram et al., 1999), and the development of cardiac illness (Holahan et al., 1997; Okun et al., 1990). Following this line of research, the present investigation examined whether unsupportive social interactions were a unique predictor of depression and total mood disturbance apart from social support. Accounting for a significant portion of unique variance in both depression and total mood disturbance would provide further evidence for unsupportive social interactions as a distinct construct from social support, and encourage their continued examination.

The results from the current study indicate that unsupportive social interactions accounted for a significant portion of unique variance in both depression and total mood disturbance at the time of hospitalization in this sample of cardiac patients. This unique variance was beyond that accounted for by positive social support reported during the patients' hospitalization. These findings parallel those reported in other studies examining both supportive and unsupportive interactions following a stressful event (Holahan et al., 1997; Ingram et al, 1999; Ingram et al, in press; Okun et al., 1990). Thus, the results from the current investigation suggest that unsupportive social

interactions are a separate construct from social support, and appear to make a unique contribution to mood state in cardiac patients following an acute event. In addition, the results from the present study in tandem with results from previous investigations suggest that unsupportive social interactions exist in many different populations and are important predictors of well-being following a stressful event.

Unsupportive social interactions and cognitive appraisal. In a review article examining social support and social strain, Rook (1992) put forth a series of questions pertaining to future research directions in the area of unsupportive social interactions. One question she posited was "What theoretical models best characterize the additive and interactive effects of positive and negative encounters?" (p. 130). In fact, several researchers have discussed the cognitive appraisal model (Lazarus & Folkman, 1984) as an explanatory framework for their work on social interactions (both positive and negative) and psychological consequences of stressful events (e.g., Cohen & Wills, 1985; Fontana et al., 1989; Kulik & Mahler, 1993; Lepore, Evans, & Schneider, 1991; Wingate, 1995). However, despite the cognitive appraisal model's intuitive value, very little research has been conducted which has tested this model's utility, and no studies have been conducted examining unsupportive social interactions as a moderator of appraisal. Thus, the current investigation was an attempt to directly test the associations among the constructs of threat appraisal, unsupportive social interactions, and mood state following an acute cardiac event.

The model put forth by Folkman and Lazarus (1991) suggests that environmental variables (e.g., social interactions) influence or moderate the relationship between

appraisal and emotion. In this way, we would expect unsupportive social interactions to have a significant interaction with threat appraisal on emotional distress. In the present study, results indicate that although threat appraisal and unsupportive social interactions were significant predictors of depression and total mood disturbance following an acute cardiac event at hospitalization and 1 month later, the interaction term between these two variables was not a significant predictor. This suggests that for this sample of cardiac patients, there was no moderating relationship between unsupportive social interactions and threat appraisal on mood state (e.g., depression, total mood disturbance) with the occurrence of an acute cardiac event. In other words, the frequency of unsupportive interactions during hospitalization did not significantly change the quality of the relationship between threat appraisal and mood state during hospitalization. In fact, the post-hoc analyses that were conducted suggest that unsupportive social interactions partially mediate the relationship between threat appraisal and emotional distress. The data suggest that the presence of a relationship between mood state and threat appraisal may be at least partially accounted for by the frequency of unsupportive social interactions the patient experiences.

There may be several ways in which unsupportive social interactions may partially account for the relationship between mood state and threat appraisal. First, patients may become more self-reflective following the occurrence of the acute cardiac event given its life-threatening nature. They may begin to reassess aspects of their lives that were and may continue to be threatened as a result of the cardiac event including their values, beliefs, and relationships with others. Consequently, the patients may become more

sensitive to the interactions they have with members of their social network, and may react negatively to perceived slights or bungled attempts at support. These perceptions of unsupportive social interactions with members of the social network may then lead to increased mood disturbance.

A second way that unsupportive social interactions could partially account for the relationship between threat appraisal and mood state is by patients unknowingly eliciting unsupportive social interactions from members of their social networks. Cardiac patients who are experiencing higher levels of threat may begin to express these feelings of threat behaviorally through ways such as anger or withdrawal. These expressions, such as angry outbursts or avoidant behaviors, may trigger negative reactions from network members with whom the patient is interacting, which may lead to increases in unsupportive social interactions. As stated above, the presence of these unsupportive social interactions can then lead to increased emotional distress. For example, patient B feels extremely threatened by the occurrence of his acute cardiac event. He feels very vulnerable and does want his family and friends to see him in this state. As a result, he forcefully tells his family and friends that he does not want them to visit him in the hospital anymore. This then leads his family to confront him angrily when they feel cut off from helping him recover.

The main effect of unsupportive social interactions reported in the present study has been demonstrated in previous investigations. For example, Okun and colleagues (1990) found, in a sample of older adults, that negative social ties did not interact with negative daily events in predicting psychological distress, but, rather, had an additive

effect on distress. Norris and colleagues (1990) found a significant main effect of social problems on personal adjustment in a sample of stroke patients. Similarly, Ingram and colleagues (1999) found a significant main effect for unsupportive social interactions on identified symptoms including depression, overall psychological distress, and physical symptoms in two samples of college students. Therefore, these results from previous studies suggest that unsupportive social interactions are a separate construct from social support, and that they exert a unique effect on levels of depression and mood. Furthermore, results from the current study suggest that unsupportive social interactions influence depression and overall mood regardless of the amount of threat that the patient perceives from the acute cardiac event.

The main effect of threat appraisal has also been demonstrated in previous studies. For example, in a sample of 150 community-residing adults, Folkman and colleagues (1986b) found threat appraisal had a significant main effect on psychological symptoms. Similarly, Tomaka and colleagues (1993) found that threat appraisal predicted levels of subjective stress in a sample of male college students completing an arithmetic task. Fontana and colleagues (1989) also found that threat appraisal predicted distress in a sample of patients with coronary heart disease, but this relationship was not demonstrated until 6-months post-hospitalization. Tomaka and colleagues (1989) stated that threat might become more activated over time as patients move from concerns about immediate survival to concerns about the extent of disability. The results from previous research provide evidence that threat appraisal is an important predictor of well-being following a stressful event. However, the results from the present study suggest that the relationship

of threat appraisal and well-being may be at least partially due to the frequency of unsupportive social interactions that the patient experiences.

Because no other studies have been conducted examining the moderating effect of unsupportive social interactions on threat appraisal, it is difficult to place the results from the present investigation in an appropriate context. Despite this difficulty, there are two potential explanations for the lack of a moderator effect between unsupportive social interactions and threat appraisal in this sample of cardiac patients. First, as mentioned earlier, the statistical power in the present investigation may have been inadequate to detect significant effects. This limitation will be discussed further in a later section of this chapter. Second, as it has been stated previously by other researchers (Rook, 1984; Rook & Pietromonaco, 1987), unsupportive social interactions occur less frequently than positive interactions and are, therefore, more salient. Therefore, the occurrence of these negative interactions could make a strong impression on an individual and produce negative emotional consequences regardless of the individual's threat appraisal associated with his or her cardiac event. Basically, results from the current study and other studies suggest that the relationship between unsupportive social interactions and distress associated with a specific stressor, in this case an acute cardiac event, may not depend on level of threat. Actually, extrapolating from the post-hoc analyses, level of threat may only exert an influence on patients' mood state by contributing to an increase in the frequency of unsupportive social interactions the patient experiences.

Limitations

There are limitations to the current study that should be considered in interpreting the results. The extent to which these limitations can be controlled for in future research will provide us with a more complex and rich understanding of patients' emotional reactions to acute cardiac events as well as the personal and situational characteristics that influence the recovery process.

First, as mentioned earlier in this chapter, the sample size in the present investigation was smaller than originally planned, which constrained the amount of statistical power available to detect significant effects in the sample. Statistical power ranged from .64 to .74 with a medium effect size and p set at .05 for the Time 1 hypotheses. For the longitudinal analyses, statistical power was also lower ($1 - \beta = .54$ with a medium effect size and p set at .05) because fewer participants (ranging from $n = 32$ for the Total Emotional Support received subscale of the UCLA – SSI to $n = 46$ for the SSQ – 6 Number subscale) completed the Time 2 packet.

The frequency of missing data was examined to discern any pattern to the missing responses. For the Time 1 data, the measures that were placed towards the end of the questionnaire packet (e.g, USII, UCLA – SSI) had a higher percentage of data excluded due to missing values. For the Time 2 data, the pattern of missing data was similar with measures placed at the end of the questionnaire packet having a higher percentage of data excluded due to missing values. One potential contributor to this pattern is fatigue, especially given the weakened physical condition of the patients who participated in this study. It is possible that some patients may not have been able to sustain their attention

on the questionnaire due to fatigue and could have stopped completing the questionnaire or could have inadvertently skipped items. Despite follow-up precautions such as reminder phone calls and stamped addressed return envelopes, many Time 2 packets were not returned. Although attrition was expected given the mail administration, our follow-up precautions could not improve the return rate above 66%. Alternative administration methods (in-person administration) and follow-up procedures should be considered in order to improve the return rate and the researchers' ability to test longitudinal hypotheses.

In order to have an acceptable level of statistical power ($1 - \beta = .80$) for the longitudinal analyses, at least 66 participants would be needed who had completed the Time 2 questionnaire packet. In the present investigation, several correlations approached significance, including the correlation between age and depression, and the correlation between unsupportive social interactions at Time 1 and depression at Time 2. These relationships may potentially be significant with a larger sample size. Although it would be inappropriate to speculate on these relationships without the collection of additional data, these trends warrant further examination.

A second limitation is that depression and total mood disturbance were assessed at only two timepoints (at hospitalization and at 1-month post-hospitalization). Due to the dynamic nature of emotional reactions following a stressful event, the limited number of assessments may not be sensitive enough to fully capture patients' emotional reactions during their recovery. In addition, the short follow-up in the current investigation does not allow for the examination of emotional adjustment over an extended period of time.

Fontana and colleagues (1989) found that stress was more predominant in the second half of the recovery year than in the first half, especially as patients change their focus from immediate survival to concerns about disability. Other studies have also demonstrated changes in quality of life and well-being up to 1-year post-cardiac event (Kornfield et al., 1982; Folks et al., 1986; Jenkins et al., 1983).

The current study provides some information about the emotional adjustment of male veterans following an acute cardiac event. Because of this, a third limitation to the current investigation is that it may be difficult to attempt to generalize these results to different populations without further investigation. For example, the way in which a 60-year old retired, male combat veteran reacts emotionally following an acute cardiac event may be very different from the way a 46-year old employed female may react. It is possible that the female who is working may feel that there is more at stake with the occurrence of an acute cardiac event, and subsequently have more intense emotional reactions than the male veteran. Another characteristic of the current sample that has implications for generalizability is marital status. In the current investigation, patients who were married or in a committed relationship were more likely to complete questionnaires for both timepoints, whereas patients who were not in a relationship were more likely to discontinue their participation in the study. It is possible that being in a relationship during their hospitalization provides cardiac patients with the emotional resources to focus on other events and people in their lives, rather than remaining focused on their own thoughts and feelings. Regardless of the reasons for this difference, the results of this study tell us more about people who are in committed relationships than for

those who are not, which makes it more difficult to generalize these results to all subgroups of cardiac patients. Because of this, it is important to compare and contrast different populations as a way to determine commonalities and differences in the recovery experience. This does not minimize, however, the importance of exploring the emotional adjustment of this population of veterans who experience acute cardiac events. These data contribute to a developing understanding of how military veterans adjust to these life-threatening occurrences, and can potentially be used to inform the development of interventions to promote emotional adjustment in this population.

A fourth limitation of the current investigation is that self-report was used to assess patients' emotional reactions to and appraisals of their acute cardiac event. Self-report is a necessary strategy when examining individual's cognitive appraisals of stressful events and perceptions of unsupportive social interactions. However, other researchers (Folkman et al., 1986a; Ingram et al., 1999) have emphasized the importance of verification by other means, such as observation of direct behavior and physiological assessment. Integrating self-report with other methodologies would provide a more complete understanding of the emotional adjustment process in acute cardiac patients.

Additionally, the research design for the present investigation does not allow for causal inferences to be made, especially when interpreting significant cross-sectional relationships. It can be asserted that unsupportive social interactions occurring during the cardiac patient's hospitalization can lead to higher levels of depression and total mood disturbance. Because of the difficulty in inferring causation, it is also possible to consider that higher levels of depression and total mood disturbance caused unsupportive

interactions with individuals in the patient's network. This line of reasoning would suggest that cardiac patients who are more depressed might somehow provoke or be more sensitive to upsetting and unsupportive interactions with members of their social networks. As research into the relationships among unsupportive social interactions, threat appraisal, and mood states continues, causal models may be tested using structural equation modeling, which will assist in understanding the nature and direction of the relationships among those variables.

Another limitation for the current investigation is that a measure of social desirability was not included in the questionnaire packet that participants received. One potential explanation for the low frequency of reported unsupportive social interactions in this sample is that the veterans may have been unwilling to admit distress or relationship problems. In trying to keep with a proud, strong, military stereotype, the participants may have avoided endorsing items that would communicate that they were somehow weak or unable to deal with their present circumstances. A measure of social desirability would have improved our ability to determine whether participants answered in a way to manage the impression they made with the researchers.

Future Research Directions

There are many directions that researchers can follow to better understand unsupportive social interactions and the process by which individuals react emotionally to acute cardiac events. Several recommendations for future research will be discussed.

First, continued examination of unsupportive social interactions and their relationship to mood states in acute cardiac patients is warranted. An extension of this

research to include non-veteran populations will enable researchers to examine differences in emotional reactions and perceptions of unsupportive social interactions among sub-groups of cardiac patients. For example, it would be useful to examine gender differences in emotional adjustment to cardiac events. Because women are at nearly as much risk for developing heart disease as men (American Heart Association, 1998), it is important to explore how women may react emotionally with the occurrence of an acute cardiac event, and to what extent unsupportive social interactions affect their recovery.

In addition, as definitions of unsupportive social interactions are agreed upon and measures of the construct are validated, it would be important to continue to examine specific types of unsupportive interactions that a person receives from others about a stressful event. It seems intuitive that the quality and effects of these unsupportive interactions may differ depending on the event that is experienced. For example, Ingram and colleagues (1999) identified four types of unsupportive interactions that an HIV-positive person might experience from others: insensitivity, disconnecting, forced optimism, and blaming. Given potential differences between participants in the Ingram et al study and the cardiac patients in the present investigation (e.g., age, expectations for recovery, lack of stigma), it is possible that the nature of upsetting responses received from the patients' social networks may be different. It is suggested that further research examine whether different types of unsupportive social interactions have differential utility in predicting emotional adjustment across populations. The identification of specific unsupportive interactions experienced in particular populations would have

important implications for intervention development. For example, individuals from the patient's social network can receive training and education to facilitate their "positive" participation in the recovery process.

Similar to examining the specific types of unsupportive interactions, an additional focus of research could examine whether the source of the unsupportive interactions is important in cardiac patients' emotional recovery. In other words, researchers could examine whether unsupportive social interactions from different network members have a differential effect on the patient's mood state. For example, with cardiac patients, it may be possible that unsupportive social interactions that are experienced from nurses in the hospital may affect levels of depression more than unsupportive interactions from spouses. Dakof and Taylor (1990) found that certain actions were perceived as helpful or unhelpful depending on the source in a sample of 55 cancer patients. More specifically, receiving cancer information was most helpful from other cancer patients or physicians, while receiving cancer information from family members and friends was perceived as unhelpful. Dakof and Taylor's (1990) study underscores the importance of exploring the interaction between source of support (e.g., spouse, physician) and type of support being given (e.g., informational, emotional) in a cardiac patient population. In future studies of unsupportive social interactions experienced by cardiac patients, it would be useful to examine how the source of the unsupportive social interactions (e.g., minimizing, blaming) may interact to influence the recovery process.

Second, the current investigation has provided preliminary evidence for the utility of the cognitive appraisal model (Folkman & Lazarus, 1984) as a framework for

understanding cardiac patients' emotional reactions to their acute cardiac event. It is important for researchers and practitioners to understand the process by which cardiac patients react emotionally when facing an acute event. In the present study, a moderating effect was not detected in the current sample. However, post-hoc analyses suggest that unsupportive social interactions may at least partially mediate the relationship between threat appraisal and mood state following the occurrence of an acute cardiac event. Continued empirical investigation can lead to a greater understanding of the nature and extent of the relationships among threat appraisal, unsupportive social interactions, and mood state in acute cardiac patients.

A third direction for future research in this area is to examine the effect of unsupportive social interactions on cardiac patients' adherence to medical recommendations and health-promoting behaviors following their acute cardiac event. Because health-related behaviors (e.g., eating habits, exercise) are crucial to physical recovery and prevention of subsequent cardiac events, information on variables that may negatively impact adherence to these health-enhancing behaviors is important to assist practitioners in the development of interventions to facilitate rehabilitation. Dracup (1994) discussed unsupportive social interactions as a variable that may affect cardiac patients' adherence to rehabilitation. An example of this is a cardiac patient whose son constantly reminds him of the importance of attending cardiac rehabilitation. Despite his son's good intentions, the cardiac patient stops attending rehabilitation to avoid being bothered by his son's reminders. Because social support is a significant predictor of cardiac rehabilitation adherence (Andrew et al., 1979), it is important for researchers and

practitioners to better understand how social interactions (positive and negative) with individuals from a cardiac patient's network can affect that patient's adherence to rehabilitation.

Implications

This study is a first step towards understanding the role of social relationships in cardiac patients' emotional recovery from an acute event. Although this investigation provides direction for future research in this area, these results also have implications for practitioners working with cardiac patients (e.g., cardiologists, nursing staff).

Cardiologists and cardiac rehabilitation staff play a key role in the recovery of the cardiac patient due to their frequent interactions with members of the patient's social network. These staff are in an appropriate position to sensitize and educate network members about the impact of their interactions on the cardiac patients' emotional and physical recovery. Given what we are learning about the power of social relationships in the emotional adjustment of cardiac patients, interventions with network members that target unsupportive social interactions and help facilitate positive social support skill building can be developed.

Mental health professionals can also be integral members of the cardiac rehabilitation team. Practitioners can design programs to assist patients in developing coping strategies to manage their emotional reactions as well as dampen threatening appraisals of the acute cardiac event. Programs that incorporate interventions such as cognitive reframing, healing imagery, and progressive muscle relaxation can provide the cardiac patients themselves with the tools they need to successfully recover, both

physically and emotionally. Mental health professionals can also participate in the training and preparation of health care providers who work with acute cardiac patients, such as cardiologists and critical care nursing staff. Therefore, psychologists and other mental health providers should seek out formal and informal opportunities to educate and train patients, their family and friends, and medical staff about the impact of social interactions on emotional adjustment following acute cardiac events. Continued empirical investigation and the development of intervention strategies aimed at improving supportive behaviors and minimizing unsupportive ones may facilitate improved emotional recovery for acute cardiac patients.

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Appendix A

Profile of Mood States - Short Form

The Profile of Mood States Inventory (POMS) (McNair et al., 1992) is not reprinted here due to copyright restrictions.

Appendix B

Social Support Questionnaire – 6

The Social Support Questionnaire – 6 (SSQ-6) is not reprinted here because of copyright restrictions.

Appendix C

UCLA Social Support Inventory (UCLA-SSI)

The UCLA Social Support Inventory is not reprinted here because of copyright restrictions.

Appendix D

Threat Appraisal Measure

The threat appraisal measure is not reprinted here because of copyright restrictions.

Appendix E

Unsupportive Social Interactions Inventory (USII)

USII

Instructions: Listed below are a number of responses that you may or may not have received from other people about your having current cardiac problem. For each statement, please indicate how much of that type of response you received from other people.

	NONE				ALOT
1. Someone felt I was over-reacting to my having a heart problem...	0	1	2	3	4
2. When I was talking with someone about my having a heart problem the person did not give me enough of his or her time, or made me feel like I should hurry.....	0	1	2	3	4
3. Someone made "should/shouldn't have" comments about my role in having a heart problem, such as "You should/ shouldn't have _____".....	0	1	2	3	4
4. Someone didn't seem to know what to say, or seemed afraid of saying/doing the "wrong" thing.....	0	1	2	3	4
5. Someone refused to provide the type of help or support I was looking for.....	0	1	2	3	4
6. After becoming aware of my having a heart problem, someone responded to me with uninvited physical touching, such as hugging.....	0	1	2	3	4
7. Someone said that I should look on the bright side.....	0	1	2	3	4

8. Someone said, "I told you so", or made some similar comment to me about my having a heart problem.....	0	1	2	3	4
9. Someone seemed to be telling me what he or she thought I wanted to hear.....	0	1	2	3	4
10. In responding to me about my having a heart problem, someone seemed disappointed in me.....	0	1	2	3	4
11. When I was talking with someone about my having a heart problem, the person changed the subject before I wanted to.....	0	1	2	3	4
12. Someone felt that I should stop worrying about having a heart problem and just forget about it.....	0	1	2	3	4
13. Someone asked me "why" questions about my role in having a heart problem, such as "Why did/didn't you_____?".....	0	1	2	3	4
14. Someone felt that I should focus on the present and/or the future, and that I should forget about what's happened and get on with my life.....	0	1	2	3	4
15. Someone tried to cheer me up when I was not ready to cheer up about having a heart problem.....	0	1	2	3	4
16. In responding to me about my having a heart problem, someone refused to take me seriously.....	0	1	2	3	4
17. Someone told me to be strong, to keep my chin up, or that I shouldn't let it bother me.....	0	1	2	3	4
18. When I was talking to someone about my having a heart problem, he or she did not seem to want to hear about it.....	0	1	2	3	4
19. Someone told me that I had gotten myself into the situation in the first place, and that I now must deal with the consequences.....	0	1	2	3	4
20. Someone did some things for me that I wanted to do and could have done myself, as if he or she thought I was no longer capable.....	0	1	2	3	4
21. Someone discouraged me from expressing feelings about having a heart problem such as anger, hurt, or sadness.....	0	1	2	3	4
22. Someone felt that it could have been worse or that it was not as bad as I thought.....	0	1	2	3	4
23. From the person's tone of voice, expression, or body language, I got the feeling that he or she was uncomfortable talking with me about my having a heart problem.....	0	1	2	3	4

24. Someone made comments which blamed me or tried to make me feel responsible for having a heart problem.....	0	1	2	3	4

Appendix F

Demographic Questionnaire

1. How old were you on your last birthday? _____

2. With what ethnic/racial group do you identify:

_____ African American _____ Hispanic

_____ Asian American _____ Native American

_____ Caucasian (White) _____ Other or Multiracial

3. What was the highest level of school you completed:

_____ Less than high school _____ Some high school

_____ Completed high school or GED _____ Some college

_____ Completed college _____ Some graduate school

_____Completed graduate or other professional degree

4. What is your marital status:

_____ Married _____ Not married but in an exclusive relationship

_____ Single _____ Separated _____ Divorced _____Widowed

5. What is your current employment status:

_____ Full-time _____ Part-time _____ Homemaker _____Retired

_____ Unemployed

6. How many people are living in your household (including yourself): _____

7. Is this your first cardiac event? Yes _____ No _____

Appendix H

Informed Consent Form

Consent for Participation in Research

1. Title: Emotional Adjustment in Acute Cardiac Patients

2. Introduction: Acute cardiac events, such as myocardial infarction (MI), angioplasty, and coronary artery bypass grafting (CABG), can lead to negative psychological and emotional reactions, which can affect recovery. The purpose of this research study is to examine how cardiac patients react emotionally to cardiac events. Therefore, Scott L. Green, M.S. and Kathleen M. Ingram, Ph.D. of the Psychology Department at Virginia Commonwealth University, in conjunction with the Cardiology Service of the Hunter-Holmes McGuire Veterans Administration Medical Center (VAMC), are distributing questionnaire packets to cardiac patients who have experienced an acute cardiac event such as MI, CABG, or angioplasty. Approximately 100 patients will participate in the study.

   You will receive two questionnaire packets over the course of the study. The first packet will be given to you by a research assistant during your stay on the cardiology unit at the VAMC. Once you have completed your packet, it can be given to Mary Jane Michaels, case manager for the cardiology unit, for collection. The second questionnaire packet will be sent to you one month after your discharge, to your home address. The completed packet can then be returned to the researchers using the enclosed stamped, pre-addressed envelope. Each packet will take approximately 40 minutes to complete. In addition, your medical records will be examined to evaluate

your cardiac status including enzymes, pumping ability of your heart, and overall severity of your heart condition.

3. Benefits: Participants who complete both questionnaire packets will have their names entered into a raffle to win $150. In addition, by completing the questionnaire packets, you will have the opportunity to be reflective about yourself in new ways and may increase your self-understanding. Your participation will help us gain a better understanding of common emotional reactions to cardiac events. A summary of the study's results will be made available to you upon request.

4. Risks, Inconveniences, and Discomforts: Although it is impossible to identify all possible risks and inconveniences associated with any study, we anticipate no serious risks to

participants. As with all surveys, some participants may feel some discomfort in responding

to questions about themselves. However, we expect only the minor inconvenience of taking the time to obtain, complete, and return the questionnaire packets.

Please initial to indicate that you have read the statements above _____

5. Confidentiality of Records: Participants will be instructed not to write their names on either of the questionnaire packets, and information will be identified using an arbitrary code number. Consent forms will be removed from packets to protect confidentiality. In addition, in the event that any professional publications or presentations result from this project, your data will not be reported in such a way that you will be identifiable. Medical charts will be examined in cooperation with the case manager and chief of the cardiology unit at the VAMC, but information will not be disclosed to anyone not participating in the research study. Therefore, the researchers will never have access to the participants' medical charts.

6. Withdrawal: Participation in this study is voluntary. The investigators will answer any questions you have about the study. You are free to withdraw your consent, and discontinue your participation at any time. If you decide to withdraw from this study, you should contact Scott Green [(804) 828-4921] or Dr. Kathleen Ingram, the principal investigator [(804) 828-6346]. Discontinuation will in no way affect or jeopardize the quality of care you receive now or in the future at the VAMC. Your doctor may also withdraw you from the study without your consent for medical or administrative reasons. Any significant new findings which develop during the course of the research study which in the opinion of the investigators may affect your willingness to continue to participate will be provided to you as soon as possible.

7. Participant Rights Information: If you have any questions about this study or your rights as a participant, contact the Committee on the Conduct of Human Research at 828-0868.

By signing this form I give consent to participate in this project.

_____ _____

Signature Date

_____ _____

Print Full Name Phone Number

_____ _____

Witness Date

Vita