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Running-Head: COPING WITH BREAST CANCER SCREENING

Contextual and Subjective Indices of Coping Strategies in Breast Cancer Screening:

A Longitudinal Investigation

(C) Jo Anne Savoie (#061557)

University of Ottawa

Ph.D. Thesis in Psychology



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Abstract

With the aim of better understanding the concept of coping, the objectives of the study were to (1) examine the concordance of subjective and contextual coping indices, (2) investigate changes in the use of coping strategies as a natural stressor unfolds, and (3) predict levels of psychological stress from coping strategies used when faced with a health threat. A sample of 828 women undergoing routine breast screening completed subjective measures of stress and coping at four time points (prior to the screen as well as 24 hours, 20 days and three months follow-up). Contextual coping was gathered at the three-month follow-up for all participants with a false positive screen along with matched negative-screen counterparts ($n=132$). Correlational analyses revealed poor concordance between the subjective and contextual indices of coping, with a trend toward overreporting approach and underreporting avoidance strategies compared to experimenter ratings of coping. The use of contextual avoidance and approach strategies over time peaked following the result of the screen for the positive screen group, yet remained relatively stable across time for those with the negative screen group. A stage effect was noted on subjective strategies, with all participants reporting higher levels of approach coping from pre-screen to post-result. At post-result, group differences showed that women with a positive screen displayed, but did not report on the subjective measure, more behavioral and cognitive avoidance strategies than the negative screen group. No differences between groups were noted at follow-up on either coping measure. In the prediction of stress, prospective levels of subjective cognitive avoidance predicted higher levels of stress after notification of the result. The use of contextual strategies was not found to be a significant predictor. The strengths and limitations of the study are presented in the discussion along with the research and clinical implications.

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I have rehearsed in my mind on numerous occasions who and how I would thank everyone who has contributed to this project. As I sit here, I realize that the two pages I had purposely saved for last for this purpose seem much too short. It feels like I've just won the Oscar and the music has started to play before I have finished with my thank yous. So without further ado, I had better get started.

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Contextual and Subjective Indices of Coping Strategies in Breast Cancer Screening: A Longitudinal Investigation

Stress is a widely studied phenomenon in psychology. There is evidence to support the hypothesis that stressful events can be detrimental to one's physical and psychological well-being (Aldwin & Revenson, 1987; Folkman, Lazarus, Gruen, & DeLongis, 1986; Gass & Chang, 1989), however, it appears that the relationship between the two is neither simple nor direct. Instead, certain variables appear to mediate the relationship between stressful events and well-being (Masel, Terry & Gribble, 1996; Frederikson & Dewe, 1996). One variable that has received considerable attention as a potential mediator of this relationship is the use of coping strategies. Despite efforts put forth in understanding the concept of coping, numerous criticisms about its method of measurement continue to surface. Mainly, the general reliance on self-report inventories, said to have inadequate psychometric properties, is viewed as problematic. In spite of many criticisms, direct comparisons of respondent-based measures with other modalities, such as investigator-based coping measures, have yet to be conducted. In an effort to overcome past methodological shortcomings, the current project utilizes two measures to operationally define coping efforts: a self-report measure (respondent-based) as well as an investigator-based measure using contextual indices of coping efforts. Both measures are used to examine coping over time and to predict levels of psychological stress in the real-life context of breast cancer screening.

In the current thesis, *stress*, which has been used to refer to either a stimulus (Holmes & Rahe, 1968), response (Selye, 1956) or transaction (Folkman & Lazarus, 1984), is defined as a non-pathological state of psychological tension exhibited in cognitive-affective, somatic and behavioral modalities (Folkman & Lazarus, 1984; Hobfoll, 1989; Lemyre, 1986), whereas a

stressor is used to refer to a situation or stimulus (Holmes & Rahe, 1967; Brown & Harris, 1989).

Coping is defined as dynamic cognitive and behavioral efforts aimed at managing demands that are appraised as taxing or exceeding available resources (Lazarus & Folkman, 1984). The following chapter provides the theoretical framework for the current project.

CHAPTER 1

THEORETICAL CONTEXT

Understanding and predicting the way in which individuals deal with stressful life events, and how such events impact on their physical and psychological well-being, has been the quest of many researchers. This chapter provides the reader with an historical overview of stress and coping research along, with current knowledge about factors that may moderate coping efforts. In addition, the possible impact of coping on well-being is presented. Finally, studies examining coping with breast cancer and screening are presented in order to highlight the areas in need of scrutiny and, thereby, anchor the reader into the specific setting of this research project.

1.1 Conceptualizations of Stress

Our understanding of how individuals cope with stressful situations would be incomplete without first examining the concept of stress. The following section briefly reviews the ways in which stress has been conceptualized: *stress* as a response, *stress* as a stimulus, and *stress* as a transaction.

1.1.1. Stress as a Response

The first conceptualization of stress was introduced by Selye with the General Adaptation Syndrome (GAS; Selye, 1956). He defined stress as a stereotypical response to any demand on the body. More specifically, he stated that the body exhibits a non-specific response in an effort to mobilize the resources needed to meet the demands of a threat. In the context of the GAS, the body's physiological response to the stressor was of primary interest.

As the conceptualization of stress as a response evolved, its definition grew to include psychological, as well as physiological and neurobiological, responses to stressors (Selye, 1993).

Psychological models of stress, therefore, came to include the individual's adjustment in terms of mood and affect. In the beginning, stress was inferred via pathological processes, with stress viewed as a function of psychopathology and maladaptive functioning. More specifically, cognitive dysfunctions, symptoms of distress, and dysfunctional relationships were used to indicate the presence of stress (Derogatis & Coon, 1993). As researchers began to show that all individuals could react to threat, the notion of a "normal" response to stress evolved. At that point, stress came to be viewed as an adaptive response experienced by most individuals (Derogatis & Coon, 1993; Lazarus & Folkman, 1984; Lemyre, 1986).

The measurement of stress evolved with the changing perspective of stress as a response. When stress was inferred from mood and affect, researchers used unidimensional psychopathology instruments such as the Beck Depression Inventory (BDI: Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) or multidimensional measures such as the Symptom-Checklist-90 (SCL-90; Derogatis, 1977) to assess stress. However, this practice has been criticized for assessing a clinical outcome of stress rather than the state of stress itself. Moreover, measures based on pathological indices, such as anxiety and depression, were said to be representative of only a small proportion of the population (Lemyre, 1986). Lemyre (1986) also suggested that measuring psychological stress from anxiety or depression jeopardized its construct validity. In response to these critiques, researchers developed measures of stress-as-a-response that focused on "normal" states of tension, independent of its source (i.e., the stressor) and of pathology (i.e., physical or mental illness).

To date, measures such as the Perceived Stress Scale (Cohen, Kamarck & Mermelstein, 1983) and the Strain Questionnaire (Lefebvre & Stanford, 1985) have been designed to measure

stress as a psychological state. A third measure, the Psychological Stress Measure (PSM; Lemyre, Tessier & Fillion, 1990), focuses on the individual's temporary state of adaptation in response to the environment. By examining stress at the physical, cognitive, and behavioral levels, the PSM aims at measuring more directly the state of stress independently of stressors and of pathology, allowing researchers to study normal responses to stressful situations.

1.1.2. Stress as a Stimulus

The second category of conceptualizations of stress is a stimulus-based perspective which shifts the focus from the state of stress to stressors, also known as life events. According to this perspective, stress is viewed as "a potential residing within the stimulus provided by the organism's environment" (Derogatis & Coon, 1993). Therefore, stress is experienced when aspects of the environment, such as acute life events, chronic difficulties (e.g., Brown & Harris, 1978; Holmes & Rahe, 1967) and hassles (e.g., DeLongis, Coyne, Dakof, Folkman & Lazarus, 1982; Kessler, Price & Wortman, 1985), impose increasing demands on the individual. The conceptualization of stress as a stimulus has mainly focused on the relationship between these environmental demands and the onset of pathology.

Based on this perspective, the measurement of stress focuses on the characteristics of the environment and assigns weights or quantifies the environmental demands in terms of stress value (Derogatis & Coon, 1993). The Social Readjustment Rating Scale (SRRS; Holmes & Rahe, 1967) was developed to provide such an objective list of life events. Each event was assigned a weight to indicate the amount of readjustment required to deal with the event. It was one of the most widely used inventories for the gathering of life events. Despite the popularity of life event checklists, a number of articles (Brown, 1974; Derogatis & Coon, 1993; Wethington, Brown,

Kessler, 1997; Zimmerman, 1983) have been devoted to the criticism of such instruments. The shortcomings include the lack of specificity of items (i.e., intracategory variability), lack of information regarding the actual incidence and their date of occurrence, and confounding of items with outcome variables. Moreover, most studies using checklists failed to support a strong relationship between stressful life events and pathology (Dohrenwend, Raphael, Schwartz, Stueve and Skodol, 1993). According to Coyne and Downey (1991), attempts to improve self-report inventories were not able to increase the predictive power of life events in the onset or levels of psychopathology.

A promising alternative to the use of checklists was the semi-structured interview. The largest contribution of such interviews was the attempt to identify stressors that are assessed independently of the individual's psychological state of mind. According to Brown and Harris (1989), event specification is critical to our understanding of the correlation between a class of stressors and physical or psychiatric disorder. Moreover, they suggest that a better classification of events and the rejection of events which are not "truly" stressful will improve our understanding of the relationship between life events and adaptational outcomes.

The Life Events and Difficulty Schedule (LEDS: Brown and Harris, 1978), the most widely-used interview method, was created to remedy methodological problems of traditional checklists used to identify life events. The LEDS has three distinct phases. In the first step, the interviewer gathers contextual information about each life event using a series of mandatory questions, followed by probes when necessary. The second step has the interviewer rate each event on a number of descriptors, such as threat, using stringent guidelines and examples. Finally, the contextual information is presented to a panel of trained judges who independently rate each

event. Advantages of the LEDS include the precise dating of events, the probing for factual information, and the stringent guidelines used to rate the severity of each stressful life event by a consensus of investigators. Using this instrument, Brown and his colleagues (Brown, Adler, & Bifulco, 1988; Brown, Lemyre & Bifulco, 1992), along with other researchers (e.g. Craig & Brown, 1984; Day, Nielson, Korten, Ernberg, Dube, Gebhart, Jablensky, et al., 1987; Finley-Jones & Brown, 1981; Grant, Brown, Harris, & MacDonald, 1989; Nadeau, 1989), have found stronger evidence for a relationship between life events and the onset of pathology.

Nevertheless, growing evidence developed for the importance of individual differences in response to similar life events, which emphasized the need to also examine the interaction between the individual and the environment (Lazarus & Folkman, 1984). This led to the view of stress as a transaction process between the individual and the environment.

1.1.3. Stress as a Transaction.

According to this conceptualization of stress, characteristics of the organism mediate the relationship between the stimulus and the response. In turn, the individual's perceptual, cognitive and physiological characteristics change the demand characteristics of the environment (Derogatis & Coon, 1993). One of the most prominent theories, which conceptualizes stress as a transaction, is Lazarus' cognitive-appraisal model of stress and coping (Lazarus & Folkman, 1984). This model provides the theoretical framework for the current project.

According to this model, an individual's level of psychological stress depends on the interaction between an individual and his or her environment. More specifically, cognitive appraisals mediate the relationship between the individual and the situational demands of the stressful encounter. Lazarus and Folkman (1984) have identified primary and secondary

appraisals. In the face of a particular stressor, the primary appraisal evaluates what is at stake in terms of the degree of threat, harm, loss or challenge. The secondary appraisal involves the assessment of resources available to deal with this event. When the stakes involved surpass the resources available, stress ensues.

According to the cognitive appraisal model of stress and coping (Lazarus & Folkman, 1984), the next step in the regulation of stress involves the use of coping strategies. Defined as the cognitive and behavioral efforts exhibited to deal with events appraised as taxing or exceeding personal resources, coping strategies come into play once the individual has evaluated the impact of an event on his or her potential state (Croyle & Hunt, 1991; Croyle, Sun & Louie, 1993; Folkman & Lazarus, 1985; Stanton & Snider, 1993). For example, strategies aimed at solving the problem are more likely when the event is perceived as threatening or challenging, whereas strategies aimed at affect regulation are most likely to ensue from loss events (Bjorck & Cohen, 1993; Carver & Scheier, 1994; Folkman & Lazarus, 1985; Stanton & Snider, 1993). In turn, "the effectiveness of the coping strategy depends on the extent to which it is appropriate to the internal and/or external demands of the situation" (Folkman & Lazarus, 1980, p.185).

In summary, Lazarus and Folkman's (1984) conceptualization of stress has incorporated the complexities of stress and its measurement into an integrated framework which includes the stimulus, the response and the interaction between the two. The inclusion of coping into their model further adds to our understanding of idiosyncratic responses to stressful events and its impact on well-being. The next section will explore further the conceptualization of coping and its theoretical evolution over the years.

1.2 Conceptualizations of Coping

Over the years, coping has been conceptualized in various ways, from protective mechanisms in ego psychology (Haan, 1977; Vaillant, 1977) to a dynamic process in Lazarus' cognitive-appraisal model (Lazarus & Folkman, 1984). For the most part, theoretical models have conceptualized coping as either (a) a style or trait involving personality characteristics related to one's behavior, independently of the situation, or (b) a process in which various dynamic strategies are influenced by the interaction between individual and situational characteristics. The review begins with the early origins of the study of coping with its underpinnings in psychoanalytic theories of ego defence.

1.2.1 Defence Mechanisms

The concept of defence, the notion that individuals can manipulate or avoid unpleasant and disturbing thoughts, has been examined since the 19th century (Parker & Endler, 1996). Therefore, one could say that traditional models of coping began with psychoanalysis, where defences were seen as mechanisms used to deal with overwhelming or unacceptable ideas or feelings (Freud, 1955). Expanding on her father's work, Anna Freud (1946) defined a number of defence mechanisms previously identified in psychoanalysis such as repression, sublimation, and reaction formation. In addition, she introduced new mechanisms such as intellectualization and denial in fantasy. Her observation that individuals typically use a restricted repertory of these mechanisms across situations has had a lasting impact on research in the area of defence, as well as in the area of coping (Parker & Endler, 1996). She also proposed that certain mechanisms are thought to be inherently more pathological than others (Freud, 1946). Many hierarchical theories

of defences grew out of this body of work, with some post-Freudian theorists choosing to include adaptive or nonpathological defences.

Menninger (1963), Vaillant (1977), and Haan (1977) are examples of researchers who adopted a hierarchical model of defences inspired by the psychoanalytic model. For the most part, their approaches encompassed defence mechanisms which had the primary function of protecting the individual from external and intrapsychic threat. These theorists categorized the various defence mechanisms according to their outcome.

One of the most prominent theorists to propose a hierarchical model of defences was Vaillant (1977). His hierarchy ranged from mature defences, such as sublimation and humor, to immature defences, such as projection and hypochondriasis, with denial as the lowest category of psychotic mechanisms. Intermediate defence mechanisms, called neurotic defences, included intellectualization and repression. His model proposes that the use of more mature defences results in better well-being than the use of immature defences.

Haan (1977) was one of the first theorists to make a clear distinction between defences and coping. Whereas defences are characterised as "intersubjective and intrasubjective inaccuracies" (Haan, 1993), coping was defined as an encounter wherein individuals use accuracy to mobilize resources within themselves and around themselves to deal with the difficulty. More specifically, Haan (1977) defined three qualitatively different modes of expression: coping, defence, and fragmentation. This hierarchy is best described by the following quotation: "The person will cope if he can, defend if he must, and fragment if he is forced" (Haan, 1977, p. 42). According to this model, coping was the healthiest and most mature mode of adaptation.

The assessment of defence mechanisms has generated a large body of research (Parker & Endler, 1996). The most commonly used methods to assess defences are projective (e.g., the Rorschach) and self-report measures. Among the self-report inventories, general inventories assessing various types of defence mechanisms such as the Defence Mechanisms Inventory (Gleser & Ihilevich, 1969) and inventories designed to measure a specific dimension (e.g., Repression-Sensitization scale by Byrne, 1961) are available.

The models of coping inspired by psychoanalytic theory have been criticized on many counts. One of the main shortcomings of defence mechanisms was the confounding of coping and outcome. Inherent in the term "hierarchy" was the notion that certain strategies are more adaptive than others, which confounded the dependent and independent variables. Second, the coping models developed by researchers such as Haan (1977) and Vaillant (1977) focused primarily on unconscious mechanisms. Not only were researchers responsible for the identification of these mechanisms via clinical judgements or projective techniques, the attention on the maintenance of psychological equilibrium lacked consideration for overt behaviors or cognitions aimed at changing or avoiding the external stressor. This limited their usefulness in the study of coping (Billings & Moos, 1981). Finally, the models focused primarily on psychopathology, neglecting the wide range of non-clinical psychological outcomes.

In contrast to the literature on defence mechanisms, other researchers outside the psychoanalytic tradition focused their attention on conscious strategies used by individuals in the face of adverse situations. Rather than focusing on ego processes, the following theoretical formulations of coping examined overt behaviors and cognitions.

1.2.2 Coping Traits and Styles.

A number of researchers have conceptualized coping as stable and unmodifiable person-characteristics that operate as dispositions applied to various life stressors (Buntrock & Reddy, 1992; Carver, Scheier, & Weintraub, 1989; Miller, Brody & Summerton, 1988; Nowack, 1989; Pearlin & Schooler, 1978). The distinction between trait and style is conceptually similar to Eysenck's (Eysenck, 1965; Eysenck & Eysench, 1985) definitions of trait and type. Traits were defined as "stability, consistency, repeated occurrence of actions" (Eysenck & Eysenck, 1985, p. 12) whereas types were superordinate factors made of intercorrelated traits. In relation to coping, styles involve more of a stereotypical and pervasive manner of dealing with the environment, whereas traits predispose individuals to react in certain ways when faced with a particular kind of situation (Lazarus & Folkman, 1984). Also known as the interindividual approach to coping, this perspective holds that individuals use similar strategies across different types of stressful events as a result of preference or predisposition.

A current examples of a style model is Miller and her colleagues' (1988, 1995) conceptualization of individuals as monitors or blunterners when faced with a stressful situation. This model conceptualized individuals in terms of their style of seeking out information related to a threat: they were monitors if they sought out information, whereas they were blunterners if they avoided threat-relevant information (Miller, 1987). Whereas some researchers have focused on a unidimensional trait, others have described coping using a larger array of styles or traits. Nonetheless, each reflects a proneness to act or think in a predisposed way when faced with a stressful event (Endler & Parker, 1990).

The interindividual approach to coping has resulted in the development of measures that reliably assess basic coping styles. For example, the Miller Behavioral Style Scale (MBSS; Miller 1987) assesses an individual's coping style along two dimensions: monitoring (seeking information) and blunting (use of distracters). Other measures of coping traits or styles include the Coping Strategy Indicator (CSI: Amirkhan, 1990) and the Coping Inventory for Stressful Situations (CISS: Endler & Parker, 1990). By asking what the person *usually* does when under stress, these instruments attempt to determine if people have preferred ways of dealing with stressful situations (Carver et al., 1989).

When conceptualizing coping as a style, the assumption is that it is consistent or stable across different situations. However, studies have shown modest intersituational correlations among coping styles (Aldwin, 1994). Moreover, past studies have found that coping styles do not predict actual coping efforts (Carver & Scheier, 1994; Cohen & Lazarus, 1973). With the exception of religion and use of alcohol, coping styles only relate to actual coping strategies at correlation coefficients below .40 (Carver & Scheier, 1994; Cohen & Lazarus, 1973). Finally, numerous studies (Carver, Pozo, Harris, Noriega, Scheier, Robinson, Ketcham, Moffat, & Clark, 1993; Carver & Scheier, 1994; Folkman & Lazarus, 1985; Stanton & Snider, 1993) have demonstrated that individuals vary in their coping strategies as a stressful encounter unfolds. These studies measured coping prospectively (i.e., before the occurrence of the stressor, while anticipating results, and after receipt of results) in undergraduates during examinations (Folkman & Lazarus, 1985; Carver & Scheier, 1994) and in individuals waiting for medical test results (Carver et al., 1993; Stanton & Snider, 1993). In each study, the stages of anticipation, occurrence and recovery of a stressor entailed the use of different strategies. Therefore, treating a

stressful encounter as a single event undermines the complexity of this process, thus limiting our potential for understanding the dynamic nature of coping.

Before inferring whether coping is a trait or style, perhaps its extensive description in relation to various situational factors constitute a heuristic step. The conceptualization of coping as a process proposes that the use of strategies varies as a function of the interaction between individual and situational characteristics. As Lazarus and Folkman (1984) stated, adopting a process-oriented approach does not mutually exclude the use of preferred or habitual strategies. Rather, they argued that our understanding of coping, along with its antecedent and consequent correlates, is best achieved by directly assessing coping efforts as they vary with the demands of the situation. The following section examines this theoretical framework in greater depth.

1.2.3 Coping as a Process.

The conceptualization of coping as a process, also known as the intraindividual approach to coping, aims to identify basic coping efforts used by individuals when faced with a particular type of stressful situation. Depending on the nature of the stressful encounter and the availability of a repertoire of coping efforts, individuals can use what they believe to be the most effective strategy to deal with the particular event (Parker & Endler, 1996). As such, the assessment of coping as a process focuses on what the person thinks she does at a specific point in time, not what he/she usually does.

One of the most prominent theories which conceptualizes coping in this manner is Lazarus' cognitive-appraisal model of stress and coping (Lazarus & Folkman, 1984). As mentioned, an individual's level of psychological stress is postulated to depend on the interaction between the individual and the challenges imposed by the environment. Once the individual determines the

degree of threat, harm, loss or challenge of an event and assesses resources available to deal with this event, the next steps involve the use of various coping strategies.

According to the cognitive-appraisal model of stress and coping, coping strategies are defined as "the person's cognitive and behavioral efforts to manage (reduce, minimize, master or tolerate) the internal or external demands of the person-environment transaction that is appraised as taxing or exceeding the person's resources" (Folkman, Lazarus, Gruen & DeLongis, 1986, p. 572). The strategies used in a particular situation are related to an individual's cognitive appraisals (Croyle & Hunt, 1991; Croyle, et al., 1993; Folkman & Lazarus, 1985; Stanton & Snider, 1993). Once an individual appraises the contextual demands of a situation, behavioral and cognitive efforts are expended to deal with the stressor.

Finally, coping as a process implies dynamic shifts and changes in strategies as the stressful encounter unfolds. In other words, as the interaction between the person and the situation change, so do the resulting coping strategies. Within Lazarus and Folkman's model (1984), the concept of time also plays an important role in the individual's choice of coping strategies (Carver et al., 1989; Folkman & Lazarus, 1985). Based on the disaster literature, Lazarus and Folkman (1984) proposed three stages of events referred to as anticipatory or warning, impact or confrontation, and postimpact or postconfrontation. They suggest that the different stages elicit different appraisals, which in turn, result in the use of varying coping strategies. During the anticipatory phase, thoughts and actions are geared toward the possibility that the event might occur. Attempts to prevent the situation, information gathering to prepare for the eventuality or avoiding its potential threat are examples of coping strategies that might be exhibited. During the stage of impact, as the person reassesses the level of threat or harm in relation to his/her

expectations, changes in coping strategies are appropriate. As for the postimpact stage, the passing of the event may bring with it a period of psychological and material damage control. Similarly, new anticipatory processes related to events with similar contextual demands may emerge. For the most part, studies have shown that active coping strategies such as problem-solving are used when anticipating the stressor, whereas strategies used to deal with the emotional reaction ensuing from the occurrence of the event typically follow the actual event (Carver et al., 1989; Folkman & Lazarus, 1985).

Lazarus and Folkman (1984) hypothesized that coping has two major functions: regulating the emotions associated with the distressing agent (emotion-focused coping) and changing the situation causing the distress (problem-focused). Both functions are represented in the vast majority of stressful encounters (Folkman & Lazarus, 1980). For the most part, problem-focused strategies are used more frequently when the situation is appraised as changeable, whereas emotion-focused strategies are more likely when the situation is appraised as unchangeable (Folkman & Lazarus, 1980).

Coping researchers, including Folkman and Folkman (1988), have expanded the range of coping strategies in order to describe the efforts exhibited by individuals when faced with a stressor. Prior to beginning a discussion of the measurement of coping as a process, the theoretical basis and empirical findings of coping taxonomies need to be presented.

1.2.3.1 Coping Taxonomies: Theoretical basis.

Although there is potentially an unlimited number of ways that individuals can deal with a stressful event, there is an assumption that these can be meaningfully classified into a few parsimonious categories (Parker & Endler, 1992).

The most common classification is based on the object of coping. It asks: does the strategy focus on resolving the situation (i.e., problem-focused) or are efforts aimed at modifying or regulating the emotional reaction to the stressor (i.e. emotion-focused)? (Folkman & Lazarus, 1980). In later studies, Folkman and Lazarus (1988) expanded the number of strategies to include a total of eight strategies: confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem solving, and positive reappraisal. Coping strategies categorized as problem-focused include problem-solving, confrontive coping, and planning, whereas common emotion-focused strategies are distancing, emotional expression, and wishful thinking.

The next most common taxonomy is goal-based. It asks whether the person is moving toward or away from the problem (Billings & Moos, 1984; Heppner, Cook, Wright & Johnson, 1995; Suls & Fletcher, 1985). Most researchers refer to these strategies as approach and avoidance, with some variability in the names (e.g., engagement and disengagement by Tobin, Holroyd, Reynolds & Wigal, 1989).

Conceptually, there is considerable overlap between the various coping taxonomies. Herman-Stahl and her colleagues (1995) argued that two broad dimensions are repeatedly identified across studies: approach and withdrawal/avoidant strategies. Although there is variability in the names used to identify the strategies, they are conceptualized as the most common modes of dealing with stressful events. Approach strategies have also been referred to as problem-focused (Folkman & Lazarus, 1980), engagement (Tobin et al., 1989), active (Hobfoll, Dunahoo, Ben-Porath, & Monnier, 1994) or task-oriented strategies (Endler & Parker, 1994). Differences between them are mainly reduced to semantics. Avoidant strategies are

typically identified by other labels such as emotion-focused coping (Folkman & Lazarus, 1980), disengagement (Tobin et al., 1989) or passive strategies (Hobfoll, et al., 1994). For the most part, researchers use the terms interchangeably. Despite the overlap between the two primary taxonomies (i.e., similarities between approach and problem-focused coping), there appears to be greater support for the categorization of coping strategies as approach and avoidance strategies (Roth & Cohen, 1986).

Significant conceptual and empirical differences between the two types of categorizations also need to be emphasized. Mainly, the assumption that emotion-focused coping inherently represents some form of avoidance or withdrawal seems misguided. For instance, telling your partner your feelings are hurt because he/she forgot your wedding anniversary does not represent the same strategy as skirting the issue by scolding your partner for his perpetual tardiness as he/she arrives a few minutes late from work on that day. By associating emotion-focused coping with avoidance, we neglect the ways of regulating emotions that involve directly tackling a stressful event (Belding, Iguchi, Lamb, Lakin & Terry, 1996).

Second, there appears to be less ambiguity about classifying strategies as approach or avoidance coping compared to emotion- and problem-focused coping. More specifically, less interpretation on the part of the researcher is needed to classify a specific action or thought as approaching or avoiding the problem. On the other hand, the classification of strategies or items into problem or emotion-focused coping requires some guess work, unless the person's intent is known. For example, someone dealing with a relationship problem by talking to a friend is clearly approaching the problem whether the purpose is to gather information or seek emotional support. Classifying this item as emotion- or problem-focused depends on the content of the conversation.

If she is gathering information, it would be classified as problem-focused. If she is discussing her feelings to get emotional support, it would be classified as emotion-focused simply because feelings were involved. Therefore, the use of avoidance-approach taxonomy requires less explicit information about the intent of the individual's coping effort, and subsequently, less assumption or interpretation on the part of the researcher, thereby decreasing the likelihood of experimenter bias.

1.2.3.2. Coping Taxonomies: Empirical Evidence.

Over the years, empirical data related to various taxonomies of coping strategies have accumulated. Empirical evidence also appears to favor the approach- avoidance taxonomy. With respect to Folkman and Lazarus' (1988) eight factors, numerous attempts have failed to replicate their solution (e.g., Aldwin & Revenson, 1987; Knussen, Sloper, Cunningham & Turner, 1992; Vitaliano, Russo, Carr, Maiuro, & Becker, 1985). For the most part, scales such as problem-focused, seeking social support and distancing resurface across factor analytic studies, whereas strategies such as confrontive coping and self-controlling have been identified less reliably.

Frederikson and Dewe (1996), in an attempt to reproduce the emotion-focused and problem-focused categorization of coping, found that the items subdivided into two components representing avoidance and approach coping strategies. They suggested that approach-avoidance categorization was preferable because "it is possible to use both emotion-focused and direct action behaviors in terms of avoiding and/or approaching the problem at hand". As such, they suggested that this dichotomy provided clearer and more distinct factors. Similarly, Cook and Heppner (1994; cited in Heppner et al., 1995) conducted an exploratory factor analysis with three coping inventories which yielded two superfactors: avoidance and approach.

In testing the structure of two taxonomies (i.e. approach/avoidance vs. emotion-focused/problem-focused), Belding and his colleagues (1996) hypothesized that strategies, such as planning and instrumental social support, would load onto the latent construct called problem-focused whereas, emotional social support, religion and denial would represent emotion focused coping. The second model examined the fit of planning, emotional and instrumental social support, and venting emotions on the construct of approach coping, whereas behavioral disengagement and denial were hypothesized to load on avoidance coping. As they hypothesized, the fit for the second model ($CFI=.94$) was better than for the first model ($CFI=.87$), suggesting that strategies aimed at regulating emotions are not synonymous with avoidance.

On a similar note, Hilton and her colleagues (1994) examined the structure of the Coping Responses Indices (Billings & Moos, 1984) which categorizes coping responses based on method (active cognitive, active behavioral, and avoidance) or focus (appraisal-focused, problem-focused, or emotion-focused). The exploratory factor analysis lent more support to the categorization based on method. Overall, the internal consistency of the subscales were greater for the categorization based on method (range=.55 to .80) rather than focus (range=.41 to .70). In addition, a larger number of items loaded as expected for categorization based on method compared to focus (18 versus 13 items, respectively).

Results from these studies suggest that the avoidance/approach taxonomy has the most empirical support. However, some researchers have suggested that taxonomies with two strategies are too simplistic to describe the myriad of coping efforts (Aldwin, 1994; Carver et al., 1989). Given that the majority of coping researchers agree that coping efforts are displayed in two modalities (i.e. behavioral or cognitive) (Carver et al., 1989; Endler & Parker, 1994; Folkman

& Lazarus, 1988), a dual axis model, as proposed by Moos and Schaefer (1993), can be used to classify coping along two main axes. The first represented by approach and avoidance strategies, relates to the “person’s orientation and activity in response to a stressor” (Holahan, Moos & Schaefer, 1996, p. 27) (i.e., approach or avoidance), whereas the second axis reflects the modality of the action (i.e., behavioral or cognitive). This results in four basic coping categories: behavioral approach, cognitive approach, behavioral avoidance, and cognitive avoidance.

In summary, the conceptualization and the assessment of coping has evolved considerably over the years. Although many questions remain to be answered, each conceptualization of coping has contributed to a better understanding of how individuals deal with adversity. As for assessment, certain methodological considerations need to be rectified in order to make conclusive statements about future studies. These are discussed in the following section.

1.3 Measurement of Coping

Although researchers agree that coping is an important variable in the relationship between stress and health, its measurement remains controversial (Aldwin, 1994). Problems related to self-report measures, the identification of the stressful event, and the definition of outcome variables are some examples of criticisms. Like the study of life events, some suggest that the heavy reliance on self-report measures has been the largest hindrance to coping measurement and, therefore, a move towards more objective measures is warranted (Coyne & Gotlieb, 1996). The following sections attempt to demonstrate that the current state of coping research requires a comparison of instrument modalities before one type can be deemed superior to the other.

Before beginning a discussion on measurement issues, a distinction between different types of instruments is required. Measurement tools can be divided into two categories: respondent-

and investigator-based. Respondent-based measures are also known as self-report inventories or questionnaires. They require the participant to rate his/her own behaviors, emotions, or thoughts in response to an event. Often, these measures are said to be subjective because the rating of the item depends on the individual. The second category, investigator-based measures, involves the rating of the emotion, thought or behavior by the investigator based on observations or disclosure from the participant. When limited to disclosure from the participant, the onus is on the investigator to use probes in order to gather information which is as factual as possible. Validity checks from official records or reports from close others may also be used as evidence to corroborate the participant's report. This type of instrument modality is said to be objective because the rating is independent of the respondent, although clearly it is not used to refer to the existence of an unquestionable or absolute truth. Within this category are contextual measures. In this case, the investigator gathers pertinent information related to the context in which each event occurs.

Prior to beginning the review on the current state of coping measurement, the following section begins with a discussion on issues in stress and life events measurement which have implications for coping research.

1.3.1 Stress and Life Events Measurement

There are two important issues in stress measurement that have implications for coping research: (a) the debate over subjective and objective measures of stressors and how it applies to coping assessment and (b) the assessment of stress and life events as it relates to our understanding of coping effectiveness.

1.3.1.1. Objective Versus Subjective Measures of Stressors.

Although there is some evidence to support a relationship between stressors and both physical and psychological well-being, the relative strength of this relationship has been low (Dohrenwend et al., 1993). In an effort to understand this better, an important debate emerged about the predictive ability of objective and subjective indicators of stressors in predicting mental or physical pathology (Solomon, Mikulincer, & Hobfoll, 1987). The controversy centers mainly around the use of a hassles scale, said to be subjective, (Chamberlain & Zika, 1990; DeLongis, et al, 1982; Kanner, Coyne, Schaefer, & Lazarus, 1981; Lazarus, DeLongis, Folkman & Gruen, 1985) versus major life events checklists, said to be objective (Dohrenwend, Dohrenwend, Dobson, & Schrout, 1984; Dohrenwend & Shrout, 1985).

Lazarus and his colleagues argued that hassles, defined as common everyday stressors that range from "minor annoyances to fairly major pressures, problems and difficulties" (Kanner, et al., 1981, p.25), are much better predictors of health outcomes than the sum of life events. Lazarus and Folkman's (1984) cognitive-appraisal model of stress postulates that subjective appraisals of the hassle mediate the relationship between the hassle and the state of stress. Moreover, unlike life events checklists, the subjective nature of daily hassles considers individual differences in stress measurement (DeLongis et al., 1982; Kanner et al., 1984)

The Dohrenwends and their colleagues argued that the reliance on subjective appraisals of hassles confounds with the individual's mental and physical health. In other words, the individual's evaluation of minor annoyance as a hassle may be a reflection of mental health (or of coping), not the cause of it. More specifically, the Dohrenwends and their colleagues reported that three quarters of items from the hassles scale were rated as manifestations of psychological

disorder (Dohrenwend et al., 1984). Therefore, they argued that this confounding of variables explains the finding that hassles account for a larger amount of variance than major life events as found by Chamberlain and Zika (1990), DeLongis and her colleagues (1982) as well as Kanner and his colleagues (1981).

In their rebuttal to this finding, Lazarus and his team (1985) correlated confounded items and nonconfounded items with psychological symptoms. Findings showed no difference in the strength of the correlations, suggesting that hassles account for a significant amount of variance in psychological symptoms, whether or not they appeared to be signs or symptoms of psychopathology. Dohrenwend and Shrout (1985) re-examined the protocol of the study and found that the rating of the severity of the hassles ranged from “somewhat severe” to “extremely severe.” As such, anything below “somewhat severe” was not considered a hassle and subsequent endorsement of these items reflected maladaptive distress. They claimed that this explained the finding that confounded and nonconfounded items contributed equally to psychological symptoms.

The solution to the debate between the two perspectives continues to elude researchers. Recently, it has been stated that perhaps pitting one measure against the other is not the best answer. According to Aldwin (1994), life events and hassles appear to be related, yet distinct, concepts of stressor. She states that “equating them or saying that one should be measured at the expense of the other may be ill-advised” (Aldwin, 1994, p.66). It has been recommended that researchers would do well to retain different measures until a better understanding of the concepts and how they interact are reached (Aldwin, 1994; Katona, 1976). The combination of both a subjective or respondent-based measure and an objective or investigator-based measure may help

to clarify some methodological problems outlined in the literature on the assessment of stressors. As discussed in the section on coping measurement, the controversy in life events research over subjective and objective measures can also be applied to coping.

1.3.1.2. Measurement of Stressors and Coping Effectiveness.

Advances made in the proper identification of life events and the measurement of the state of stress in a non-pathological population have significant implications for the study of coping strategies. In the coping literature, attempts to examine the use of coping strategies in various populations have generally asked the individual to identify strategies used when faced with a past stressor. For the most part, these studies (e.g., Aldwin & Revenson, 1987; Folkman & Lazarus, 1980; Gass & Chang, 1989) examined the individual's worst stressor in the last week or month and averaged their data across the various worst stressors. Also, given the possibility that the identification of an event as stressful by the participant may be a function of psychopathology or of past failure to cope with a similar event, measurement tools with investigator-based identification of stressful events such as the LEDS are required to minimize this problem (Kessler, et al., 1985). With the exception of a few studies (Bifulco & Brown, 1996; McNaughton, Smith, Patterson, & Grant., 1990), contextual indices of life events in the study of coping have not been sufficiently used. Secondly, in order to determine the effectiveness of various coping strategies in reducing stress levels, appropriate measures for the state of stress which are not confounded with pathology or the stressor are crucial. As discussed in the following section, advances that have been made in life events research can be pertinent to coping assessment. In addition, the current state of coping measurement and its main shortcomings are highlighted.

1.3.2 Coping Measurement

A vast literature on the assessment of coping has emerged over the past few decades (Parker & Endler, 1996). As with the study of stress and life events, the coping literature is saturated with self-report inventories and checklists. Among self-report measures designed to assess coping strategies across various stressful situations, there is the Ways of Coping Questionnaire (WCQ; Folkman & Lazarus, 1988), the COPE inventory (COPE: Carver et al., 1989), the Coping Strategies Inventory (CSI; Tobin, et al., 1989), the Coping Response Inventory (CRI: Moos & Schaefer, 1993), and the Coping Strategies Indicator (CSIn; Amirkhan, 1994). These intraindividual inventories of coping have a number of common characteristics. Using a Likert type scale, individuals are asked to indicate the use of various coping strategies when faced with a self-identified (i.e., participant chooses his most salient stressor) or an assumed stressor (e.g., examination, screening). Using multiple items, they also examine a repertoire of coping efforts, ranging from three for the CSIn (Amirkhan, 1990) to thirteen for the COPE (Carver et al., 1989).

According to Coyne and his colleagues (Coyne & Downey, 1991; Coyne & Gotlieb, 1996), reliance on self-report measures of coping may not provide the coping literature with conclusive findings. Self-report measures of coping have been widely criticized on a number of counts. Their poor (or unreported) psychometric properties and unstable factor structure have been widely cited. Endler and Parker (1994) suggested that many of the most widely used measures of coping suffered from poor reliability and validity as well as failure to cross-validate with different samples. The appropriateness of applying traditional psychometric criteria to coping inventories has been questioned by some authors (Aldwin, 1994; Coyne & Gotlieb, 1996).

Aldwin (1994) suggested that process measures are meant to assess changes and, therefore, one should expect poorer psychometric properties compared to style measures of coping. As an example, she adds that the Ways of Coping (Folkman & Lazarus, 1988) is relatively robust when one considers the number of modifications made to the scale. Nonetheless, brief test-retest should be high in unchanged situations. The weakness of the instrument raises questions about it being a non-optimal measurement device.

Problems related to subscales of various coping measures have also been identified. A study by Stanton et al. (1994) examined more closely the problems related to the assessment of emotion-focused coping. They reported that emotion-focused coping scales were contaminated with items reflecting psychopathology. As mentioned in the discussion on inventories designed to assess stress as a response, confounding the construct of interest with an adaptational outcome can artificially inflate the relation between the two constructs. For example, items such as "become very tense" from the emotion-oriented coping subscale of the CISS and "my feelings were overwhelming and they just exploded" from the expressing emotions subscale from the CSI could represent distress, depression or other forms of poor adaptational outcomes. When attempting to accurately predict adaptational outcome using coping strategies, the need to be wary of items which confound coping with outcome is critical.

Another significant limitation of numerous coping inventories relates to the participant's interpretation of the instructions. Interpretations of the term "coping" may unknowingly influence the endorsement of particular coping items. As suggested by O'Driscoll and Cooper (1994), many designs asked participants to identify a current or past stressor and, subsequently, identified strategies used to deal with it. They found that the use of the term "stressful" predisposed

participants to report only those situations that they were not able to manage effectively. As such, this may have unknowingly restricted the researcher from studying effective coping efforts (O'Driscoll & Cooper, 1994). Similarly, in response to specific stressors, individuals may restrict their reports of coping to strategies that were found to be effective. Overall, the reliance on the coping efforts, as with the self-identification of a stressor, may be problematic. Probes in the context of an investigator-based measure may help alleviate this shortcoming.

The use of retrospective accounts of coping is also problematic. Not only are the respondent's reports of coping strategies potentially biased by the effectiveness of the strategies used, their recall of how they dealt with the stressor might also be biased. Ptacek and his colleagues (1994) found that the highest correlations between daily coping reports and retrospective coping recall five days following the event were moderate at best (highest correlation=.58). They tested whether the discrepancies were due to participants being more likely to recall the strategies they used most, the strategies they used when the event was most stressful or intense, or the strategies used first or last. However, analyses did not support any of these hypotheses (Ptacek et al., 1994). Another possibility, as suggested by Peterson (1980), was that participants were more likely to report what they usually do as the period of recall increases. As a result, researchers who rely on retrospective recall of coping behaviors within the context of a process model may, in fact, be measuring coping as a trait or style.

Throughout the discussion of coping assessment, the most basic issue of coping scales has not been addressed: construct validity. According to Stone and his colleagues (1992), this basic question needs to be asked: do people who indicate on a self-report measure of coping that they do strategy X a lot actually do strategy X a lot? Although this question is fundamental to the

measurement of coping, few researchers have actually investigated this. According to Benson and Hagtvet (1996), coping researchers have invested a great deal of effort in investigating the relationship between coping and other constructs, before sufficiently examining the construct validity of coping itself. First and foremost, it is suggested that coping researchers invest efforts in “defining and clarifying the domain of observables that encompasses the construct of coping and studying the relations among the coping-relevant observables” (Benson & Hagtvet, 1996, p. 84). In order to examine this issue, different types of coping modalities within a study are required to study coping. Not only will this allow researchers to examine the construct validity of coping, the use of multiple measures will help offset their respective limitations (Beehr & McGrath, 1996).

Another type of assessment modality includes investigator-based coping measures. The semi-structured interview in life events research (Brown & Harris, 1978) has been used to elicit information required to clarify the context and personal significance of stressors. Many advantages of the semi-structured interview over checklists for the measurement of stress also pertain to the assessment of coping. For instance, the LEDS Coping Schedule (LEDS-CS, Bifulco & Brown, 1996) used in conjunction with the LEDS is a semi-structured interview designed to gather factual and contextual information on coping strategies. Once life events have been identified using the LEDS, the investigator probes into contextual information about the use of coping strategies such as problem tackling and inferred denial using the LEDS-CS. As with the LEDS, dictionaries are used to provide general guidelines for the investigator to rate each type of coping strategy. Once the strategies are rated by the interviewer, the detailed accounts of

the use of coping strategies are presented to independent trained judges during a consensus meeting in the final phase.

The LEDS-CS rectifies a number of the problems related to the use of self-report inventories. First, it allows for the precise dating and chronological order of events, coping strategies and outcome. Its semi-structured nature allows the researcher to clarify the coping period and the context of strategies. As mentioned, the stages of the stressful encounter play an important role in describing the use of coping strategies. As such, the ability to clearly and discretely define the coping period helps to reduce any misinterpretations by the participants and the researchers. In addition, the clarification helps to disentangle the sequencing of events, reducing the probability of confounding coping strategies with adaptational outcome. The systematic coding system of the LEDS-CS using special dictionaries and consensus meetings reduces the contamination resulting from the participant's state of mind. By using the probes and following the stringent guidelines for rating, the experimenter ensures with greater accuracy that the participant's perception of coping effectiveness does not interfere with the reporting of what is actually done.

Although contextual measures of coping have certain advantages over the more traditional checklists and questionnaires, they do have certain psychometric shortcomings and limitations. For example, three of the original LEDS Coping Schedule scales (helplessness, pessimism, and self-blame) reflect outcome rather than coping effort. An individual's feeling of helplessness may be the result of the event rather than a coping strategy used to deal with it. Second, helplessness and pessimism conceptually overlap with personality traits such as optimism. As such, a researcher interested in examining the mediating role of coping strategies in the relationship

between personality variables or coping resources on adaptational outcome would have to be cautious in interpreting significant results. A significant relationship may simply be an artefact of the conceptual overlap between the concepts. A third criticism is that the interview method is time consuming. Measures such as the LEDS Coping Schedule require extreme time commitments because of (a) extensive training, (b) lengthy interviews with the participants (1-2 hours per interview) and (c) consensus meetings. Finally, although many steps are taken to gather contextual information, the reliance on the participant remains less factual than direct observation of his or her behaviors. Therefore, the effectiveness of interview over self-report inventories in the collection of data remains to be considered in coping research. Until differences and similarities between subjective and contextual indices of coping are better understood, the retention of both types of measurement modalities seems essential to the study of coping.

Coping research needs to ensure a more comprehensive and informative assessment of coping processes. By supplementing traditional self-report inventories with probes provided by the use of contextual measures of coping, researchers can gather concrete information about idiosyncratic coping efforts (Sommerfeld, Curbow, Wingard, Baker & Fogarty, 1996). In sum, the simultaneous use of respondent- and investigator-based instruments alleviates a number of methodological problems outlined in the literature.

Armed with better understanding of the current state of coping assessment, it is possible to review the individual and situational factors which relate to the use of coping strategies. Lazarus and Folkman (1984) propose that the interaction of person variables and contextual demands play an important role in the prediction of coping strategies and, subsequently, in understanding adaptational outcomes. In the coping literature, the ability of specific factors to moderate the use

of coping strategies and subsequent outcomes have been examined. The following section will examine person variables such as personality and resources, situation variables such as contextual severity and time, as well as appraisals, the interaction between person and situation variables.

1.4 Factors Related to Coping Strategies

Certain coping theorists claim that the use of coping strategies are moderated by variables such as personality (Bolger, 1990; Scheier, Carver & Bridges, 1994), objective situational characteristics (Kohlmann, 1993; Mattlin, Wethington & Kessler, 1990; Parkes, 1986) and appraisals (Lazarus & Folkman, 1984). The first subsection on person variables examines intraindividual differences represented by personality characteristics and resources. The second subsection presents studies on the role of situational factors on the use of coping strategies. The final subsection examines the interaction of person and situation variables represented by cognitive appraisals.

1.4.1 Person variables.

Numerous variables have been hypothesized to be important predictors of coping behavior. Two major factors are personality and personal resources.

1.4.1.1. Personality.

Some theorists suggest that personality dispositions help to explain why individuals choose particular coping strategies when faced with stressful events (e.g., Bolger, 1990, McCrae & Costa, 1986). Examples of personality characteristics studied include neuroticism (Gallagher, 1990; Hooker, Frazier & Monohan, 1994; Martin, 1989; McCrae & Costa, 1986), optimism (Carver et al., 1993; Scheier, et al., 1994), or self-esteem (Cozzarelli, 1993). The relationship between these personality characteristics and coping has been studied in a variety of samples

including students (Bolger, 1990), individuals with chronic challenges (e.g., HIV) (Brook, Brook, Wynn, Whiteman, Masci, De Catalogne, Roberto & Amundsen, 1994), individuals with unipolar depression (Holahan & Moos, 1987), and myocardial infarction patients (Martin, 1989).

McCrae and Costa (1986) examined the relationship between three personality characteristics (neuroticism, extraversion, and openness) and 27 coping responses. Participants were asked to recall a stressful event reported nine months prior as part of a larger study and indicate the strategies used at that time to deal with the event. A second study asked subjects to recall how they coped with three events in the past six months, which were appraised as either a loss, a threat, or a challenge. In both studies, significant correlations were reported between neuroticism and hostile reaction and between neuroticism and indecisiveness. Other correlations, however, either did not replicate across studies or did not replicate when peer- and spouse-ratings of personality were used (McCrae & Costa, 1986). The latter suggests that the remaining significant correlations may have been an artefact of self-report response biases. Hence, the potential shared variance common to the general methodology of self-reports puts these findings into question. Bolger (1990) adds that having to recall coping efforts in the study may have biased their accounts, as evidence suggests that people report more dispositional accounts of coping as time elapses.

In an attempt to correct the shortcomings of McCrae and Costa's study, Bolger (1990) conducted a longitudinal study of personality and coping. He also examined the relationship between personality and coping using an approach that incorporated the stage of the stressful event (i.e., anticipation, impact and post-impact). Bolger (1990) attempted to demonstrate that coping processes mediated the effects of neuroticism on distress in students undergoing college

entrance examinations. Using Lazarus' Ways of Coping, neuroticism only predicted self-blame and wishful thinking during the pre-examination period. With the exception of these two strategies, the participants, as a group, displayed similar changes in the use of coping strategies as the stressful encounter unfolded, suggesting that situational factors played a greater role in predicting coping than personality.

For the most part, studies find a significant relationship between personality (Gallagher, 1990; Hooker et al., 1994; Martin, 1989) and coping strategies, although, across a wide range of studies, correlations between personality and coping have been below .50 and sporadic (Brook et al., 1994; Hooker et al., 1994; Martin, 1989). The extent to which problems of coping measurement and design relate to this is unclear. Nevertheless, there is a lack of evidence to date supporting the predictive power of personality with respect to coping strategies.

1.4.1.2 Resources.

Coping resources are person-characteristics that "provide immunity against damage from stress" (Zeidner & Hammer, 1992, p. 710). Variables typically construed as facets of personality enable individuals to deal with stressful events more effectively. Examples of resources that have been studied include such concepts as locus of control (Amatea & Fong, 1991; Holmes & Werbel, 1992; Terry, 1994) and mastery (Freddy & Hobfoll, 1994; Hobfoll, 1989). Others have expanded the definition to include social resources such as social support (Freddy & Hobfoll, 1994; Holahan & Moos, 1987, 1990; Scharlach & Fuller-Thompson, 1994; Tessier, Piché, Tarabulsky & Muckle, 1992). Studies on coping resources have often focused on students (Ginter, West, Zarski, 1989; Terry, 1994); however, coping research has also examined the stress of birth (Tessier, et al., 1992), joblessness (Holmes & Werbel, 1992), and role strain (Amatea & Fong, 1991).

Studies have shown that the availability of resources relate to the use of specific types of coping strategies. For example, individuals with fewer resources seem more likely to use emotion-focused coping in a more self-defeating manner, whereas those with sufficient resources appear to use a mix of problem- and emotion-focused coping. Holahan and Moos (1987) reported that their community-dwelling participants with greater personal and social resources relied on active coping strategies more frequently and avoidance coping strategies less frequently than did those with fewer resources. Although the findings were statistically significant, the strength of the correlations were low to moderate and explained little variance. Similar results have been reported in other studies (Tessier et al., 1992; Zeidner & Hammer, 1992). For example, Terry (1994) reported that coping resources accounted for 2% of variance in the coping strategy of cautiousness and up to a maximum of 15% for the strategy of minimization.

The role of coping as a mediator between resources and adaptational outcomes is equivocal. Holahan and Moos (1987, 1990) posited that the relationship between personal and social resources, and adaptational outcomes is mediated by coping efforts. In fact, they found that coping efforts mediated the relationship between resources and improved daily functioning under high-stress conditions (Holahan & Moos, 1990). However, a study by Zeidner and Hammer (1992) failed to support this finding in a group of Israeli subjects experiencing missile attacks during the Persian Gulf War.

The lack of conceptual boundaries between coping resources, personality, and coping is a significant shortcoming in the study of person variables. Zeidner and Hammer (1992) claimed that coping resources and coping strategies are often used interchangeably in the literature. There is also an overlap between the use of personality and coping resources or strategies. For

instance, the concept of optimism has been categorized as either a personality characteristic (Cozzarelli, 1993; Scheier, et al., 1994) or as a resource (Jerusalem, 1993). This overlap may overestimate the relationship between resources, personality and coping strategies. There is evidence that the relationship between both resources and personality with coping strategies are often artificially inflated by the overlap between these three concepts and their measurement (Scheier et al., 1994).

Second, problem-solving abilities are also often included among a number of resources. It is hypothesized that effective problem-solving skills are required for an individual to successfully adapt to the environment (Moos & Schaefer, 1993). However, it is difficult to disentangle problem-solving skills from the coping strategies referred to as problem-solving or problem-focused. Again, there is an overlap between the resources studies and the concept of coping.

In summary, the study of personality and coping resources as predictors of coping strategies is encumbered by methodological and conceptual problems. Mainly, the entanglement of the concepts and measurement of coping, resources and personality has resulted in an inflation of the relationship between these factors. Before further studies attempt to examine personality and resources as predictors of coping, clearer conceptual boundaries and methodologically sound instruments are required.

1.4.2. Situational Factors.

Numerous researchers have hypothesized that situational characteristics play an important role in determining the use of coping strategies (Kolhmann, 1990; Parkes, 1986; Terry, 1994). The role of objective situational characteristics such as the nature of the stressor or its

controllability, the severity of the stressor as well as the stage of the stressor have all been examined.

1.4.2.1 Objective Situational Characteristics.

Few studies have examined the effects of objectively determined situational characteristics of a stressor, also known as contextual characteristics, on the use of coping strategies. The closest attempt has been to classify stressors based on the content or nature (e.g., illness, interpersonal relationships, and work) of the event. These studies failed to yield consistent results. For instance, in a study of 135 female nursing students, stressful events related to their first ward assignment were categorized independently by judges into four types of work-related stressors (Parkes, 1986). Parkes (1986) found that situational factors, and their interaction with individual differences (i.e. neuroticism and extraversion) and environmental demands (i.e., work demand), explained 39% of variance in the coping strategy of suppression, but failed to reach significant levels for direct coping (35%). Overall, the type of event was a greater predictor of coping than was the perceived importance of the stressor (Parkes, 1986). On the other hand, other studies found that the nature of the event was related to coping strategies only weakly (Wells & Matthews, 1994) or not at all (Heady & Wearing, 1990). Heady and Wearing (1990) categorized the life events of 942 community dwelling residents into three categories: work-related, health or interpersonal. No differences on instrumental, affect regulation and avoidance strategies were noted across stressor type (Heady & Wearing, 1990). As will be discussed, the differences between these studies may relate to the method used to categorize life events.

Two problems are identified with the practice of categorizing events to determine the role of situational characteristics in coping strategies. First, a stressful life event can be complex. More

specifically, an event may lead into, result from, or co-exist with a second stressor. For example, a chronic health problem can result in greater absenteeism at work which, in turn, may lead to missed deadlines and other work stressors. In such a case, objective and accurate classification of the event is jeopardized. Second, events within one category may have dissimilar characteristics. For instance, one work stressor may involve threat, whereas another may involve loss. Thus, inconsistencies may simply be due to the heterogeneous nature of events found in a single category.

The number of studies designed to examine contextual characteristics, rather than the simple categorization of events based on broad types of stressors, have mainly focused on the controllability or predictability of the stressor (Kohlmann, 1993). Recent research on the role of coping in adaptational outcomes proposes a goodness of fit approach, which contends that coping efficacy depends on the match between coping strategy and controllability of the event. In other words, a person's coping efforts must be congruent with the controllability of the stressor in order to be effective; problem-focused strategies are more appropriate when dealing with a controllable stressor, and emotion-focused strategies are more important when dealing with an uncontrollable one (Terry, 1994). For instance, in a laboratory study conducted by Kohlmann (1993), subjects used more avoidant coping when the predictability of a cue warning of an upcoming electric shock was low.

However, studies conducted in the laboratory are not easily generalizable to natural settings. Few studies have examined the role of contextual characteristics on coping strategies in a natural setting. Stanton, Tennen, Affleck and Mendola (1992) examined the use of coping strategies with the Ways of Coping in infertile couples. Postulating infertility as an uncontrollable

stressor, they found that women who accepted responsibility for this event used more escape-avoidance and experienced the most distress (Stanton et al., 1992). The authors assumed that all cases of infertility have similar situational characteristics, when in fact the contextual information surrounding each case may be vastly different. For example, infertility due to genital dysmorphism is contextually different from infertility due to sexually transmitted diseases.

Mattlin and his colleagues (1990) examined the relation between threat and loss, as rated by a contextual third-party rating scale, the LEDS, and the effectiveness of coping. The findings showed that the severity of the loss or threat was related to the effectiveness of various coping strategies in modifying levels of anxiety and depression. For example, reappraisal helped to alleviate levels of distress when dealing with the death of a loved one, whereas reappraisal when dealing with a low-threat stressor exacerbated levels of anxiety. Although this represents a clear attempt to incorporate objective characteristics in investigation of the stress-health relationship, the use of clinical samples makes causal inferences difficult. As will be discussed further, the chronological sequence of coping strategies, stress and illness needs to be laid out carefully before drawing conclusions about the stress-health relationship. Otherwise, the alternative hypothesis, that illness led to stress and maladaptive coping strategies, cannot be discounted.

Masel, Terry, and Gribble (1996) examined longitudinally the fit of coping efforts with the controllability of a stressful event as they relate to coping efficacy in a sample of undergraduate students. Using both subjective and objective measures of event controllability, they found that the goodness of fit was irrelevant when faced with stressors of low to moderate severity. They suggest that the lack of support for the goodness of fit model may have been due to the lack of severe stressful events experienced by the study participants. The findings reported by Forsythe

and Compas (1987) which support the goodness of fit when dealing with major life events, but not with daily hassles, provides empirical evidence for their hypothesis. As will be described in the following section, the importance of stressor severity in the role of coping strategies and impact of well-being needs to be discussed.

1.4.2.2 Stressor Severity.

The use of coping strategies as a function of stressor severity has not been widely examined. The results of studies that have considered the effects of severity on the use of coping strategies have been mixed. These discrepancies can be attributed to the researcher's definition of stressor severity. For instance, Billings and Moos (1981) found that the severity of life events, as measured by the Social Readjustment Rating Scale (SRRS: Holmes & Rae, 1967), was not a predictor of coping effort. In this case, severity was operationally defined as the rating on the SRRS. However, the vagueness of items on the inventory may have created large inter-item variability. For example, the death of a second cousin who is seen once a year and the death of a close sibling could both be reported as stressors categorized as the death of a family member, and therefore receive the same normative rating on the SRRS. In the case of the contextual severity of these events, the death of a close sibling would be rated as a greater loss.

A second study conducted by Ptacek and his colleagues (1994) examined if recall of coping strategies was related to the levels of stress at the time of the event. College students reported their daily coping for seven days prior to a mid-term examination. Five days following the exam, they were asked to recall their exam-related coping. Correlations between daily reports and recall of coping were not highest on the day reported as most stressful (Ptacek et al., 1994). These findings should not be taken to discount the effects of severity on use of coping strategies

because the outcome of coping efforts (i.e. stress), not stressor severity, was being measured. In fact, differences should not have been expected: subjectively reported levels of stress varied, but the contextual severity of the stressor did not actually change over the course of anticipation of the exam. Although students became increasingly stressed as the exam approached, the contextual information surrounding the stressor did not change over this period (i.e., marked going into exam was the same, the weight given to the exam had not changed, etc.).

Studies which have operationalized stressor severity using contextual information have found a relationship between severity and coping effectiveness (e.g., Mattlin et al., 1990; Zeidner and Hammer, 1992). Mattlin et al.'s (1990) study illustrated the importance of the contextual severity of stressor, as measured by the LEDS, in moderating the relationship between coping and distress. They reported that certain strategies (i.e., reappraisal) were more effective in reducing anxiety or depression when the contextual severity was high, whereas the same strategy used with a stressor of low contextual severity resulted in increased levels of distress. These findings coincide with the results from an empirical investigation conducted during the Gulf War by Zeidner and Hammer (1992). Unlike many studies, active coping was not found to decrease anxiety when individuals were faced with a missile attack. It was hypothesized that the decreased effectiveness of the strategy was related to the intense severity of the event.

The studies by Zeidner and Hammer (1992) and Mattlin and his colleagues (1990) carefully demonstrated the importance of stressor severity in the moderation of the use of coping on outcome. Although these studies are important in understanding the relationship between coping and health, studies directly examining severity and use of coping strategies are still required.

1.4.2.3 Stage of the Event.

As mentioned in the discussion of coping as a process, the stage of the event is an important factor in an individual's use of coping strategies. In other words, as a stressful encounter unfolds from anticipation to recovery, different strategies are used to deal with the psychological stress. Evidence for this variation across time has been demonstrated in different settings, including academic examinations (Arthur & Hiebert, 1996; Bolger, 1990; Carver, et al., 1989; Folkman & Lazarus, 1985; Stewart & Schwarzer, 1996), and breast cancer diagnosis and treatment (Carver et al., 1993; Heim, Augustiny, Schaeffer, Valach, 1993; Stanton & Snider, 1993).

A study by Arthur and Hiebert (1996) examined the use of coping strategies in students adjusting to the transition from high school to university. Over the course of the academic year, the participants were more likely to use positive reappraisal and acceptance in the beginning of the year, whereas seeking social support and suppressing competing activities were more likely at the end of the academic year. Findings from Stewart and Schwarzer (1996) further support these findings. In their sample of first year medical students, they reported that seeking social support increased, whereas acceptance decreased from the week of orientation to the beginning of the second semester of classes. In addition, increases in the use of avoidance strategies such as denial, behavioral disengagement and alcohol use were also noted. Of special note, Heim and his colleagues (1993) examined the coping modes of women with breast cancer for five years following breast cancer diagnosis. They found that four modes of coping changed with the course of the illness. Emotional release and the need for support decreased as the disease progressed, whereas relativizing consistently increased. Constructive activity and self-validation formed an

inverted-U shape (i.e. reached their peak at the mid-point of the study). Although these studies show that coping strategies vary over time, they do not detail the situational characteristics that relate to these changes, making it difficult to generalize to other stressful events.

Other studies have attempted to define more clearly the stages of the stressful encounter by examining discrete stressors such as midterm examinations or health threats. In these settings, findings suggest that the use of approach-type coping strategies such as problem solving, planning and seeking social support decrease once the event (i.e., mid-term examination or diagnostic assessment) has passed (Carver & Scheier, 1994; Carver et al., 1993; Folkman & Lazarus, 1985). Lazarus and Folkman (1984) refer to this stage as post-impact. On the other hand, significant decreases in avoidant-type coping strategies tend to occur after the results of the academic examination or diagnostic assessment (Carver & Scheier, 1994; Folkman & Lazarus, 1985; Stanton & Snider, 1993), also known as the stage of impact (Lazarus & Folkman, 1984). More specifically, the use of behavioral disengagement decreased only several weeks after the receipt of a cancer diagnosis (Carver & Scheier, 1994; Stanton & Snider, 1993), whereas the use of cognitive avoidance or denial decreased immediately following the news that the assessment confirmed the presence of cancerous cells (Carver & Scheier, 1994; Stanton & Snider, 1993).

Based on these findings, it appears that the stage of the event plays an important role in the use of coping strategies. Despite evidence for its importance, there is a lack of prospective designs in the coping literature. Moreover, the longitudinal description of the coping process has been somewhat limited to student populations faced with mid-term examinations. Hence, the stage of the event in relation to coping needs to be incorporated into studies examining strategies as other natural stressors unfold.

1.4.3. Interaction Between Person and Situation Variables

The characteristics of an event as perceived by the participant have also been examined in relation to coping strategies. For the most part, the subjective evaluation of the event relates to the individual's appraisal of the stressor (Lazarus & Folkman, 1984).

As mentioned, once an individual determines what is at stake and what resources are available to deal with an event, behavioral and cognitive coping efforts are exhibited to manage the situational demands (Lazarus & Folkman, 1984). Findings consistently demonstrate that subjective appraisals are significant predictors of coping strategies. Studies have shown that problem solving strategies are more likely when the event is perceived as threatening or challenging, whereas emotion-focused strategies are most likely to ensue from loss events (Bjork & Cohen, 1993; Carver & Scheier, 1994; Folkman & Lazarus, 1985; Stanton & Snider, 1993). In turn, some researchers have attempted to show that the effectiveness of coping efforts depends on the goodness of fit of the appraisals and the coping efforts in question. More specifically, problem-focused coping would be more effective when the event is perceived as controllable, whereas emotion-focused coping would be more effective in uncontrollable situations. However, few studies have entirely supported this tenet. For example, Forsythe and Compas (1987) found the perceived controllability of a major life event moderated the impact of coping on symptom levels; however, the result was not replicated for daily hassles. Moreover, the nature of these studies have tended to be correlational, and therefore the role of appraisal in the choice of coping strategy could not be determined causally. Given the dynamic nature of the stress process, it is plausible that appraisals are the outcome of coping, rather than the opposite.

According to Lazarus' model, coping and appraisals are separate processes. Yet, measurement of both often seems redundant. The appraisal of "had to hold yourself back from doing what you wanted to do" and the coping item "tried not to act too hastily or follow my own hunch" are very similar. Researchers have suggested that the distinction between appraisals and coping is unclear and difficult to make in practical terms (Stone et al, 1992) especially between cognitive appraisals and cognitive coping (Schwarzer & Schwarzer, 1996). For example, when a person initially perceives a situation as threatening, but subsequently decreases the level of threat by positively reappraising the situation, is she coping or appraising? Theoretically, researchers can make the distinction by stating that the appraisal of threat triggered the positive reappraisal. However, in practical terms, the distinction is less obvious. Future research needs to examine more closely the overlap between these two concepts.

In summary, numerous variables have been hypothesized as moderators of coping strategies. A few issues such as overlap between personality, resources, appraisals, and coping, and the use of some measures have led to difficulties in the interpretability and generalizability of the findings. Within this vast body of literature, some variables, such as situational characteristics, have had more predictive power than other variables, such as coping resources. On the other hand, stressor-specific variables, such as stressor severity and the stage of the stressor, have not been studied as extensively, despite evidence suggesting that they relate to use of coping strategies. Consequently, their relation to coping requires more empirical scrutiny.

1.5 Coping and Adaptational Outcome

Not only have investigators attempted to identify factors associated with the use of coping strategies, many have focused on coping strategies as potential mediators or moderators of the

stressor-stress-illness relationship to assess the efficacy of coping to enhance well-being. Despite agreement that specific coping behaviors are related to one's level of well-being, the strategies responsible for these fluctuations have varied from study to study.

Studies examining the relationship between health and coping generally fall into two categories: domain oriented and outcome oriented. The first involves the use of coping strategies to deal with different pathologies, such as rheumatoid arthritis (e.g. Revenson & Felton, 1989), sickle cell disease (Thompson, Gil, Abrams, & Phillips, 1992), myocardial infarction (Martin, 1989), or AIDS (Commerford, Gular, Orr, Reznikof, & O'Dowd, 1994). The outcome oriented studies, which is the focus of the following section, examines the role of coping in the onset, maintenance, and recovery of various physical and psychological symptoms or disorders. Examples of outcomes examined include the individual's concurrent and/or prospective levels of depression (Holahan & Moos, 1987; Osowiecki & Compas, 1998; Rohde, Lewinsohn, Tilson, & Seeley, 1990; Vitaliano et al., 1990), health dysfunction (Gass & Chang, 1989), migraine headaches (Sorbi & Tellegen, 1988), health behaviors (Croyle & Hunt, 1991; Miller, Brody, & Summerton, 1988), distress (Carver & Scheier, 1994), immunological functioning (McNaughton et al., 1990), negative affectivity (Heady & Wearing, 1990), and stress (Kuiper, Martin, & Olinger, 1993).

A series of studies have been conducted to examine the role of coping strategies in the onset and maintenance of psychological disorders as assessed by diagnostic criteria (Holahan & Moos, 1987; Rohde et al., 1990; Vitaliano et al., 1990). Although studies have found a significant relationship between coping and psychopathology, problems in determining causality between variables have made it difficult to draw conclusions. In other words, negative responses

to a stressor, such as self-blame and denial, might be a component of the disorder itself, not a cause of it. In order to rectify this problem, Bifulco and Brown (1996) stated that coping strategies and the onset of the disorder need to be sorted out chronologically when attempting to make causal inferences. Until investigators carefully sequence coping efforts and ensuing pathology, findings will remain inconclusive. Second, a lack of distinction between symptoms and disorders have made it difficult to draw firm conclusions from the findings (Coyne & Downey, 1991; Kessler, Price & Wortman, 1985). Coyne and Downey (1991) argued that individual's suffering from a particular pathology, not simply exhibiting symptoms, may have different resources and greater vulnerabilities to other risk factors which alter their ability to successfully adapt to a stressor. These complex, intertwined factors make it more difficult to separate the role of coping in adaptation to stress from other extraneous factors.

Studies have been designed to examine similar questions in nonclinical samples. These studies generally examine the role of coping strategies in levels of psychological and/or physical symptoms (Aldwin & Revenson, 1987; Commerford, et al., 1994; Dunkel-Schetter, Feinstein, Taylor & Fake, 1992; Gass & Chang, 1989; Kendler, Kessler, Heath, Neale, & Eaves, 1991; Revenson & Felton, 1989). Findings suggested that emotion-focused coping strategies such as avoidance, emotional expression, wish-fulfilling fantasy, and denial are positively correlated with levels of psychological and physical symptoms (Commerford et al., 1994; Dunkel-Schetter et al., 1992; Gass & Chang, 1989; Kendler et al., 1991; Osowiecki & Compas, 1998). On the other hand, emotion-focused coping has also sometimes been associated with decreased levels of symptoms (Dunkel-Schetter et al., 1992; Folkman & Lazarus, 1985). Although these findings are supported in numerous empirical studies, problem-focused and emotion-focused coping do not

infallibly predict these outcomes. For instance, seeking social support has been related to increased levels of distress (Dunkel-Schetter, et al., 1992; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986).

The reason for the inconsistencies in the prediction of psychological and physical symptoms may be due to the categorization of the coping strategies. As mentioned previously, there appears to be some overlap between emotion-/problem-focus and approach/avoidance taxonomies, however, the conceptual differences, especially between emotion-focused coping and avoidance coping, cannot be neglected. Carver et al. (1989) and Stanton and her colleagues (1994) pointed out that researchers often make the mistake of categorizing strategies other than problem-focused strategies as evidence of emotion-focused coping strategies. However, there are conceptually distinct ways of dealing with emotions (Stanton et al., 1994), some of which represent approach coping and others which represent avoidance coping. Given the variability in which researchers may categorize such strategies, inconsistencies in the prediction of well-being are expected.

The conceptual and methodological confounding of emotion-focused coping with distress or psychopathology is also problematic. According to Stanton and her colleagues (1994), it is not surprising that studies find a relationship between coping and illness given the salient confounding of emotion-focused coping and psychopathology. More specifically, emotion-focused coping items often reflect symptoms of distress or psychopathology. For example, the item "feel anxious about not being able to cope" from the Endler and Parker's (1990) emotion-oriented coping scale confounds coping with a possible symptom of anxiety. While controlling for this problem, Stanton and her colleagues (1994) found that women who used emotional-approach coping

became less depressed and displayed more life satisfaction. The findings were replicated for women when the content of the situation involved interpersonal stressors. Contrary to prior research, these findings suggested that efforts to identify, understand, and express emotions could have beneficial effects on adjustment (Stanton et al., 1994). Thus, further investigation using systematic and factual measures of coping are required before conclusive statements can be made from these findings.

The discrepancies in findings related to the prediction of well-being using coping strategies may also be explained by the lack of consideration for the contextual severity of the event. Although relatively few studies have systematically investigated the role of contextual severity, studies have shown that the severity of the particular stressor plays a significant moderating role on the relationship between coping and outcome (Mattlin et al., 1990; Zeidner & Hammer, 1992). More specifically, the effectiveness of a coping strategy depends on the severity of the event. For example, approach coping strategies when faced with missile attacks increased levels of distress (Zeidner & Hammer, 1992). The studies which examined the relationship between coping and health typically fail to incorporate the notion of stressor severity. Although the stressor may be homogenous (i.e., same health stressor for all participants), the range of contextual severity, even for individuals at the same stage of the disease, may be large. For example, a 40-year old woman with no children who recently miscarried would not receive the same contextual severity as a 25-year old with two children experiencing the same stressor.

In summary, findings suggest support for theoretical models implying that coping strategies play an important role in psychological and physical well-being. Generally, strategies directly aimed at solving stressors predict better outcomes than do those which attempt to avoid

the stressor. However, in order to fully understand coping effectiveness and to accurately predict well-being, theoretically and empirically more sound coping taxonomies, as well as the incorporation of the stage of the event and contextual severity, are required. Moreover, past studies have helped to increase our understanding of the effects of coping on mental and physical health, yet inadequate or inappropriate measurement tools for coping and outcome variables, and a scarcity of prospective designs attempting to chronologically disentangle coping efforts from onset of symptoms, render the generalizability and usefulness of these findings questionable. As such, more stringent guidelines for the measurement of stress and coping are required. As will be discussed in the following section, certain methodological considerations need to be rectified in order to make conclusive statements about future studies.

1.6 Synthesis of Problems

Throughout this document, many inconsistencies and problems in the coping literature have been outlined. Depending on the population, the conceptualization of the variables, the stressor, and the measurement tools used, the predictability of coping strategies and its ability to influence adaptational outcomes have varied. These inconsistencies are found at theoretical and methodological levels.

Methodologically, problems of self-report questionnaires include vague and/or inapplicable items, misinterpretation of the coping period, unstable factor structure, and the assumption that the individual can accurately report his/her coping behavior (Ben-Porath, Waller, & Butcher, 1991; Bifulco & Brown, 1996; Endler, Parker, & Summerfeldt, 1993; Parker, Endler & Bagby, 1993; Stone, Greenberg, Kennedy-Moore, & Newman, 1991). In addition, certain coping measures (e.g., CSI) embed the notion of effectiveness within their questionnaire, which,

as mentioned previously, confounds the coping strategy with the outcome variable (Latack & Havolvic, 1992). As described in the previous section, the use of a semi-structured interview, such as the Coping Schedule, should help to alleviate problems related to contamination by the individual's state of mind, confounding of dependent and independent variables, and the chronological sequencing of events. Although semi-structured interviews have certain psychometric advantages to traditional self-report measures, they also have their shortcomings and, therefore, substituting one type of measure with another before systematically examining both their psychometric properties seems premature. As such, the combination of respondent- and investigator-based instruments will allow investigators to examine the issue of construct validation, and subsequently gain fundamental knowledge about the concept of coping and its measurement. In addition, studies comparing the relative importance of subjective and contextual indices of coping strategies and how they relate to levels of psychological stress are needed to expand on our understanding of how the construct of coping relates to adaptational outcomes.

Another prominent problem is a paucity of prospective-design studies. Many studies measure the effects of past coping strategies on current mood (e.g., Gass & Chang, 1989). Based on previous findings, this type of research design does not allow for accurate and clear descriptions of coping strategies. First, findings strongly suggested that coping strategies change as the encounter unfolds (Folkman & Lazarus, 1985; Scheier & Carver, 1994; Stanton & Snider, 1993). Second, retrospective accounts correlated moderately with the strategies reported at the time of the event (Ptacek, et al., 1994). The passage of time and biased accounts of coping due to knowledge of the outcome are problematic issues. In order to truly study coping as a transaction,

multiple prospective assessments with brief intervals between assessments are necessary (Endler et al., 1993).

Theoretically, the overlap between predictor and outcome variables needs to be addressed. For instance, McCrae and Costa (1986) noted that measures of personality, coping, and stress outcome may have similar items that lead to an artificial inflation of the relation between these variables. They gave the example of negative affectivity, depression, and self-blame. Similar underlying structures are embedded in each of these variables. Thus, before embarking on empirical studies, the concepts studied need to be distinct and clearly defined to make conclusive statements about the findings.

A number of methodological, empirical, and theoretical problems have been outlined. The use of prospective studies and adequate measurement tools can help to alleviate some of them. Similarly, the study of coping using samples with no suspected psychological or psychiatric pathology (i.e., non-clinical sample) in the context of a rather homogeneous naturally threatening stressor is needed. Breast cancer screening could be such a setting. The procedure involves the anticipation of screening results and has the potential for either a positive or negative outcome. These factors make breast screening an ideal setting to prospectively study coping in the face of a natural stressor. The following section discusses the specific context in which coping strategies will be assessed in the current project.

1.7 Coping in the Context of Breast Cancer and Screening

The relationship between coping, stress and health has been widely researched in several medical settings. One area of particular interest in women's health has been breast cancer, mainly because of its high incidence and major consequences. This high incidence has led to the

implementation of preventative screening programs whose impact have just begun to be scientifically scrutinized (e.g., Lerman, Sands, Balshem, Lustbader, Heggan, Goldstein, James, & Engstrom, 1993; Lightfoot, Steggles, Wilkinson, Bissett, Bakker, Darlington, Erola, & Miller, 1994). To date, there are relatively few studies which have examined the use of coping strategies when undergoing routine breast screening. As such, the study of coping in this context helps to expand our knowledge of how women deal with a specific health threat, such as the risk of breast cancer, and the impact of their coping efforts on their levels of psychological adjustment. The non-clinical sample and anticipation of results associated with breast screening make it an ideal setting for the prospective study of coping strategies.

1.7.1 Breast Cancer

According to the Canadian Cancer Statistics (National Cancer Institute of Canada, 1994), it is estimated that breast cancer will continue to be the most frequently diagnosed cancer for women. It is the most common type of cancer and second only to lung cancer in mortality (Glanz & Lerman, 1992). The incidence of breast cancer continues to rise in women aged 55 years and over. Estimated statistics in Canada suggested for 1994 that 17,000 new cases of breast cancer would be diagnosed and 5,400 women would die from this disease, representing 20% of all deaths due to cancer. To date, the etiology of breast cancer is unknown. However, age, family history of breast cancer, personal history of breast cell abnormalities, early menarche or late menopause, and delayed first parity have been identified as primary risk factors (Baron-Faust, 1995; Gail, Brinton, Byar, Corle, Green, Schairer, & Mulvihill, 1989; Ingram, 1989).

When a suspicious lump is discovered, there are medical procedures designed to examine the cells of the tissue. Biopsies are conducted to determine if the lump is malignant or benign.

Non-surgical biopsies involve the aspiration of the lump with a needle, whereas surgical biopsies remove a part of or the entire lump in order that it can be tested for malignancy. If the lump is cancerous, the patient begins cancer treatment. Treatment for breast cancer invariably involves the surgical removal of the cancerous tissue. Often, treatments such as radiation, chemotherapy, and hormone therapy are used in conjunction with surgery (i.e., lumpectomy or mastectomy). Although lumpectomy is now being offered more frequently, 65% of breast cancer patients still undergo partial or total mastectomy. The use of a surgical procedure in conjunction with other therapies depends on the stage of the cancer and the size of the breast (Baron-Faust, 1995).

In order to reduce death rates associated with breast cancer, prevention practices and screening programs have been implemented. For example, conducting monthly breast self-examinations has been encouraged in Canada and the United States. Pamphlets and videos are available from breast cancer organizations to demonstrate the proper method to check for lumps. Breast cancer screening through mammograms are also an important method of prevention. Screening programs aimed at the early detection of breast cancer lumps in women at relatively low risk typically include a clinical breast examination by an experienced health professional, the screening mammography (x-ray of the breast tissue) and education related to breast health and the practice of breast self-examination. In Canada and the United States, mammography screening guidelines recommend that women over 50 years of age receive a mammogram every two years. The purpose of the screening mammography is to detect an abnormality rather than to diagnose a malignancy. It is reported that mammography reduces mortality rates by up to 35% for this age group (Baron-Faust, 1995; Fine, Rimer & Watts, 1993). Moreover, the increased use of mammography, and breast-self examinations have helped to identify more than half of breast

cancer cases before the cancer has spread beyond the breast (Baron-Faust, 1995). The growing number of population-based breast screening programs has led to the design of studies that examined utilization rates and adherence to these programs (Costanza, 1994; Lerman et al., 1993; O'Connor, 1993). With the importance given to such screening practices and the number of women it affects, researchers are becoming increasingly interested in its psychosocial impact and relation to other health behaviors.

1.7.2 Coping with Breast Cancer

Studies on the psychosocial impact of breast cancer and its treatment generally suggest that the disease can result in body image problems, high levels of anxiety, and depression (Ingram, 1989). Moreover, levels of distress may vary depending on a history of depression or stressful life events preceding the diagnosis (Maunsell, Brisson, & Deschenes, 1992), as well as the type of treatment (Margolis & Goodman, 1987; Maunsell, Brisson, Deschenes, 1989). Within the context of breast cancer, most studies have focused on how the use of coping strategies and stress levels led to or influenced the onset of breast cancer (Cooper & Faragher, 1992, 1993) or how they subsequently affected survival rates and prognosis (Buddeburg, Wolf, Sueber, Riehl-Emde, Bergant, Steiner, Landolt-Ritter, & Richter, 1991; Burgess, Morris & Pettingale, 1988). Understanding how women cope with the diagnosis and the disease may also highlight factors relevant to coping with breast screening.

In an attempt to reduce the psychosocial impact of breast cancer, researchers in this area are beginning to examine variables which play a role in increasing the patient's adaptive adjustment to the disease and its treatment. Among these variables is the use of coping strategies across treatment and diagnosis. These descriptive studies have examined the use of various

coping strategies when dealing with the actual diagnosis of breast cancer and how these subsequently influence either concurrent or prospective levels of psychological well-being. Stanton and Snider (1993) examined the use of coping strategies in women awaiting biopsy and cancer treatment. More specifically, they considered at what phase of diagnosis and treatment distress was most prominent, and identified factors that hindered or facilitated positive emotional adjustment. They reported that women who experienced pre-biopsy distress were younger, less optimistic, more threatened, and engaged in more cognitive avoidance compared to women not experiencing pre-biopsy distress. Prospectively, women who used more cognitive avoidance experienced higher levels of distress when diagnosed with cancer.

A study by Carver et al. (1993) examined the use of coping strategies across diagnosis and treatment by incorporating both concurrent and prospective variables. Before surgery acceptance of the situation was associated with decreased distress at post-surgery. Follow-up over a three month period showed that denial and disengagement were positively related to distress, whereas humor was negatively related to distress. Avoidance was found to be harmful to both levels of concurrent and prospective distress. These studies (Carver et al., 1993; Stanton & Snider, 1993) represent important contributions to the study of the psychosocial impact of breast cancer. However, as will be discussed in the following section, there remains an area underdeveloped in the breast cancer literature: the description of coping strategies when faced with population-based screening and the impact of the experience on short- and long-term adjustment.

1.7.3 Coping and Screening

Currently, there are a variety of medical screening programs available in the community. Screening for HIV, cholesterol levels, hypertension, cervical cancer, prenatal abnormalities and

mental retardation are among numerous programs available to medical consumers. One of the most prominent population-based screening programs is for breast cancer. Genetic screening for the BRAC1 gene and screening mammography are programs receiving considerable attention in the media (Baron-Faust, 1995).

Although studies have been conducted to investigate how individuals cope with a health threat, relatively few studies have examined how women deal with population-based screening programs. With the increasing incidence of breast cancer, many areas are beginning to implement population-based screening programs in an attempt to reduce the number of deaths associated with this disease. Results of many studies (e.g., Gram, Lund & Slenker., 1990; Lerman, Miller, Scarborough, Hanjani, Nolte, & Smith, 1991; Lerman et al. 1993; Lightfoot et al., 1994; Rippetoe & Rogers, 1987) suggested that breast screening increased anxiety levels and worry about cancer, and decreased preventive health behaviors. Based on these studies, it appears that screening does influence levels of well-being, both before and after screening.

Although screening has the benefit of identifying a cancerous tumour early in its development, Mushlin and his colleagues' (1998) meta-analysis of the accuracy of screening mammography report a false positive rate (i.e., follow-up testing revealed no malignancy) ranging between 1% and 6.5%, and a true positive rate (i.e., follow-up testing confirmed malignancy) between 83% and 95%. Of particular interest is the impact of false positive screen result on women's well-being. Researchers have suggested that the notification of an abnormal result following a routine mammography might contribute to psychological morbidity. Results have shown that 40% of patient's with false positive mammogram results reported at least some worries about breast cancer (Gram et al., 1990). Three months following a reassuring diagnosis,

one-third of the participants with false positive screens were still anxious about future mammograms (Lerman et al., 1991). Similarly, Gram and his colleagues (1990) revealed that 40% of patients with false positive screens were still experiencing anxiety about breast cancer six months following diagnosis, compared to 22% of the participants with negative screens. Other investigators have found that the effects of a false positive result were only short-term. For example, women at high risk for ovarian cancer who had received a false positive result were more anxious in the short-term, but this disturbance quickly dissipated once a definitive negative diagnosis was rendered (Wardle, Collins, Pernet, Whitehead, Bourne, & Campbell, 1993). Wardle and Pope (1992) suggested that the transient effects of a false positive diagnosis needs careful replication. Evidence indicates that a serious threat may strongly relate to well-being (Croyle & Hunt, 1991; Miller et al., 1988). Therefore, someone who has experienced the threat of a cancer diagnosis is likely to be affected. As such, the psychological implications of a false positive result should not yet be discounted.

The mechanisms by which some individuals participating in screening are distressed and others are not remain to be examined. As Marteau (1994) stated in the context of prenatal screening, further investigations into the use of adaptive coping strategies in the context of screening programs await testing. A small number of investigations have examined how individuals cope with screening. Those that do generally study coping modes or styles (e.g., Irvine & Logan, 1994; Miller, 1995; Miller & Mangan, 1983; Warburton, Fishman, & Perry, 1997; Wardle et al., 1993). Miller (1995) stated that individuals experienced less psychological, behavioral and physiological consequences when information about their diagnosis was tailored to their coping style (i.e., monitors do better when given information, whereas blunders fare better

with minimal information). Irvine and Logan (1994) reported that men who denied having cholesterolemia despite being informed of a positive diagnosis scored higher on measures of positive affect and lower on measures on negative affect. However, this finding could simply be an artefact of the participant's response style to self-report. In other words, men who denied the cholesterolemia could also be minimizing all other psychological or physical symptoms. Based on these findings, one could speculate that an increase in denial of the risk of breast cancer followed by an increase in levels of distress may result from a positive breast screen. Conversely, the active effort required to undergo screening may solicit more active coping such as information seeking. A better understanding of the long-term implications of screening programs is required.

The findings of breast-cancer studies indicate that breast cancer screening and diagnosis can be a very stressful experience. However, certain limitations of past studies require that further investigation into this topic be conducted. Firstly, most studies have examined the issues in relation to women's reactions to diagnosis and treatment in a clinical setting; therefore, the longitudinal study of the impact of population-based screening remains underdeveloped. Secondly, although Lerman and her colleagues have contributed significantly to a better understanding of the screening experience, most of her studies have been conducted in a retrospective manner, have focused on women's reactions to screening results, and have consisted mainly of female participants who were found to have abnormal screen results. A description of strategies and our knowledge of their adaptiveness within this context of population-based screening programs remains limited. In sum, there is a need to examine coping prospectively in the context of breast cancer screening. Similarly, insight into the impact of false positive and negative results and how women cope with this type of threat requires attention.

1.8 Goal of the Study

The review illustrates the importance of coping strategies in psychological adjustment to various stressful events within Lazarus' cognitive-appraisal model of stress and coping. It also points to the areas in need of future development and inquiry. Mainly, knowledge related to contextual coping instruments in relation to subjective coping modalities remains relatively limited and the need for prospective designs in meaningful real-life situations is also required.

In an effort to explore the concordance between these two coping modalities, the goal of the current study is to examine subjective and contextual coping measures as a naturally occurring stressor unfolds. In addition, attempts will be made to predict psychological stress on the basis of coping strategies that are used in the face of a specific health threat: the risk of breast cancer.

Figure 1 presents the four variables of interest in the current project, as well as the hypothesized relations among those variables. First and foremost, subjective and contextual coping instruments are each represented by four coping strategies: behavioral approach, cognitive approach, behavioral avoidance and cognitive avoidance. The objective is to compare the reliability and the concordance between similar conceptual strategies across coping instruments for varying levels of stressor severity. Beyond examining the concordance between both instruments in terms of psychometric properties and conceptual overlap, the project includes the prospective examination of strategies as a natural stressor unfolds (i.e., breast screening procedure). According to Lazarus and his colleagues (Lazarus & Folkman, 1984; Folkman & Lazarus, 1985), as the stressful encounter unfolds from anticipation to post-impact, the use of coping strategies should vary. Therefore, the current project aims at examining the use of coping strategies at four time points: pre-screen, post-screen, post-result and follow up.

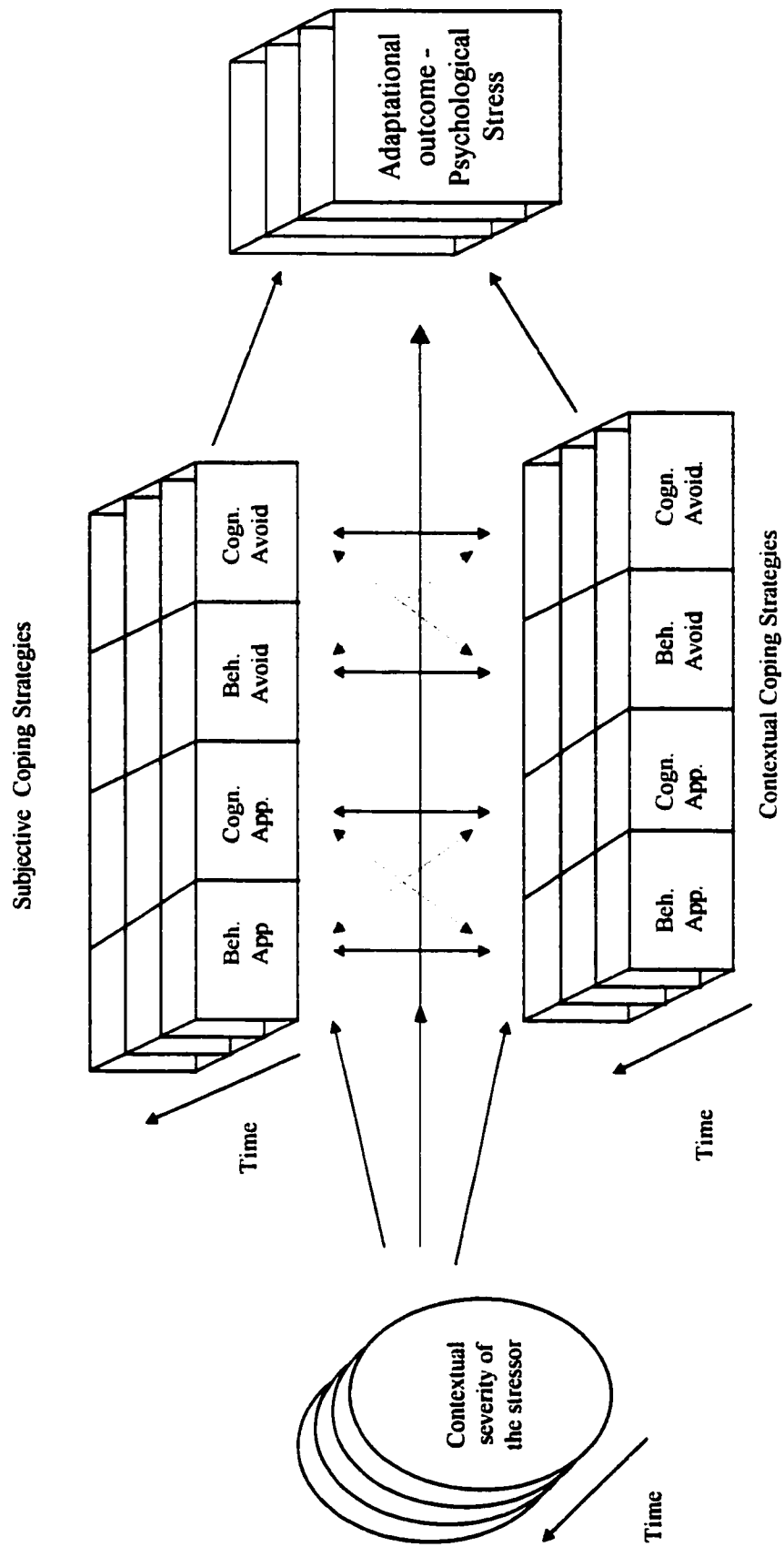


Figure 1. Variables of interest in the current research project.

Finally, the role of subjective and contextual coping strategies in predicting adaptational outcome when faced with varying levels of contextual severity is also investigated.

1.9 Objectives and hypotheses

With the aim of better understanding the concept of coping, the current project examined the following three objectives in women undergoing breast cancer screening: (a) the concordance between subjective and contextual indices of coping, (b) the types of coping strategies that are used to deal with the experience of breast cancer screening, at the subjective and contextual level, and (c) predicting levels of psychological stress using contextual and subjective indices of coping.

In an attempt to explore these objectives, women undergoing breast cancer screening were assessed chronologically prior to their screening appointment (Time 1); the day following their screen (Time 2) when women are awaiting the results; 20 days following the screen (Time 3) when all participants have received the results, and 90 days after the screen (Time 4) when follow-ups to the original positive screen result have been resolved. Because the focus is on reactions to screening, not to the diagnosis of breast cancer, data from women with confirmed diagnoses will not be included in this study.

Objective 1: To examine the concordance between subjective and contextual indices of coping.

As reported earlier, the debate over using self-report versus objective measures has surfaced in the measurement of variables such as stress and social support. This issue has also affected the coping literature. Unstable factor structure, poor (or unreported) psychometric properties, and variability in the interpretation of items have been cited as major concerns. Despite such critiques, certain theoretical models, such as Lazarus', emphasize subjective

appraisals of events (Lazarus & Folkman, 1984). As such, the development of psychometrically sound instruments within this theoretical framework is critical to the advancement of coping research. Nonetheless, some authors (e.g., Coyne & Gotlieb, 1996) have suggested that coping studies should rely more heavily on objective measures, suggesting that the use of objective measures may attenuate some of the shortcomings of traditional coping measures. Before drawing conclusions about the value of one type of measure over another, a systematic study of their psychometric properties using the same sample needed to be conducted. The first objective aimed at (a) examining differences in test-retest reliabilities of both measurement modalities, (b) determining the concordance between conceptually similar coping scales from different indices, and (c) examining the impact of the contextual severity of a stressful event on the relationship between conceptually similar scales (moderator interaction).

The first hypothesis involved the examination of stability (test-retest reliability) of subjective and contextual indices of coping in response to a stressor (the risk of breast cancer) over 24 hours and over three months. In general, self-reported measures tend to be more labile and mood-related, which result in less stable measures. On the other hand, contextual measures, based on the objective ratings of the investigator, examine observable behaviors and therefore should be more stable relative to the subjective measure. Consequently, contextual measures tend to be more reliable.

Hypothesis 1: The contextual coping strategies will exhibit more stability across time in comparison to the subjective coping strategies

- $r_{\text{test-retest}}$ for contextual scales > $r_{\text{test-retest}}$ for subjective scales

Examining differences between the psychometric properties of subjective and contextual measures of coping also raises an important question about the validity of coping: Are actual coping efforts reflected in the same construct as what people report that they do? According to Stone et al. (1992), the question of construct validity in coping measurement has not been addressed properly. More specifically, Benson and Hagtvet (1996) stated that coping researchers have invested a great deal of effort in investigating the relationship between coping and other constructs before sufficiently examining the construct validity of coping itself. As suggested, the second part of the first objective examined the relations among conceptually similar and dissimilar coping strategies across coping indices. In order to examine this question, the correlations between conceptually similar and dissimilar strategies from a contextual coping measure and a traditional self-report measure were examined.

Hypothesis 2: The largest correlations between the subjective and contextual coping scales will be between conceptually similar coping strategy from the same coping modality, followed by conceptually similar strategies using a different coping modality. Conceptually dissimilar strategies will be poorly correlated for the same and different coping modalities. Table 1 presents the hypothesized correlations in terms of their relative size.

The role of the severity of a stressor in an individual's reporting of coping strategies has been underdeveloped. Brown and Harris (1989) have made the point that the severity of an event,

Table 1.

Hypothesized Size of Correlations across Similar and Dissimilar Coping Strategies.

Contextual Scales	Subjective scales			
	Behavioral approach	Cognitive approach	Behavioral avoidance	Cognitive avoidance
Behavioral approach	++	+	0	0
Cognitive approach	+	++	0	0
Behavioral avoidance	0	0	++	+
Cognitive avoidance	0	0	+	++

Note. ++ = largest correlations, + = significant correlations but smaller than the largest correlations, 0 = non-significant correlations.

most notably severe life events, play an etiological role in both psychiatric and physical disorders. Others have shown that severe events were the most reliably reported (Biron, 1992). Moreover, there was less variability in subjective appraisals of an event when the contextual severity of the stressor was severe (Sweet & Lemyre, 1994). In the coping literature, the number of similar investigations are limited. Ptacek and his colleagues (1994) found that there were no differences in the strength of the correlations between daily reports and recall of coping on days that were stressful versus days that were not. However, the confounding of coping outcome (i.e., level of stress) and stressor severity render these findings inconclusive. Similar discrepancies have yet to be examined between contextual and subjective reportings of coping strategies when faced with varying levels of contextual stressor severity. In order to expand on the second hypothesis, Hypothesis 3 explored whether stressor severity relates to the size of correlations between conceptually similar strategies from self-reported coping strategies and contextual accounts of coping efforts. In the breast screening sample, contextual severity varies according to actual risk and screen result.

Hypothesis 3: The relationship between the self-report and contextual measures of conceptually similar coping strategies for an event of high contextual severity will be significantly greater than will be the relationship between the two measures for an event of low contextual severity.

- $r_{\text{subjective-contextual severe events}} > r_{\text{subjective-contextual non severe events}}$

Objective 2: To describe the use of coping as the experience of breast screening unfolds, at the subjective and the contextual level.

Few studies have examined the use of coping strategies longitudinally. When a stressful event unfolds, evidence suggests that individuals use different strategies from anticipation to recovery (Carver & Scheier, 1994; Carver et al., 1993; Folkman & Lazarus, 1985; Stanton & Snider, 1993). More specifically, results suggest that the use of approach-type coping strategies such as problem solving, planning, and seeking social support decrease once the event has passed (Carver & Scheier, 1994; Carver et al., 1993; Folkman & Lazarus, 1985). In the case of dealing with a newly diagnosed breast cancer, a decrease in the use of these strategies occurred three months following the surgical intervention. On the other hand, significant decreases in avoidant-type coping strategies occurred after the results of the academic examination or diagnostic assessment (Carver & Scheier, 1994; Folkman & Lazarus, 1985; Stanton & Snider, 1993). More specifically, the use of behavioral disengagement remained at similar levels several weeks following the receipt of a cancer diagnosis (Carver et al., 1993; Stanton & Snider, 1993), whereas cognitive avoidance decreased immediately following the disclosure of a cancer diagnosis (Carver & Scheier, 1994; Stanton & Snider, 1993).

To date, few studies have been conducted to examine how women deal with breast screening results. Those that have been done focus primarily on retrospective accounts of psychological adjustment in women having received an abnormal screen. In order to adequately grasp the dynamics of coping under these circumstances, two methodological shortcomings need to be addressed. First, the inclusion of participants with negative screens (i.e. normal screen result) is essential. Despite the large number of women undergoing population-based breast

cancer screening, few researchers have studied the experience of women with a normal screen result as the event unfolds. Second, multiple prospective assessments of coping as the encounter unfolds are essential to reducing error or bias associated with recalling coping efforts, which in turn help to ensure that coping and adaptational outcome are not confounded.

For the current study, the second objective will focus on the longitudinal aspects of coping. The breast screening procedure will be the event in which coping will be assessed prior to screening, when results are anticipated, once the results have been received, and at follow-up (*Time 4*) once participants with a positive screen have the confirmation of a negative (normal) diagnosis. In order to further explore the concordance between both coping indices, a description of changes over time and across groups (positive screen and negative screen groups) will be conducted separately for both contextual coping and subjective coping.

Hypothesis 4: Coping varies according to the severity of the stressor and the stage of its processing. More specifically:

Hypothesis 4a: Time by screen group interactions will be found from pre-screen to the notification of the screen result. Women in the positive screen group (PS) will display a decrease in the use of avoidance, with approach strategies remaining at the same level, and those in the negative screen (NS) group will report a decrease in both behavioral and cognitive approach while behavioral and cognitive avoidance remain the same.

PS: Approach_{pre-screen} = Approach_{post-result}

NS: Approach_{pre-screen} > Approach_{post-result}

PS: Avoidance_{pre-screen} > Avoidance_{post-result}

NS: Avoidance_{pre-screen} = Avoidance_{post-result}

Hypothesis 4b: The use of approach strategies for the participants in the positive screen group, who will have been given a negative diagnosis at follow-up, will decrease significantly from coping reported following the receipt of the positive screen result, whereas avoidance strategies will return to pre-screen levels resulting in an increase in use.

PS: Approach_{post-result} > Approach_{follow-up}

PS: Avoidance_{post-result} < Avoidance_{follow-up}

Hypothesis 4c: Differences on coping between participants from the positive and negative screen groups will be found following the notification of the result.

Women in the positive screen group will display more approach coping and less avoidance than will their negative-screen counterparts. No differences between the two groups will be found at follow-up when the participants in the positive screen group will have received the confirmation of a negative diagnosis.

At post-result: PS approach > NS approach

PS avoidance < NS avoidance

At follow up: PS approach = NS approach

PS avoidance = NS avoidance

Objective 3: To predict levels of psychological stress using contextual and subjective indices of coping.

Over the years, researchers have taken particular interest in the relation between coping and stress. Efforts aimed at a better understanding of the relationship have resulted in a large body of research. However, a lack of prospective designs and adequate measurement tools have put the conclusiveness of the findings at risk. In the context of breast cancer screening, the mechanisms by which some women experience a rise in levels of psychological stress and others do not is poorly understood (Marteau, 1994). Gaining a better understanding of the role of coping prior to the screen, in addition to concurrent coping efforts, in predicting stress levels following the receipt of the screen result may assist screening programs in identifying individuals at risk of becoming distressed in the face of the screen result.

Studies have shown that the contextual severity of an event may play an important role in coping's moderation of psychological stress levels (Mattlin et al., 1990; Zeidner & Hammer, 1992). Incorporating the notion of contextual severity when attempting to predict stress from coping may help explain the variability in response to the screening procedure. Because of the shared method variance between the two self-reported measures, it is expected that subjective coping would explain more variance in experienced psychological stress than would a contextual measure of coping. In order to directly compare the relative contribution of subjective and contextual measures of coping in prospectively predicting levels of stress, one would require respondent-based and investigator-based measures of the dependent variable (i.e., a self-report inventory and a physiological marker of stress). In the current project, two modalities of the

measurement of the stress state are not available and therefore, the subjective and contextual indices of coping will not be directly compared in their prediction of outcome.

In an attempt to prospectively examine the relationship between coping and psychological stress, the role of contextual coping strategies and subjective coping strategies will be examined separately in their prediction of psychological stress after the notification of screen results.

Hypothesis 5: Contextual and subjective measures of coping prior to the screen and those used during the notification of results, as well as the contextual severity of the event, will contribute to the prediction of psychological stress after notification of the result. Subjective indices of coping will account for a larger amount of variance in psychological stress than will contextual coping indices partly because of the shared variance between methodologies.

- R^2 (stress_{notification} = contextual severity + subjective coping_{pre-screen} + subjective coping_{notification}) > 0
- R^2 (stress_{notification} = contextual severity + contextual coping_{pre-screen} + contextual coping_{notification}) > 0

CHAPTER 2

METHOD

2.1 Participants

Participants consisted of women undergoing breast cancer screening at the Ontario Breast Screening Program (OBSP), which aims at the early detection of an unsuspected mass. The screening procedure involves a clinical breast examination performed by a trained nurse examiner and a mammogram. In order to attend the clinic, the women must be (a) residents of Ontario, (b) be over 50 years of age, (c) have no previous history of breast cancer or artificial breast augmentation, (d) not have undergone mammography in the last 12 months, and (e) have no acute breast symptoms. Women participating in this provincial program are self-referred or referred by a physician (general practitioner). To participate in the study, women also had to be proficient in either French or English.

The recruitment of the participants took place over a period of seven months (May 1996 to November 1996). During this period, a total of 6,219 women underwent the screening at the clinic. Of those women for whom appointments were scheduled a week in advance, and for whom addresses were known, 59% (n=3,698) were sent a letter by the clinic to ask them to participate in the study and to meet the experimenter for an informed consent briefing. A total of 828 women accepted to arrive at the clinic prior to their scheduled breast screening appointment in order to complete the questionnaires, resulting in an overall response rate of 22%. Of the women who agreed to participate in the first phase of the study, 72% (n=598) completed the

questionnaires on all three time points. Subsequently, as will be described, a subgroup of 132 women were met individually for an interview.

Demographic characteristics of the entire sample are presented in Table 2. The participants ranged in age from 50 to 83 years. Given that the program actively aims to serve women between the ages of 50-75 years, women outside of this range were excluded from the analyses. This criterion resulted in the exclusion of 18 cases. As shown, the mean age of the study group was 60 years. Seventy-two percent (72%) of the participants were married or cohabiting with a partner, 10% were divorced or separated, 10% were widowed and 6% were single. As for educational attainment, the screened sample reported an average of 14 years of education with 13% having less than a high school education, 36% having a high school diploma and 52% having some post-secondary education.

The following sub-sections present descriptive analyses conducted to (a) determine the representativeness of the sample and to (b) ascertain homogeneity within the sample.

2.1.1 Participants versus Non-participants

Analyses were conducted to examine if (a) women who participated in the study were similar to women who chose not to participate and (b) the sample used in the study was representative of the women who attend OBSP. First, analyses revealed that those who did not complete all three initial questionnaires had less education than those who completed all three questionnaires (17.2 % versus 10.8% with less than high school, 35.4% versus 33.4% with high school diplomas, 47.4 versus 55.8% with post-secondary education) ($\chi^2=8.31$, $p<.05$). However, the two groups were similar on marital status ($\chi^2=3.93$, $p>.40$), family income level ($\chi^2=13.60$, $p>.50$) and age ($t=-1.18$, $p>.20$).

Table 2

Demographic Characteristics of the Study Sample

Variable	Mean/Frequency
AGE (yrs) (SD)	60.3 (0.26)
MARITAL STATUS (%)	
Single	6.0
Married/partner	72.5
Divorced/separated	10.0
Widow	9.7
FAMILY INCOME (%)	
\$0-\$15,000	2.7
\$15,000 - \$30,000	12.4
\$30,000 - \$50,000	18.3
+\$50,000	69.0
EDUCATION (%)	
0-11 years	13.2
12-13 years	35.8
+13 years	52.0

Comparisons between the study sample and women attending the screening clinic were examined using archival data provided by OBSP. Frequencies for age, education and language preference are provided in Table 3. As shown, significant differences between OBSP clients and the recruited sample were found on age ($\chi^2 = 12.90$, $p < .05$) and education ($\chi^2 = 16.68$, $p < .01$). The study sample is slightly younger and more highly educated than the entire client population seen at OBSP. No significant differences were found on language preference ($\chi^2 = .28$, $p > .60$).

2.1.2. Anglophone versus Francophone Participants

As mentioned, anglophones and francophones were eligible to participate in the study. A total of 40 women requested to complete the questionnaires in French. Analyses on demographic variables such as age, education, marital status, and family income were conducted to ensure that the data from the participants who completed questionnaires in French could be pooled with those who completed the questionnaires in English. As shown in Table 4, results revealed no significant difference on age ($t = .72$, $p > .40$) and education ($\chi^2 = 4.77$, $p > .05$) between the two groups. However, differences were revealed on marital status ($\chi^2 = 27.25$, $p < .001$) and family income ($\chi^2 = 14.99$, $p < .01$). With respect to marital status, 45% of women who completed the questionnaire in French had partners (i.e., married or common law) compared to 75% of those who completed the questionnaire in English. As for family income, the differences were explained by a larger percentage of francophone women living with one income. More specifically, no difference were found between women who completed the questionnaires in French or English on personal income levels ($\chi^2 = 8.07$, $p > .30$) or on spousal income level for women with partners ($\chi^2 = 3.69$, $p > .80$). Finally, no differences were found between these two groups on the results of the clinical breast exam ($\chi^2 = 1.13$, $p > .20$), or the results of the mammography ($\chi^2 = 0.73$, $p > .60$).

Table 3.

Demographic Characteristics of Women Attending the Ontario Breast Screening Clinic and the Recruited Sample.

	OBSP	Recruited sample	χ^2	p
AGE (%)			12.90	.01
50-54 years	26.4	23.8		
55-59 years	21.1	28.4		
60-64 years	26.4	20.0		
65-69 years	21.1	14.5		
70+ years	26.4	13.3		
EDUCATION (%)			12.68	.005
Primary school	6.7	0.0		
Some high school	17.1	13.2		
High school graduate	24.6	34.8		
Post-secondary	45.7	52.0		
LANGUAGE PREFERENCE (%)			.28	.60
English	91.1	95.0		
French	5.8	5.0		

Table 4.

Demographics for Participants who Completed the Questionnaires in French or in English prior to the Screening

Variable	English	French	t/χ^2	p
Age (yrs)	60.4	59.6	.72	.47
Marital status (%)			27.25	.001
Married/common law	74.8	45.0		
Divorced/separated	10.1	20.0		
Single	5.2	22.5		
Widow	9.8	12.5		
Education (%)			4.77	.09
No high school diploma	11.8	16.5		
High school diploma	35.3	35.6		
Post-secondary education	52.9	49.9		
Family Income (%)			14.99	.01
0 - \$15,000	2.4	12.8		
\$15,000 - \$30,000	13.3	17.9		
\$30,000 - \$50,000	16.1	10.3		
\$50,000 +	68.2	59.0		

Differences between the two language groups on the dependent variables (i.e. level of psychological stress and the four subjective coping strategies) were tested using multivariate analyses of variance. Differences on contextual coping could not be ascertained given the insufficient number of women requesting to be interviewed in French. Due to slight differences noted in relation to socio-demographic variables between those who completed the questionnaires in French and those who completed it in English, 40 anglophones who completed all three initial questionnaires were matched in relation to age, education, marital status and income with the 40 francophone participants. Of the 40 matches, 80% were similar on all four variables, 15% on three variables, and 5% on two variables. There were no significant differences noted on age ($t = .24, p > .80$), education ($\chi^2 = .33, p > .80$), marital status ($\chi^2 = .00, p > .90$) and family income ($\chi^2 = 2.64, p > .40$). Similarly, no significant differences were revealed on any of the dependent variables at Time 1 (Wilks' $\lambda = .56, p > .05$), Time 2 (Wilks' $\lambda = .89, p > .20$), or Time 3 (Wilks' $\lambda = .84, p > .05$). In most respects, then, francophone and anglophone participants were sufficiently similar to justify pooling their data.

2.1.3. Abnormal versus Normal Screen

Information related to the screen results was only available at the time of the third questionnaire. Based on the participant's self-report, results of the screening were available for 616 participants. A total of 554 women reported a normal clinical breast exam (CBE) and a normal mammogram (MAM), and thus comprised the negative screen group. The remaining 62 women reported abnormal screen results. More specifically, 27 had an abnormal CBE with a MAM, 15 had an abnormal mammogram with a normal CBE, and 20 were advised of abnormal results on both the CBE and the MAM. Table 5 presents the cross-tabulation of screen results by

Table 5.

Reported Screening Results of the Study Sample

Mammogram (MAM)	Clinical breast exam (CBE)	
	Normal	Abnormal
Normal	554 (89.9%)	27 (4.4%)
Abnormal	15 (2.4%)	20 (3.2%)

Note. 616 screen results were available. Negative screen group (normal CBE and normal MAM) =554/616. (False)-positive screen group (abnormal CBE and/or abnormal MAM)=62/616. Two participants for whom a follow-up diagnosis confirmed a true-positive result are excluded.

CBE and mammography results. Finally, of the women with positive screens, two were diagnosed as having malignancies and their data were excluded from further analyses. Of the women interviewed, seven (5%) had recently self-detected a lump prior to their schedule appointment: two from the negative screen group, two from the positive CBE/negative MAM group and three from the positive CBE/positive MAM group. Therefore, based on the reported screen results, women were categorized on a post-hoc basis into one of two groups: (1) negative screen group (normal on CBE and MAM) consisting of 554 women and (2) the false-positive screen group (disconfirmed suspicion on either the CBE or the MAM) with 60 women. In sum, the rate of abnormal screens in the current study sample, using women for whom screen results are known, is 9.7%. This is similar to the rate reported by OBSP which is estimated at 10%.

At follow-up (Time 4: 90 days post-screen), all women with a positive screen result and a matched subsample of the negative screen group were approached for an interview. All 62 women with a positive screen agreed to be interviewed (100%). From the negative screen group, 85 case-control women were chosen with respect to matching the women with false positive screens on the variables of age, marital status, income, and education. Of these 85 women, 70 (82%) agreed to be interviewed and 15 women either could not be reached or declined due to reasons such as emergencies, “bad timing”, or travel.

In summary, the study is based on 828 women at Time 1, with 598 of these women also completing Time 2 and Time 3. Moreover, of the women whose screen results were reported to us ($n=616$), 62 received an abnormal screen result and were interviewed at Time 4. Two women received confirmation of a malignancy and thus their data was excluded from subsequent analyses. A case-control sample of 70 women with a negative screen result were also interviewed.

2.2 Measures

The current study incorporated two assessment modalities: a questionnaire and an interview. For our purpose, the questionnaire comprised two pre-validated psychological scales: (1) the COPE (Carver et al., 1989) and (2) the Psychological Stress Measure (PSM; Lemyre, Tessier & Fillion, 1990). A sample of the questionnaire is included in Appendix A. The second assessment modality consisted of a semi-structured interview using the Life Events and Difficulties Schedule and its accompanying Coping Schedule. A copy of the semi-structured interview is provided in Appendix B. Other parts of the questionnaire related to appraisals, health beliefs, attitudes toward screening, perceived risk, and demographics were included for the purposes of a larger project.

2.2.1 The COPE

The COPE inventory was developed by Carver and his colleagues (1989) to improve on existing measures such as the Ways of Coping scale (Folkman & Lazarus, 1984, 1988), which suffered from unstable factor structure (Ben-Porath et al., 1991) and ambiguous items (Coyne & Gottlieb, 1996). When the scale was first developed, it was tested as both a situational and dispositional measure of coping (Carver et al., 1989). The measure has mostly been used with students (Arthur & Hiebert, 1996; Carver & Scheier, 1994; Carver et al., 1989; Scheier, et al., 1994; Schill & Beyler, 1992; Stanton et al., 1994), however adolescents (Phelps & Jarvis, 1994), female inmates (Negy, Woods, & Carlson, 1997), individuals dealing with physical illness (Bouffard & Crocker, 1992; Somerfield, et al., 1996), and families undergoing genetic testing for the BRAC1 gene (Lerman, 1995) have also been studied.

The inventory consists of 52 items rated on a four point Likert-type scale ranging from 1 (I do not do this at all) to 4 (I do this a lot). The items represent 13 scales which were developed theoretically, not empirically. The 13 conceptually distinct scales include Active Coping, Planning, Suppression of Competing Activities, Restraint Coping, Seeking Social Support for Instrumental Reasons, Seeking Social Support for Emotional Reasons, Focusing on and Venting Emotions, Behavioral Disengagement, Mental Disengagement, Positive Reinterpretation and Growth, Denial, Acceptance, and Turning to Religion. In later studies (Scheier, et al., 1994), humor and use of alcohol or drugs were added as coping scales. To date, the factor structure of the COPE has not been examined extensively. The factor structure, as tested by the developers of the instrument, was similar when used as either a dispositional or a situational measure. More specifically, the 13 conceptually distinct scales created 11 empirically distinct scales. The items reflecting planning and active coping loaded onto a single factor, as did the Instrumental and Emotional Social Support Scales. A second-order factor analysis revealed that the 13 scales regrouped into four higher order scales (Carver et al., 1989). Active coping, planning and suppression of activities formed one factor, both scales of seeking social support and venting of emotions comprised the second factor, mental and behavioral disengagement along with denial composed a third factor and finally acceptance, restraint coping, and positive reinterpretation comprised the fourth factor (Carver et al., 1989). Others have also attempted to reproduce the second-order factor structure of the COPE (Belding, et al., 1996; Deisinger, Cassisi, & Whitaker, 1996). Deisinger and his colleagues' (1996) examination of the second-order factor analysis revealed five higher order factors which accounted for 65% of the variance in coping efforts. The first four factors were similar to those proposed by Carver and his colleagues (1989) with the

exception of restraint coping loaded on both the first and fourth factors. Unlike Carver's factor structure, Deisinger and colleagues (1996) yielded a fifth factor comprised of humor and alcohol use. On a similar note, Belding and his colleagues (1996) tested two higher-order factor structures using confirmatory factor analysis. Using the scales from the COPE, they compared a more traditional taxonomy of coping (i.e., problem focused and emotion focused coping) with the active coping - avoidance dichotomy. The overall fit of the active versus avoidant coping taxonomy ($CFI=.94$) was greater than the problem versus emotion-focused taxonomy ($CFI=.87$). The authors proposed that the inclusion of venting emotions under the latent construct of active coping accounted for this difference. This finding suggests that it is feasible to cope actively with emotions (Belding et al., 1996).

According to Carver and his colleagues (1989), test-retest correlations for the 13 scales range from .46 on the positive reinterpretation scale to .86 on the turning to religion scale at an eight-week interval, and .42 on the behavioral disengagement scale to .89 on the turning to religion scale for a six-week interval. The scales alpha coefficients were reported to range between .45 for mental disengagement and .92 for turning to religion (Carver et al., 1989). Somerfeld and his colleagues (1996) reported internal consistencies in the same range with an alpha of .44 for suppression of competing activities and .92 for turning to religion. In order to assess the validity of the instrument, correlations between the coping scales and 10 personality traits such as optimism, control, self-esteem, anxiety and social desirability were performed. Of all the correlations, only three correlations were above .35 suggesting that the scales from the COPE were distinct from personality measures. Studies (Arthur & Hiebert, 1996; Carver & Scheier, 1994; Carver et al., 1993) have also demonstrated that the COPE was sensitive to

changes in coping efforts as a stressful encounter unfolds. Finally, Stanton and her colleagues (1994) examined the pathological content of the Focus on and Venting of Emotions scale and found that it was rated “about as likely as not to be symptomatic of psychological disorder”. Of the two items on the scale, one was confounded with psychopathology.

As authors have noted, the length of administration is problematic when given in conjunction with multiple psychological measures (Zea, Reisen, & Tyler, 1996). Due to time constraints during the administration of the questionnaire in the clinic’s waiting room, it was necessary to reduce the total number of items. For the current project, a total of six of the 13 scales were included. More specifically, Active Coping, Planning, Behavioral Disengagement and Denial were used in the current project to fit with the previously mentioned dual-axis model of the person’s orientation in response to the stressor (approach/avoidance) and the method of action (cognitive/behavioral). Two other scales (Instrumental Social Support and Emotional Social Support) were included as part of the larger study. Participants were asked to complete the items in response to their risk of having breast cancer for the current project in addition to their coping behaviors in response to their financial situation and worst current stressor as part of the larger scale study in which the present study was embedded.

The decision to include these four particular scales was based on the literature and the psychometric properties of the scales. First, researchers have suggested that a taxonomy based on two axes (coping modality and coping focus) helps to describe parsimoniously and unambiguously a full gamut of coping strategies. Active Coping, Planning, Behavioral Disengagement and Denial conceptually represent Behavioral Approach, Cognitive Approach, Behavioral Avoidance and Cognitive Avoidance, respectively. Psychometrically, studies have shown that the four scales have

satisfactory internal consistencies and test-retest reliabilities. The range of alpha coefficients for each scale were .62 to .76 for Active Coping, .79 to .80 for Planning, .62 to .63 for Behavioral Disengagement, and .68 to .71 for Denial (Carver et al., 1989; Somerfield et al., 1996).

Conceptually, Mental Disengagement could have chosen in lieu of Denial, however, internal consistencies ($\alpha=.45$) were found to be less satisfactory across studies (Carver et al., 1989; Somerfield et al., 1996). As for test-retest reliabilities over an eight week period, Carver and his colleagues (1989) reported a coefficient of .56 for Active Coping, .63 for Planning, and .66 for Behavioral Disengagement, and .54 for Denial. The psychometric properties of an abridged version are presented in the next chapter.

2.2.2 Psychological Stress Measure.

The Psychological Stress Measure (PSM: Lemyre, Tessier & Fillion, 1991) is a 25-item paper and pencil questionnaire designed to assess the state of feeling stressed. Its purpose is to measure feelings of internal tension in terms of somatic, behavioral, and emotional indices. For each item, participants are asked to indicate, on an 8-point Likert-type scale (1="not at all" ; 8="extremely "), the degree to which the statement applies to them. A number of studies have demonstrated that the PSM with its normal distribution has satisfactory psychometric properties (Fillion, Tessier, Tawardos & Mouton, 1989; Lemyre & Tessier, 1988).

The hypothetico-deductive validity of the PSM (Lemyre & Tessier, 1988) was demonstrated in a study where students reported higher levels of psychological stress during exams (mid-term period, and final exam period) compared to less demanding periods (spring break and return from vacation in September). Moreover, the tendency for single parents to experience greater levels of stress compared to couples with children or singles without children

further supports the validity of the measure. Significant differences across groups of varying urban density also supported the validity (Lemyre, 1986). Concomitant validity between the PSM and salivary immunoglobulin ($r=-0.25$) and serum immunoglobulin ($r=-0.22$) has also been demonstrated by Fillion et al. (1989). As for its convergent validity, the PSM has been found to correlate $r=.73$ with Spielberger's State-Trait Anxiety Inventory (STAI), $r=.75$ with the Beck Depression Inventory (BDI). According to Dobson (1985), the communality of all psychopathology measures to a general distress factor explain the magnitude of these correlations. However, studies examining the divergent validity of the measure suggest that the PSM is conceptually distinct from anxiety and depression measures. Factor analyses revealed that the first component of the PSM was weakly related to the first component of the BDI (.18) and of the STAI (.29 and .36) (Lemyre et al., 1991).

There exist two parallel short versions of the PSM. More specifically, the test-retest reliability of the two short versions (A and B) is satisfactory ($r=.68$ and $r=.56$) (Lemyre, 1986). Over a six month period, test-retest reliability remained similar for version A and B ($r=.56$ and $r=.65$) (Fillion et al., 1989). Similarly, the internal consistency of the two versions is highly satisfactory (Cronbach alpha=.92 for both versions). Norms for version A, which was used in the presented study, indicate that a mean of 77.9 is to be expected in a sample of women between the ages of 18-65.

2.2.3 Life Events and Difficulties Schedule.

The Life Events and Difficulties Schedule (LEDS: Brown & Harris, 1978) was used in order to identify contextual and factual elements of the participant's stressful life events and difficulties. The LEDS consists of a semi-structured interview comprising 12 sections, which

assess life events that may have occurred in various domains of the participant's life (e.g., work, education, housing, finances, and relationships). The LEDS consists of three distinct phases. The first phase involves conducting the semi-structured interview. The interviewer asks a series of mandatory questions pertaining to various life events and difficulties. Other optional questions, or probes, are used to clarify or gather more extensive information, helping the investigator in collecting all contextual information surrounding the event. The purpose of the questioning is to gather a relatively complete and unbiased account of the situation, providing the researcher with information that is as factual as possible about all stressful life events and difficulties identified during the interview. During the second phase, the investigator describes and rates the event based on various descriptive scales such as, short and long term threat, loss, danger, goal attainment, and goal provision. Event dictionaries collated by the authors of the LEDS are used in this phase to assist the interviewer. The dictionaries provide general guidelines to rate each type of event or difficulty, as well as over 1000 examples from previous studies in which ratings were given. Once events and difficulties have been identified and rated by trained interviewers using stringent guidelines, the detailed accounts of the events are presented to independent judges during consensus meetings in the final phase. The trained consensus team members, who are unaware of the participant's emotional reaction and subjective appraisals, act as judges to rate the event based solely on the objective information provided by the interviewer. As with the rating provided by the interviewer, ratings given by the consensus team members are based on the event dictionaries. Because the LEDS involves investigator ratings, the measurement of life events is relatively independent of the participant's emotional or subjective reaction to the stressor. For the

present purpose, only the severity of the breast cancer screening was rated on the threat dimension.

The LEDS has been shown to have very satisfactory psychometric properties (Brown & Harris, 1978; Brown & Harris, 1982). Inter-rater reliability regarding the identification of events has been shown to be 92% for severe events and 79% for events overall (Brown & Harris, 1978) and inter-spousal agreement for identification of events was found to be 84% (Biron, Truchon & Lemyre, 1992). Test-retest reliability was found to be satisfactory by demonstrating a fall-off rate of reported events of only about 3% per month for a period of 12 months. Most life events checklists have a fall off rate almost five times greater (Brown & Harris, 1982).

For the current study, the LEDS interview was not used in its entirety due to its length (two hours). Only questions related to the participant's risk of having breast cancer were used in the current project. Questions related to financial status and the worst current stressor were also asked for the purpose of a larger study. Given the specificity of the event studied (i.e., risk of breast cancer) in the current project, as is the usual procedure with the LEDS technique, specific questions which probe into the event were developed and specific guidelines were outlined in order to facilitate a standardized coding system for that particular stressor. The mandatory and probing questions related to the risk of breast cancer are presented in Appendix C. The guidelines for rating the severity of the risk of breast cancer are presented in Appendix D. Psychometrics related to the rating of threat will be presented in the following chapter.

2.2.4 LEDS Coping Schedule

In order to assess the use of contextual coping strategies, the LEDS Coping Schedule (Bifulco and Brown, 1996) was used (see Appendix E for the LEDS Coping Schedule). More

recently, Bifulco and Brown (1996) integrated into the LEDS a series of questions that assess behavioral, emotional, and cognitive coping efforts in response to life events. The Coping Schedule follows the same three phases as the LEDS: collecting information using a semi-structured interview, rating the extent of the use of the coping strategies based on factual evidence with the help of standards in dictionaries, and presenting the contextual information to consensus team members to ensure that ratings are based on objective information, and not biased by the participant's subjective reaction to the event. Each scale is rated on a scale from 1 to 4 with 1=high use, 2=moderate use, 3=some use and 4=none or little use. The instrument examines the following seven scales: Practical Preparation, Problem Tackling, Downplaying, Pessimism, Inferred Denial, Self-blame, and Felt Helplessness. Preliminary analyses of the instrument's validity and reliability suggested that it has satisfactory psychometric properties. Inter-rater reliability of the scales was found to range between .70 for Downplaying and .93 for Practical Preparation. Second, the correlations among the seven scales were low, suggesting that they are empirically distinct concepts (Bifulco & Brown, 1996). Despite these low correlations, the factor analysis of the scales revealed three separate factors: Pessimism/Helplessness, Self-blame/Problem-tackling, and Denial/Downplaying.

For the purpose of the current study, only four of the seven scales were retained: Problem Tackling, Practical Preparation, Downplaying and Inferred Denial (see Appendix F for the coping questions and probes related to the risk of breast cancer). Pessimism, Helplessness and Self-blame were not included because of their conceptual overlap with personality traits, and the potential confound with the outcome of coping. As with the scales chosen from the COPE, the remaining four scales from the Coping Schedule fit the taxonomy consisting of coping method and coping

focus. Problem Tackling and Practical Preparation represent Behavioral and Cognitive Avoidance whereas Downplaying and Inferred Denial represent Behavioral and Cognitive Avoidance, respectively. The psychometric properties of the Coping Schedule in our study are presented in the next chapter.

2.2.5 Demographic and Socio-medical Information

This section was designed to gather general information about the participant. The demographics questionnaire covered the following characteristics: age, education, marital status, occupation, and income. The segment on socio-medical information assessed the participant's experience with breast screening and potential risk factors in relation to breast cancer. This included questions related to family history, number of children, smoking, onset of menarche and menopause, the practice of breast self-examination, and their perceived risk of developing breast cancer.

2.3 Procedure

A letter of introduction (See Appendix G) briefly outlining the study was mailed by OBSP to women who were going to attend the breast screening clinic the following week. The letter also requested that those interested in learning more about the study present themselves 30 minutes before their scheduled appointment and signal to the receptionist their interest in the study. A researcher was always on site to answer questions or concerns regarding participation in the study. Those interested in participating signed a consent form (see Appendix H) and their name and telephone numbers were gathered so that they could be contacted for subsequent assessments. The first questionnaire was filled out on site. The second and third questionnaires were given to be completed off-site and mailed to the researchers. Participants were contacted by

phone on the due dates to remind them to complete the questionnaires. As described previously, a subgroup was contacted for interviews. Interviews were conducted at the participant's home, the university, or the breast screening clinic based on participants' preferences.

The theoretical framework and design of the current project within the context of breast cancer screening, in Figure 2, illustrates the hypothesized relationships between the variables of study along with their respective methods of measurement. As also shown in Table 6, the design was longitudinal, involving four assessment periods. Participants were requested to complete the first questionnaire in the clinic waiting area before undergoing screening (*Time 1*). Women were given the option of completing the questionnaire in either French or English. In the first questionnaire, participants completed a section on demographics, the PSM, and an abridged version of COPE for three stressors: (a) the risk of breast cancer, (b) their financial situation, (c) their worst current stressor. In addition, a few questions were asked about their thoughts and attitudes towards mammography. Before leaving the clinic, participants were given the next questionnaires along with pre-addressed and stamped envelopes for the second and third assessment, which were to be completed at home.

The second assessment took place 24 hours following screening (*Time 2*). At this point, none of the participants had received the results of the mammography and, therefore did not know of their screen status. Participants were contacted by telephone by the researcher the day following the breast screening and reminded to complete and return the questionnaire. The questionnaire for this assessment again included the PSM, the abridged COPE, questions about demographics, socio-medical information (i.e., risk factors for breast cancer, health behaviors such as smoking and exercise, etc.) and other information related to the larger project.

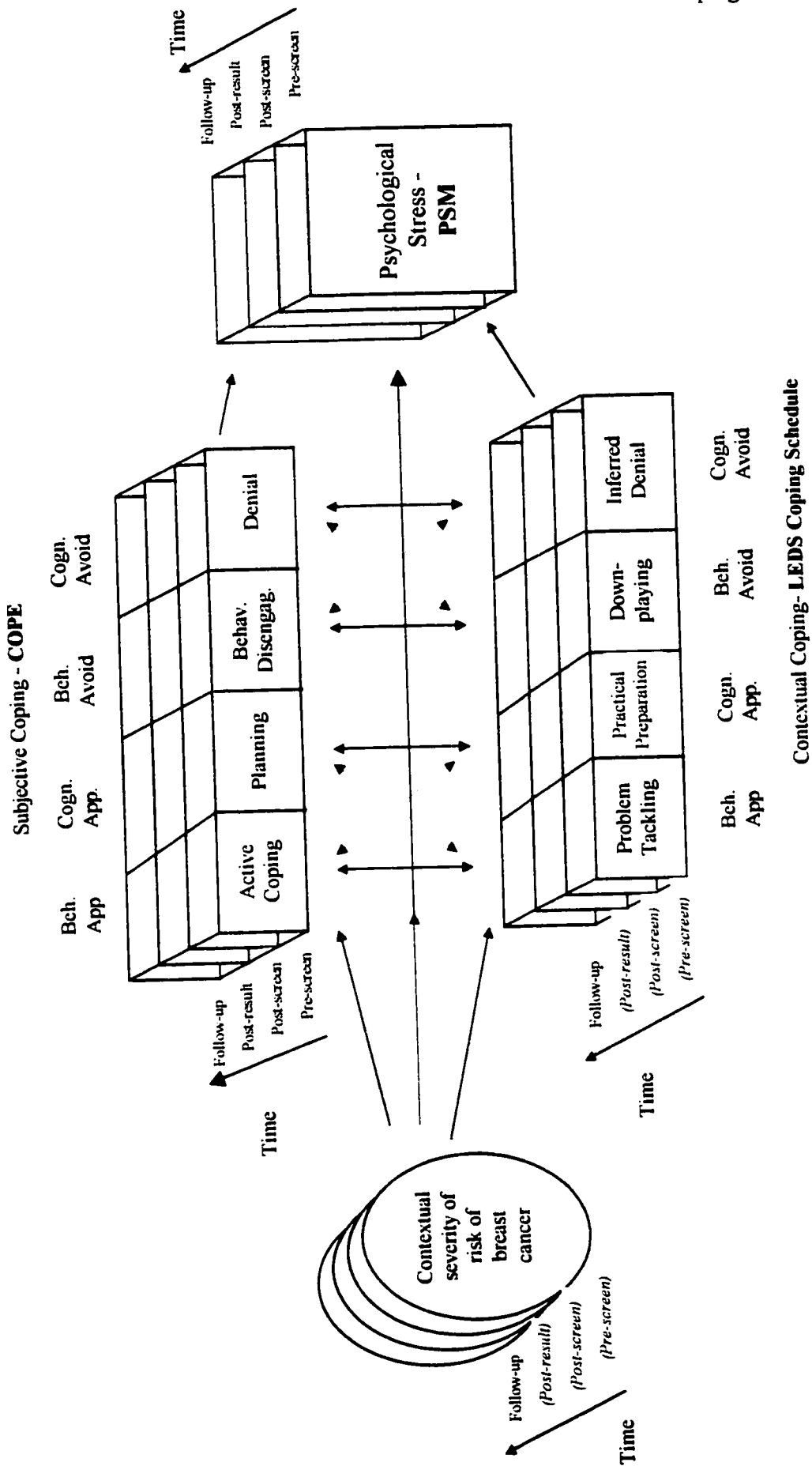


Figure 2. Theoretical framework and design of the project in the context of breast cancer screening.

Table 6.

Study Design.

Assessment Points				
	Time 1	Time 2	Time 3	Time 4
	Pre-screen	Pre-results	Post-results	Follow-up
Group		24 hours	20 days	90-days
Positive screen	O1..... screen.....	O2 ...3 days for + result.	O3 .. for (-) diagnosis	O4
n=62	COPE	COPE	COPE	COPE
	PSM	PSM	PSM	PSM
	(LEDS-CS)	(LEDS-CS)	(LEDS-CS)	LEDS-CS
Negative screen	O1..... screen.....	O215 days for- result..	O3.....	O4
n=554	COPE	COPE	COPE	COPE
	PSM	PSM	PSM	PSM
(subsample n=70)	(LEDS-CS)	(LEDS-CS)	(LEDS-CS)	LEDS-CS

Note. O=observation; COPE= Abridged COPE; PSM=Psychological Stress Measure;
LEDS-CS=Life Events and Difficulties Schedule and Coping Schedule.

The questionnaire at the third assessment (*Time 3*) was the same as *Time 1*, with the exception of two added questions related to the results of the breast screen. Participants were advised to fill it out 20 days following the screening (*Time 3*). They were also contacted by telephone on that day as a reminder to complete and return the questionnaire. It was estimated that all the participants would have received the results of the clinical breast examination and the mammography either by telephone (for women with a positive screen) or by mail (for women with a negative screen).

Finally, a follow-up assessment (*Time 4*) was conducted 90 days post-mammography for a subsample of the participants. Confirmation of the diagnosis was received for most women by this time. Women with a positive screen had undergone further testing and had been reassured of a normal condition. All women with a positive screen were asked to participate in the final assessment, along with a similar number of participants with a negative screen selected from the larger pool of women with a normal screen, matched on age, marital status, education and income. Those that agreed to be interviewed were sent a questionnaire by mail that was similar to the first and third assessments. They were asked to complete this questionnaire prior to the day of the scheduled appointment. The interviewer gathered the completed questionnaire and conducted the LEDS interview along with the Coping Schedule. The interviewer gathered information about concurrent (i.e. *Time 4*) and retrospective accounts (*Time 1* thru *Time 3*) of contextual severity and contextual coping. The return rate of questionnaires was 93% for the second questionnaire and 81% for the third.

To test changes in coping strategies with respect to the unfolding of the situation, it was necessary to determine that the time points indeed represented the important stages of the event.

In the planned design, participants were expected to be awaiting the screen at Time 1, be awaiting the result at Time 2, to have received the screen result at Time 3, and to have had confirmation of breast health at Time 4. However, in the process of gathering contextual information from the LEDS interview in relation to the screening procedure, it became obvious that the assessment periods did not always exactly coincide with the intended stages of the stressful encounter. In other words, the delay in which the participant received the result of the screen varied. First, a larger number of women than originally estimated received verbal feedback of a positive (abnormal) clinical breast examination ($n=47$) at the clinic. Second, women with positive mammographies were often advised of an abnormality earlier than 2-3 days, sometimes within 24 hours of the screen. In essence, these observations, which would have gone undetected without the use of an investigator-based method, signify that few women with a positive screen were still anticipating a result at the second assessment period. In fact, most women with a positive screen were already dealing with an abnormal screen result at this point. Therefore, Time 1 was really the anticipation phase for all participants with Time 2 at 24 hours representing the *impact* or *post-result* phase for those women who received a positive clinical breast examination. This phase prolonged itself into the third assessment (Time 3) for women whose positive screen had not yet been disconfirmed by subsequent testing. For the women advised of a negative clinical breast examination on the day of the screen, but who received mammography results more than 24 hours after the screen, the *impact* phase actually occurred only at the third assessment period (Time 3). Finally, the *post-impact* or *follow-up* phase occurred three months following the screen (at Time 4) for all participants for whom the presence of an abnormality was ruled out with subsequent testing, as well as for women who received a negative screen. Consequently, analyses involving

changes across time took into account the real stages which women were experiencing rather than the pre-determined chronological sequence. The next chapter presents the findings of the project.

CHAPTER 3

RESULTS

3.1. Preliminary Analyses

Prior to testing the study hypotheses, some preliminary analyses were conducted to ensure group equivalence of women with various types of positive screen results and to examine the psychometric properties of the measures used. As for differences on socio-demographic factors between various subgroups of the sample (i.e., participant versus non-participant, anglophone versus francophone, and normal versus abnormal screens), the reader is referred to the section Participants of Chapter 2.

3.1.1 Pooling of Women with Various Positive Screen Results

Part of the design revolves around the formation of a positive screen group and a negative screen group. The former is constituted of women with either abnormal clinical breast examinations, abnormal mammography or both. Therefore, it was deemed necessary to ensure that, prior to conducting analyses, data from women having received various combinations of positive results (i.e., CBE+ and MAM+, CBE+ and MAM-, or CBE- and MAM+) could be pooled to form a positive screen group. As shown in Table 7, no significant differences between the women having received varying combination of positive screen results were noted on socio-demographic variables. As for the dependent variables, univariate analysis of variance was used to examine differences in stress levels for women at each time point. As shown in Table 8, no significant differences were noted. Similarly, multivariate analysis did not reveal significant differences on subjective or contextual coping strategies across the time points (see Table 8). Differences between the various types of positive results on subjective and contextual coping are

Table 7.

Frequencies and Means (Standard Deviations) on Socio-demographics for Women in the False-positive Group Reporting Various Types of Abnormal Results

Dependent variable	False positive screen group			F/χ^2	p
	CBE+/MAM+	CBE+/MAM-	CBE-/MAM+		
	n=20	n=27	n=13		
Demographics	M (SD)	M (SD)	M (SD)	.98	.90
Age (yrs)	60.7 (5.9)	62.3 (7.7)	61.8 (7.5)		
Education (yrs)	13.5 (3.7)	14.0 (2.9)	13.4 (2.4)		
Marital status	% (n)	% (n)	% (n)	4.16	.84
Married/partner	75.0 (15)	84.6 (22)	76.9 (10)		
Divorced	10.0 (2)	3.8 (1)	7.7 (1)		
Single	10.0 (2)	3.8 (1)	0.0 (0)		
Widow	5.0 (1)	7.7 (2)	15.4 (2)		
Family income	% (n)	% (n)	% (n)	6.49	.37
0-\$15,000	5.3 (1)	0.0 (0)	0.0 (0)		
15,000-30,000\$	5.3 (1)	13.6 (3)	7.7 (1)		
30,000-50,000\$	26.3 (5)	4.6 (1)	23.1 (3)		
+50,000\$	63.1 (12)	81.8 (18)	69.2 (9)		

Note. CBE+ represents an abnormal clinical breast exam; CBE- represents a normal clinical breast exam; MAM+ represents an abnormal mammogram; MAM- represents an normal mammogram.

Table 8

Frequencies and Means (Standard Deviations) on Stress, Subjective Coping and Contextual Coping for Women in the False-positive Group Reporting Various Types of Abnormal Results

	False positive screen group				
Dependent variable	CBE+/MAM+	CBE+/MAM-	CBE-/MAM+	<u>F/λ</u>	<u>p</u>
	n=20	n=27	n=13		
Time 1					
Stress	64.7 (26.7)	76.0 (34.7)	70.5 (17.6)	.86	.43
Subjective Coping				.86	.44
Behavioral approach	2.25 (0.75)	2.33 (0.98)	2.79 (0.95)		
Cognitive approach	2.49 (0.89)	2.53 (1.00)	2.81 (0.94)		
Behavioral avoidance	1.40 (0.45)	1.30 (0.36)	1.25 (0.29)		
Cognitive avoidance	1.64 (0.78)	1.68 (0.72)	1.36 (0.42)		
Contextual Coping				.96	.98
Behavioral approach	2.85 (0.81)	2.78 (0.51)	3.00 (0.71)		
Cognitive approach	3.40 (0.68)	3.37 (0.63)	3.38 (0.65)		
Behavioral avoidance	3.40 (0.60)	3.37 (0.56)	3.23 (0.44)		
Cognitive avoidance	3.25 (0.91)	3.30 (0.72)	3.31 (0.63)		

Note. CBE+ represents an abnormal clinical breast exam; CBE- represents a normal clinical breast exam; MAM+ represents an abnormal mammogram; MAM- represents an normal mammogram.

(table continues)

Table 8

Frequencies and Means (Standard Deviations) on Stress, Subjective Coping and Contextual Coping for Women in the False-positive Group Reporting Various Types of Abnormal Results

	False positive screen group				
Dependent variable	CBE+/MAM+	CBE+/MAM-	CBE-/MAM+	F/ λ	p
	n=20	n=27	n=13		
Time 2					
Stress	64.0 (29.8)	75.4 (39.9)	72.5 (23.7)	.64	.53
Subjective Coping				.88	.59
Behavioral approach	2.60 (0.71)	2.79 (0.95)	2.77 (1.09)		
Cognitive approach	2.77 (0.94)	2.78 (1.06)	2.87 (1.03)		
Behavioral avoidance	1.30 (0.61)	1.47 (0.58)	1.36 (0.58)		
Cognitive avoidance	1.54 (0.80)	1.75 (0.86)	1.31 (0.55)		
Contextual Coping				.87	.58
Behavioral approach	2.60 (0.75)	2.52 (0.51)	2.77 (0.83)		
Cognitive approach	2.95 (0.76)	3.11 (0.70)	2.92 (1.04)		
Behavioral avoidance	3.15 (0.75)	3.26 (0.71)	3.00 (0.41)		
Cognitive avoidance	2.85 (0.93)	2.70 (0.91)	3.15 (0.80)		

Note. CBE+ represents an abnormal clinical breast exam; CBE- represents a normal clinical breast exam; MAM+ represents an abnormal mammogram; MAM- represents a normal mammogram.

(table continues)

Table 8

Frequencies and Means (Standard Deviations) on Stress, Subjective Coping and Contextual Coping for Women in the False-positive Group Reporting Various Types of Abnormal Results

Dependent variable	False positive screen group			<u>F/λ</u>	p
	CBE+/MAM+	CBE+/MAM-	CBE-/MAM+		
	n=20	n=27	n=13		
Time 3					
Stress	71.8 (29.2)	66.8 (28.7)	68.57 (26.5)	.18	.84
Subjective Coping				.91	.74
Behavioral approach	2.76 (0.66)	2.98 (0.94)	2.69 (1.01)		
Cognitive approach	2.77 (0.85)	2.89 (0.97)	2.79 (0.98)		
Behavioral avoidance	1.27 (0.45)	1.37 (0.53)	1.41 (0.60)		
Cognitive avoidance	1.50 (0.54)	1.50 (0.74)	1.39 (0.64)		
Contextual Coping				.90	.64
Behavioral approach	2.50 (0.69)	2.55 (0.64)	2.69 (0.75)		
Cognitive approach	2.90 (0.72)	3.15 (0.66)	3.23 (0.73)		
Behavioral avoidance	3.20 (0.70)	3.30 (0.69)	3.08 (0.64)		
Cognitive avoidance	2.95 (0.89)	2.89 (0.85)	3.15 (0.80)		

Note. CBE+ represents an abnormal clinical breast exam; CBE- represents a normal clinical breast exam; MAM+ represents an abnormal mammogram; MAM- represents an normal mammogram.

(table continues)

Table 8

Frequencies and Means (Standard Deviations) on Stress, Subjective Coping and Contextual Coping for Women in the False-positive Group Reporting Various Types of Abnormal Results

	False positive screen group				
Dependent variable	CBE+/MAM+	CBE+/MAM-	CBE-/MAM+	<u>F/λ</u>	<u>p</u>
	n=20	n=27	n=13		
Time 4					
Stress	68.2 (27.0)	62.9 (25.2)	63.8 (24.1)	.24	.78
Subjective Coping				.90	.70
Behavioral approach	2.45 (0.87)	2.82 (0.81)	2.60 (1.13)		
Cognitive approach	2.60 (1.01)	2.88 (0.91)	2.62 (1.18)		
Behavioral avoidance	1.38 (0.61)	1.60 (0.74)	1.33 (0.62)		
Cognitive avoidance	1.39 (0.49)	1.54 (0.70)	1.31 (0.49)		
Contextual Coping				.96	.98
Behavioral approach	2.75 (0.79)	2.67 (0.62)	2.85 (0.80)		
Cognitive approach	3.15 (0.67)	3.26 (0.59)	3.38 (0.65)		
Behavioral avoidance	3.30 (0.66)	3.26 (0.76)	3.23 (0.60)		
Cognitive avoidance	3.35 (0.81)	3.22 (0.85)	3.23 (0.73)		

Note. CBE+ represents an abnormal clinical breast exam; CBE- represents a normal clinical breast exam; MAM+ represents an abnormal mammogram; MAM- represents a normal mammogram.

illustrated in Appendix I. Based on these findings, it appeared appropriate to pool the data of all the participants with a positive screen result.

3.1.2 Matching

To test certain between-groups hypotheses, direct comparisons between participants from the false positive and the negative screen groups had to be made. Prior to these, it was important to establish group equivalence on socio-demographic variables in order to avoid possible confounds. The equivalency of the groups on socio-demographic variables was achieved by matching on (a) age, (b) marital status, (c) education, and (d) family income each of the 60 participants with a false positive screen with a participant informed of a negative screen. Based on socio-demographics, 70 interviews with participants from the negative screen group were realized to match the 60 interviewed participants with a positive screen result. Prior to analysing the matched participants, two multivariate outliers with Mahalanobis distances above the critical $\chi^2=32.02$ had to be removed from the negative screen group. Moreover, 19 participants (four from the positive screen group and 15 from the negative screen group) who had more than 10% missing data on their questionnaires at any of the assessment periods also had to be removed in order to allow for repeated-measures analyses. Of the remaining 53 participants with negative results and 56 participants with false positive results, 49 dyads (one false-positive participant with one negative screen participant) could be assembled from the original 60 participants with false-positive results and 70 participant with negative results who were interviewed. In total, 40 dyads (82%) were perfectly matched on all four socio-demographic variables, four (8%) were matched on age, marital status, and either education or income, and five (10%) were matched on age and marital status only. Group-wise analyses, as shown in Table 9, reveal no significant differences on

Table 9.

Demographic Characteristics of the Negative and Positive Screen Groups Matched on Four Socio-demographic Variables.

Variable	Screen result		t/χ^2	p
	Negative	(False)-positive		
AGE (years)	59.0	60.9	-1.43	.15
MARITAL STATUS (%)			0.00	1.00
Single	4.1	4.1		
Married/common law	81.6	81.6		
Divorced/separated	8.2	8.2		
Widow	6.1	6.1		
INCOME (%)			1.19	.76
0-\$15,000	0.0	2.3		
\$15,000 - \$30,000	11.1	9.1		
\$30,000 - \$50,000	13.3	11.3		
+\$50,000	75.6	77.3		
EDUCATION (%)			4.22	.12
0-11 years	4.1	14.3		
12-13 years	32.7	38.7		
+13 years	63.2	46.9		

all four socio-demographic variables between the matched false-positive and negative participants on means for age ($t=-1.43$, $p>.10$), marital status ($\chi^2=0.00$, $p>.90$), education ($\chi^2=4.22$, $p>.10$), and family income level ($\chi^2=1.19$, $p>.70$).

A further check was also conducted to ensure that the participants with negative results who were selected for the matching ($n=49$) did not differ from the overall pool of participants with negative results ($n=554$). No differences on age ($t=-0.97$, $p>.30$), marital status ($\chi^2=2.29$, $p>.80$), education ($\chi^2=4.09$, $p>.10$), or family income level ($\chi^2=1.54$, $p>.60$) were noted between selected and non-selected participants with negative results. A similar comparison between the 11 participants with false positive results who were not matched and those who were could not be run because of the inadequate sample size of non-matched participants with false positive results.

3.1.3 Psychometric Properties of Psychological Measures

To ensure that the psychological measures used in the current project were reliable, analyses aimed at determining the psychometric properties of the measures were conducted. More specifically, internal consistency and test-retest stability for 24 hrs and 90 days for the PSM, COPE, and LEDS Coping Schedule were examined. Table 10 summarizes the psychometric properties of the psychological measures used in the current project at the first assessment. Internal consistency (Cronbach's alpha) was above .78 for most measures except for the COPE subscale of behavioral avoidance at .64. Test-retest for 24 hours and 90 days for the contextual measures were all above .90. As for the subjective scales, test-retest after 24 hours was good except for behavioral avoidance. Test-retest at 90 days was much lower.

Table 10

Summary of the Psychometric Properties of the Psychological Measures

Measure	Scale	Mean (SD)	Range	Skewness	Kurtosis	Internal Consistency	Test-retest (24 hrs)	Test-retest (90 days)
PSM		69.6 (27.8)	25.0-188.5	0.82	0.48	.93	.88	.55
COPE	Behavioral approach	2.4 (1.0)	1.0-4.0	0.04	-1.23	.86	.73	.38
	Cognitive approach	2.5 (1.0)	1.0-4.0	0.03	-1.28	.87	.72	.38
	Behavioral avoidance	1.4 (0.5)	1.0-4.0	1.66	2.82	.64	.43	.08
	Cognitive avoidance	1.5 (0.6)	1.0-4.0	1.42	1.89	.78	.63	.28
LEDS	Contextual severity	4.5 (0.6)	3.0-5.0	-0.57	-0.72	--	.95	.95
	Behavioral approach	2.8 (0.7)	1.0-4.0	0.17	-0.66	--	.97	.97
	Cognitive approach	3.3 (0.6)	2.0-4.0	-0.23	-0.58	--	1.0	1.0
	Behavioral avoidance	3.4 (0.6)	2.0-4.0	-0.25	-0.74	--	.94	.94
	Cognitive avoidance	3.3 (0.7)	1.0-4.0	-0.85	0.05	--	1.0	1.0

Note: PSM: Psychological Stress Measure, LEDS: Life Events and Difficulties Schedule.

3.1.3.1 Abridged COPE

To assess subjective self-reported coping, an abridged version of the COPE (Carver et al., 1989) was used. The first step in examining the psychometric properties of the abridged COPE was to test its factor structure (see Appendix J). An exploratory factor analysis, based on Carver's four subscales, using half the sample revealed an interpretable three factor solution, with the fourth factor being substantively and empirically insignificant. Factor 1 combined the behavioral and cognitive approach scales (i.e., Active Coping and Planning). Factor 2 was made of items representing cognitive avoidance (i.e., Denial), and finally, Factor 3 comprised the behavioral avoidance items (i.e., Behavioral Avoidance). The fourth factor did not reveal any loadings above the .30 cut-off. A confirmatory factor analysis using the second half of the sample confirmed a three factor solution (CFI=.95). Although empirical evidence points to a three factor solution for the subjective strategies, analyses will be conducted using the initial four scales in order to examine the concordance between coping strategies across instruments. The significance of these findings will be considered when interpreting the results from the hypothesis testing.

Using the initial four factor structure, the internal consistency of the scales were calculated. As shown in Table 11, Cronbach's alpha for the four coping scales were satisfactory with ranges between .85 to .88 for behavioral approach, .87 to .92 for cognitive approach, .63 to .78 for behavioral avoidance, and .78 to .84 for cognitive avoidance across the four assessment periods. Test-retest reliabilities over 24 hours were satisfactory for behavioral approach ($r=.73$), cognitive approach ($r=.72$), and cognitive avoidance ($r=.63$) with behavioral avoidance being the lowest at .43. When the lapse between assessment increased to three months, the test-retest reliabilities decreased for behavioral approach ($r=.38$), cognitive approach ($r=.38$), behavioral avoidance ($r=.08$) and cognitive avoidance ($r=.28$).

Table 11.

Internal Consistency and Test-Retest for Stress and the Four Subjective Coping Strategies at Each Time of Assessment

	PSM	Behavioral Approach	Cognitive Approach	Behavioral Avoidance	Cognitive Avoidance
Internal Consistency (α)					
Time 1 (n=760)	.93	.86	.87	.64	.78
Time 2 (n=715)	.95	.87	.92	.63	.82
Time 3 (n=633)	.95	.88	.91	.66	.84
Time 4 (n=124)	.94	.85	.89	.78	.81
Test-retest (r)					
24 hours (n=308)	.88	.73	.72	.43	.63
90 days (n=55)	.55	.38	.38	.08	.28

Given that the COPE has not been validated in French, it was necessary to translate the items for the current project. Using the back-translation method (Braken & Barona, 1991), three colleagues were independently asked to translate the items from English to French. Next, the translated items were independently back-translated by two other judges from French to English to ensure that the back-translated items were similar to the original items. The translation which resulted in the closest approximation to the original item was kept to create the questionnaire in French. The psychometric properties of the French version was tested on the 38 participants who elected to complete the questionnaires in French. Test-retest reliability and internal consistency for these participants were compared to 38 matched (i.e. on age, marital status, education and income) participants who completed the questionnaire in English. Test-retest reliability over a 24 hour period are presented in Table 12. As shown, the reliabilities for both groups fall within close range except for cognitive avoidance. Fisher z-transformations did not reveal any significant differences between the test-retest correlations. Internal consistencies for the matched groups were calculated at the initial three assessment periods. As shown in Table 12, Cronbach's alpha were relatively similar across groups at all assessment periods. The largest discrepancy was noted on cognitive avoidance at the first assessment period with $\alpha=.53$ for those who completed in English and $\alpha=.77$ for those who completed in French. However, it should be noted that this discrepancy was reduced at the second and third assessments with differences in coefficients as small as .06. Given the overall similarities in psychometric properties, it was deemed acceptable to pool data from the abridged COPE questionnaires completed in French and in English.

Table 12

Internal Consistency (α) and Test-retest Reliability over 24 Hours for Matched Participants Who Completed the Abridged COPE in French or English

			Behavioral	Cognitive	Behavioral	Cognitive
			PSM	Approach	Approach	Avoidance
Internal Consistency (α)						
Time 1 (n=38)	English	.94		.85	.64	.49
	French	.93		.77	.81	.45
Time 2 (n=35)	English	.95		.81	.90	.79
	French	.94		.72	.85	.57
Time 3 (n=33)	English	.95		.84	.86	.41
	French	.94		.75	.84	.45
Test-retest (24 hrs)						
(n=38)	English	.84		.65	.59	.32
	French	.89		.69	.72	.30

3.1.2.2. Psychological Stress Measure.

In the current project, Cronbach's alphas were highly satisfactory for the PSM with a range from .93 to .95 across the assessment periods. Similarly, test-retest correlations over 24 hours ($r=.88$) and over 90 days ($r=.55$) were also satisfactory. The PSM has been validated in both French and English. In the current project, test-retest reliability and internal consistency were examined for the matched participants who completed the questionnaire in French or in English. Cronbach's alpha for the three initial assessments ranged from .94 to .95 for those who completed the questionnaire in English and .93 to .94 for those who completed the questionnaire in French. Similarly, test-retest reliabilities over a 24 hour period were .84 and .89 in English and in French, respectively. Again, it was deemed appropriate to pool data from the PSM for both linguistic groups.

3.1.3.3 Life Events and Difficulties Schedule and Coping Schedule.

As the LEDS is based on a consensus validation by a panel of external judges, interrater reliability for ratings of contextual severity had to be assessed. It was measured at three time points: at the beginning, midpoint and end of the rating process. Kappa coefficients for each assessment were .82, .92 and .93, respectively. The percentage of agreement between the three consensus meeting team members also showed high levels of agreement (80%, 91%, 93%, respectively).

Similarly, interrater reliability for the contextual ratings of each coping strategy was measured at the same assessment points. The kappa coefficients for each assessment of interrater reliability, as well as the percentage of agreement between the consensus team members for the contextual coping strategies are presented in Table 13. As shown, interrater reliability was in the range of .67 to 1.0 for behavioral approach, .69 to .97 for cognitive approach, .79 to .97 for

Table 13.

Interrater Reliability [Kappa coefficients (Percentage of Agreement)] Between Consensus Team Members of Stressor Severity and Coping Strategies for the Life Events and Difficulties Schedule

Assessment Period	Contextual scale				
	Stressor severity	Behavioral approach	Cognitive approach	Behavioral avoidance	Cognitive avoidance
Initial	.82 (80)	.67 (67)	.69 (72)	.79 (82)	.70 (72)
Mid-point	.92 (91)	.98 (98)	.82 (82)	.88 (88)	.96 (96)
Final	.93 (93)	1.0 (100)	.97 (97)	.97 (97)	.96 (97)

N=10 at each assessment period

behavioral avoidance and .70 to .96 for cognitive avoidance. Test-retest reliability over 24 hours and 90 days were equivalent with correlation coefficients of .97 for behavioral approach, 1.00 for cognitive approach, .94 for behavioral avoidance and 1.00 for cognitive avoidance.

As with all measures in the current project, participants were given the option of having the LEDS and Coping Schedule conducted in either official language. Only five of the 132 interviews were conducted in French. Given the small number of participants interviewed in French, separate analyses on the psychometric properties of the LEDS or the Coping Schedule were not appropriate because of the small sample size.

3.1.4 Socio-Medical Information

To ensure that participants in the positive screen and negative screen groups were equivalent on risk factors related to breast cancer, comparisons were made on socio-medical characteristics such as family history of breast cancer, nulliparity, menstrual history and certain breast health behaviors. Table 14 presents the results of these comparisons. As shown, there were no significant differences between the two groups on the main risk factors for breast cancer: family history ($\chi^2 = .01$, $p > .90$ for cancer in mother and, $\chi^2 = 0.36$, $p > .50$ for cancer in sister) and nulliparity ($\chi^2 = .16$, $p > .60$). As for personal menstrual history, there were no mean differences for age of onset of menses ($t = -.81$, $p > .40$) and menopause ($t = -1.12$, $p > .20$). Moreover, similar percentages of women in the negative and positive screen group began menses prior to 12 years of age (21% and 17%, respectively) and experienced menopause after 55 years of age (5% and 6%, respectively).

Table 14

Socio-Medical Characteristics of Negative and False-Positive Screen Groups

Characteristic	Screen Group		t / χ^2	p
	Negative	False-positive		
Family history of breast cancer	% (n)	% (n)		
In sister(s)	7.9 (40/506)	7.7 (4/52)	0.01	.96
In mother	10.1 (55/543)	12.7 (7/55)	0.36	.55
Nulliparity (% (n))	12.6 (70/556)	10.7 (6/56)	0.16	.68
Reported monthly BSE (% (n))	38.8 (214/552)	35.7 (20/56)	3.34	.50
Self-detection of lump (% (n))	21.0 (117/556)	35.7 (20/56)	6.30	.01
Breast problems (% (n))	35.2 (189/537)	53.6 (30/56)	7.35	.01
Menstrual history	<u>M</u> (<u>SD</u>)	<u>M</u> (<u>SD</u>)		
Mean age at menses (yrs)	12.8 (1.6)	13.0 (1.7)	-0.81	.42
Mean age at menopause (yrs)	47.0 (7.5)	48.2 (6.0)	-1.12	.26

With respect to behaviors related to breast health, similar frequencies of participants in the negative and positive groups reported practicing breast-self examination monthly (39% and 36%, respectively) ($\chi^2 = 3.34$, $p > .50$). However, a larger number of women in the positive screen group had self-detected lumps ($\chi^2 = 6.30$, $p < .05$). It should also be noted that a larger number of women in the positive screen group reported breast problems such as cysts, pain/swelling or breast feeding problems (35% vs. 54%) ($\chi^2 = 7.35$, $p < .01$).

3.2. Results of Study Hypotheses

3.2.1 Objective 1: Concordance between Subjective and Contextual Coping Strategies

The first objective examined the concordance between subjective and contextual methods of assessing coping strategies. The assessment of coping has been relatively controversial. A systematic study of the psychometric properties of both types of coping measures using the same sample needed to be conducted before drawing conclusions about the value of one type of measure over another. The use of the multitrait-multimethod design (MTMM), which assesses the divergence and convergence of concepts, was not appropriate in the current project because data on subjective and contextual coping strategies were not collected simultaneously. In an effort to examine the concordance between the two coping measures, the first objective aimed at (a) examining differences in test-retest reliabilities, (b) determining the concordance between conceptually similar coping scales from different measures and (c) examining the impact of the contextual severity of a stressful event on the relationship between conceptually similar scales from different measures.

3.2.1.1 Differences in Test-Retest Coefficients.

The first hypothesis, which examined the stability of coping measures across time for participants with a negative screen, was tested in two steps. Test-retest correlations across 24 hours and 90 days were calculated for each coping scale, followed by a test to determine if there were significant differences in the relative magnitudes of correlations for conceptually similar strategies from different coping assessment methods. Only participants who received a negative screen result, who were therefore not having to cope with the stressor of an abnormal screen result, were included in these analyses. In addition, only those who completed all three initial questionnaires were included in the test-retest analyses between Time 1 and Time 2. Of the 606 women for whom screen results were known, 554 had a negative screen result. Of these women, a total of 311 had completed all three questionnaires. Three cases were excluded because they did not meet the age criteria (i.e. below age 75), leaving a total sample of 308 for test-retest analyses across Time 1 and Time 2.

Across the 90 day period, test-retest analyses for the subjective scales included the interviewed participants with a negative screen result who completed all four questionnaires. Of the 70 negative screen women who were interviewed, 15 participants had to be removed because of missing data on their questionnaires. Data were complete for all 70 participants with a negative screen result on the contextual coping scales.

As shown in Table 15 each of the subjective coping scales had lower Pearson correlations than its contextual counterpart. Using Fisher z-transformations, analyses revealed statistically significant differences across each set of test-retest correlations. Specifically, test-retest correlations for subjective and contextual coping scales across 24 hours were .73 versus .97

Table 15

Test-retest Reliabilities (Pearson r) of Subjective and Contextual Coping Strategies.

Coping Strategy	Subjective		Contextual	
	T1-T2	T1-T4	T1-T2	T1-T4
	24 hrs	90 days	24 hrs	90 days
	n=308	n=55	n=70	n=70
Behavioral approach	.73***	.38**	.97***	.97***
Cognitive approach	.72***	.38**	1.00***	1.00***
Behavioral avoidance	.43***	.08	.94***	.94***
Cognitive avoidance	.63***	.28*	1.00***	1.00***

Note. Based on negative screen women (not experiencing the stressor of an abnormal screen result)

* $p < .05$, ** $p < .01$, *** $p < .001$

for behavioral approach ($z=8.59, p<.01$), .72 versus 1.0 for cognitive approach ($z=15.41, p<.01$), .43 versus .94 for behavioral avoidance ($z=9.48, p<.01$), and .63 versus 1.0 for cognitive avoidance ($z=16.67, p<.01$). As for test-retest correlations over a period of 90 days, correlations were .38 versus .97 for behavioral approach ($z=9.13, p<.01$), .38 versus 1.0 for cognitive approach ($z=14.00, p<.01$), .08 versus .94 for behavioral avoidance ($z=8.97, p<.01$), and .28 versus 1.0 for cognitive avoidance ($z=14.59, p<.01$). In sum, the findings supported Hypothesis 1 which predicted that contextual coping would exhibit more stability than the subjective coping scales.

3.2.1.2 Concordance between Conceptually Similar Coping Strategies Across Time.

For Hypothesis 2, correlations between conceptually similar coping strategies across different coping instruments were tested. More specifically, Pearson correlations were calculated between similar scales from the abridged COPE and the LEDS Coping Schedule. Contextual ratings were available, by design, only for the 132 women interviewed. Of these, data from two were removed because of a breast cancer diagnosis and two participants had more than 10% missing data, leaving a sample of 128. For the analysis at the other three assessment points, six participants had missing data at Time 2, three at Time 3 and eight at Time 4, leaving sample sizes of 124, 127 and 122 respectively.

Table 16 presents these Pearson correlation coefficients for conceptually similar strategies for each of the four assessment periods. As shown, the correlations between conceptually similar subjective and contextual coping scales were low and, appropriately, correlations were negative because of the reverse coding system. With the exception of four correlations, all were statistically non-significant. For cognitive avoidance at Time 1 ($r=-.24, p<.01$) and Time 2 ($r=-.22, p<.05$), behavioral avoidance at Time 4 ($r=-.24, p<.01$) and behavioral approach at Time 2

Table 16

Pearson Correlations between Subjective and Contextual Coping Scales on Conceptually Similar Coping Strategies at Each Assessment Point.

	Time 1	Time 2	Time 3	Time 4
Coping strategy	n=128	n=124	n=127	n=122
Behavioral approach	-.07	-.21*	-.15	-.12
Cognitive approach	-.02	-.14	-.04	-.09
Behavioral avoidance	-.10	-.14	-.09	-.24**
Cognitive avoidance	-.24**	-.22*	-.02	-.07

Note. The subjective and contextual coping strategies have opposite scales. Both scales are measured on a scale of “1” to “4”, however, the most frequent use of a coping strategy is represented by “4” for the subjective scales and by “1” for the contextual scales. Therefore, negative correlations reflect agreement between the two modalities.

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

($r=.24$, $p<.01$), the correlations between investigator-based ratings and self-reported ones varied in the same direction. When controlling for experiment-wise error ($.05/16=.003$), these four correlations did not reach significance levels. As shown in Appendix K, similar patterns of non-significance were noted at each assessment point. Given that none of the correlations between conceptually similar and dissimilar subjective and contextual coping scales reached statistical significance, it was deemed unnecessary to test for differences in the magnitude of correlations.

In order to understand more clearly the lack of significant relationships between conceptually similar subjective and contextual coping scales, the means on each of the subjective coping scales were examined in relation to the ratings of contextual coping. Table 17 presents the mean and standard deviations of the subjective coping scales by rating on the LEDS Coping Schedule. As shown in this table, the number of participants were unevenly distributed across the four contextual coping ratings. For this reason, the Mann-Whitney U test, a nonparametric alternative to the t-test for independent samples, was used to examine differences on subjective coping strategies between those rated as high copers (i.e., rating of 1 or 2 on the LEDS Coping Schedule) and those rated as low copers (i.e., rating of 3 or 4 on the LEDS Coping Schedule). Table 18 presents the results of these analyses. Although visual inspection of the medians of subjective coping efforts suggests that they varied as a function of investigator-based ratings, only one of the four tests was found to be significant at an alpha of .05. More specifically, the median on the subjective scale of cognitive avoidance was significantly higher for the group rated as High ($Mdn=2.00$) compared to those rated as Low ($Mdn=1.25$) on the contextual use of cognitive avoidance ($U=656.50$, $z=-2.41$, $p=.016$). However, once experiment-wise error was controlled

Table 17

Means (Standard Deviations) on Each Subjective Coping Scale by Rating on the Contextual Coping Scale at the First Assessment Period.

Subjective Coping Scale (COPE)	Rating on the Contextual Coping Scales (LEDS-CS)			
	High	Moderate	Some	Little/None
	(1)	(2)	(3)	(4)
Behavioral approach	2.37 (1.94)	2.55 (0.90)	2.44 (0.99)	2.29 (0.95)
	n=2	n=48	n=60	n=20
Cognitive approach	--	2.73 (0.75)	2.53 (0.96)	2.52 (1.05)
	n=0	n=10	n=72	n=49
Behavioral avoidance	--	1.61 (0.83)	1.33 (0.45)	1.30 (0.38)
	n=0	n=6	n=69	n=55
Cognitive avoidance	2.75 (1.06)	1.86 (0.86)	1.51 (0.65)	1.47 (0.68)
	n=2	n=16	n=50	n=64

Note. -- = no mean was calculated because there were no participants who received this rating.

Table 18

Differences in Median (Standard Deviation) on the Subjective Coping Scales by Rating on the Contextual Coping Scale.

Subjective Coping Scale	Rating on the Contextual Coping Scales		U	$\underline{z}$	p
	High	Low			
Behavioral approach	2.50 (0.92)	2.25 (0.97)	1811.00	-.90	.37
	n=50	n=80			
Cognitive approach	2.47 (0.75)	2.33 (0.99)	526.50	-.68	.50
	n=10	n=121			
Behavioral avoidance	1.17 (0.83)	1.00 (0.42)	320.50	-.62	.57
	n=6	n=124			
Cognitive avoidance	2.00 (0.89)	1.25 (0.66)	656.50	-2.41	.01
	n=18	n=121			

using the Bonferroni correction ($.05/4=.0125$), the difference between the two groups failed to reach statistical significance. The results, therefore, suggest that the participants' subjective rating of coping efforts did not match the contextual rating. In sum, hypothesis 2 shows that the concordance between the participants' self report of coping efforts and the ratings of external judges was poor.

3.2.1.3 Concordance between Conceptually Similar Strategies Across Stressor Severity.

The next hypothesis, which examined differences in the strength of correlations between conceptually similar subjective and contextual measures when the stressor severity varies, was tested using Pearson correlations. Participants were divided into one of two groups based on the peak in severity for the risk of breast cancer: low contextual severity (i.e. a rating of 3 or 4 on the LEDS) and high contextual severity (a rating of 2 or 1 on the LEDS). The peak in contextual severity varied across participants depending on when they received news of the results. For instance, a participant with no family history of breast cancer who was advised of an abnormality during the clinical breast examination but for whom a subsequent testing was negative would have a peak in contextual severity rated as 3 at Time 2 (e.g. profile on contextual severity across time of 4-3-4-4). On the other hand, a participant with a negative clinical breast exam who is advised of an abnormality on the mammogram several days following the screen would have a peak in contextual severity rated as 3 at Time 3 (e.g. 4-4-3-4 profile). When the contextual severity of the stressor was the same at Time 2 and Time 3, the peak in severity was used at Time 3 because the contextual threat was unresolved. This included the negative screen group (e.g. 4-4-4-4 profile), as well as participants who were told of a positive screen by Time 2 with no disconfirmation by Time 3 (e.g. 4-3-3-4 profile). A check revealed no significant differences between those who experienced a peak in contextual severity at the second assessment and those

who experienced it during the third assessment on age ($t=1.93$, $p>.05$), marital status ($\chi^2=2.37$, $p>.60$), level of education ($\chi^2=2.31$, $p>.30$), or family income level ($\chi^2=4.54$, $p>.20$). A total of 12 cases were excluded from the analysis because of (a) missing data ($n=7$), (b) a change in contextual severity greater than a "2" was not detected in the assessment periods ($n=1$), (c) the screen result revealed a malignant tumor ($n=2$), and (d) a BSE prior to the screen at OBSP for a participant with a family history revealed a positive result but a resulting negative OBSP screen result (2-3-3-3 profile) ($n=1$). In total, 91 participants were categorized as having low contextual severity (i.e. a rating of 3 or 4 on the LEDS) and 28 participants as having high contextual severity (a rating of 2 or 1 on the LEDS).

Pearson correlations were used to examine the relationship between conceptually similar subjective and contextual coping scales for women with high contextual severity on the risk of breast cancer and for women with low contextual severity on the risk of breast cancer. Table 19 displays the correlations for both the high and low contextual severity groups. As shown, none of the sixteen correlations reached significance levels in either the low or high contextual severity groups. Given that none of the correlations reached statistical significance, it was not necessary to test for differences in the magnitude of correlations between the low and high contextual severity groups.

3.2.2 Objective 2: Describing the Use of Coping Strategies as the Screening Procedure Unfolds

The second objective of this study was to prospectively examine the use of coping strategies of women undergoing breast cancer screening. Changes in the use of contextual and

Table 19

Pearson Correlations for Conceptually Similar Subjective and Contextual Coping Scales for the Low (n=91) and High (n=28) Contextual Stressor Severity Groups.

		Subjective scales			
Contextual Scales	Severity	Behavioral approach	Cognitive approach	Behavioral avoidance	Cognitive avoidance
Behavioral approach	High	-.13	-.20	-.11	-.30
	Low	-.14	-.16	.10	-.03
Cognitive approach	High	-.22	-.32	-.03	-.23
	Low	.10	.06	-.04	-.09
Behavioral avoidance	High	-.14	-.19	-.05	-.11
	Low	.24	.19	-.08	-.02
Cognitive avoidance	High	.03	.14	.13	-.02
	Low	-.04	-.05	.01	.07

Note. The subjective and contextual coping strategies have opposing scales. Both scales are measured on a scale of “1” to “4”, however, the most frequent use of a coping strategy is represented by “4” for the subjective scales and by “1” for the contextual scales. Therefore, negative correlations reflect agreement between the two modalities. None of the correlation reached statistical significance.

subjective coping strategies were expected to differ as the screening procedure unfolded from the anticipation of the screen to the three month follow-up, as a function of screen results.

Differences between women with false-positive and negative results were expected following the receipt of the screen outcome. However, both groups should have returned to pre-screen levels of coping at the follow-up assessment. For the current objective, dyads matched on age, marital status, education and income were used to form two equivalent groups of participants with false-positive and negative screens.

3.2.2.1 Preliminary Analyses: Verification of Statistical Assumptions

Prior to beginning the following analyses, data from each cell were tested for linearity, normality, and homogeneity of variance to ensure that assumptions of multivariate analysis of variance were met. Analyses were also conducted to identify any univariate and multivariate outliers. Casewise residuals were examined to identify univariate outliers. The findings of these analyses are presented in Appendix L.

The small sample size limited the power of a full 2×3 (group by stage) design (power estimated at approximately .40), therefore only the relevant comparisons were made at an alpha of .05 for each analysis. First, between-group differences in the use of coping strategies as a function of screen result were of primary interest as the participants experienced the acute phases of the screen (i.e., the anticipation of the screen/results, and the receipt of the results). Second, the examination of within-group differences for the women with a positive screen from the post-result to follow-up phases was also critical to understanding how the use of coping strategies varied over an extended period (i.e., over two months). Finally, in order to describe differences between the positive and negative screen groups, the use of coping strategies were examined following the receipt of the screen result and at follow-up. Means and standard deviations of

subjective and contextual coping efforts are presented separately at each stage in Table 20 and Table 21, respectively. They are also illustrated in Figures 3 and 4, respectively

3.2.2.2 Differences in Coping as a Function of Stage and Screen Result

As stated in Hypothesis 4a, differences in coping between women with false positive and negative screens were expected to vary as a function of the stage of screening. In other words, a significant stage by screen result interaction was expected on both subjective and contextual coping strategies. For the 2 x 2 mixed-effect MANOVA with stage as the within-group variable (pre-screen and post-result) and the screen result as the between-groups variable (false-positive and negative), 84 of a total 98 participants were included in the analysis. Three outliers, two cases with positive results prior to the OBSP screen, and two cases with no detection in the change in contextual severity were removed, along with their counterpart matched on age, marital status, income, and education. The latter (i.e., participants advised and disconfirmed of an abnormality between two consecutive assessment points) were excluded because the subsequent fluctuations in contextual severity of the unfolding event and the changes in the use of coping strategies could not be measured. Table 22 and Table 23 present the means and standard deviations of the subjective and contextual coping strategies at pre-screen and post-result by screen group. The results are also illustrated in Figure 5.

As shown in Table 24, contrary to the hypothesis, the stage by group interaction did not reach statistical significance for the subjective coping strategies ($Wilks' = 0.90, p > .10$). However, the results revealed a significant difference in subjective coping strategies as a function of the stage of the encounter ($Wilks' = 0.80, p < .001$). More specifically, significant increases in the use of behavioral approach ($F_{(1,82)} = 18.06, p < .0001$) ($M = 2.42$ at pre-screen and $M = 2.81$ at post-result)

Table 20
Means (Standard Deviations) on Subjective Coping Strategies for Matched Groups across Stages

Coping Strategy	Pre-screen		Post-results		Follow-up	
	Positive (n=47)	Negative (n=47)	Positive (n=43)	Negative (n=43)	Positive (n=40)	Negative (n=40)
Behavioral approach	2.34 (0.86)	2.45 (0.96)	2.92 (0.83)	2.68 (1.02)	2.69 (0.87)	2.59 (0.99)
Cognitive approach	2.52 (0.90)	2.49 (0.99)	2.87 (0.91)	2.71 (1.09)	2.76 (0.96)	2.70 (1.07)
Behavioral avoidance	1.30 (0.37)	1.30 (0.49)	1.33 (0.50)	1.12 (0.22)	1.54 (0.74)	1.25 (0.43)
Cognitive avoidance	1.51 (0.67)	1.39 (0.59)	1.38 (0.56)	1.28 (0.47)	1.40 (0.49)	1.28 (0.41)

Note. Groups were matched on age, marital status, education and income.

Table 21
Means (Standard Deviations) on Contextual Coping Strategies for Matched Groups across Stages

Coping Strategy	Pre-screen		Post-results		Follow-up	
	Positive (n=47)	Negative (n=47)	Positive (n=43)	Negative (n=43)	Positive (n=40)	Negative (n=40)
Behavioral approach	2.81 (0.65)	2.61 (0.74)	2.49 (0.63)	2.58 (0.79)	2.77 (0.66)	2.57 (0.78)
Cognitive approach	3.38 (0.64)	3.15 (0.51)	3.09 (0.81)	3.18 (0.55)	3.35 (0.62)	3.15 (0.53)
Behavioral avoidance	3.36 (0.57)	3.46 (0.58)	3.12 (0.70)	3.49 (0.59)	3.37 (0.67)	3.47 (0.55)
Cognitive avoidance	3.38 (0.74)	3.42 (0.68)	2.74 (0.88)	3.44 (0.67)	3.35 (0.77)	3.45 (0.68)

Note. Smaller means denote greater coping efforts.

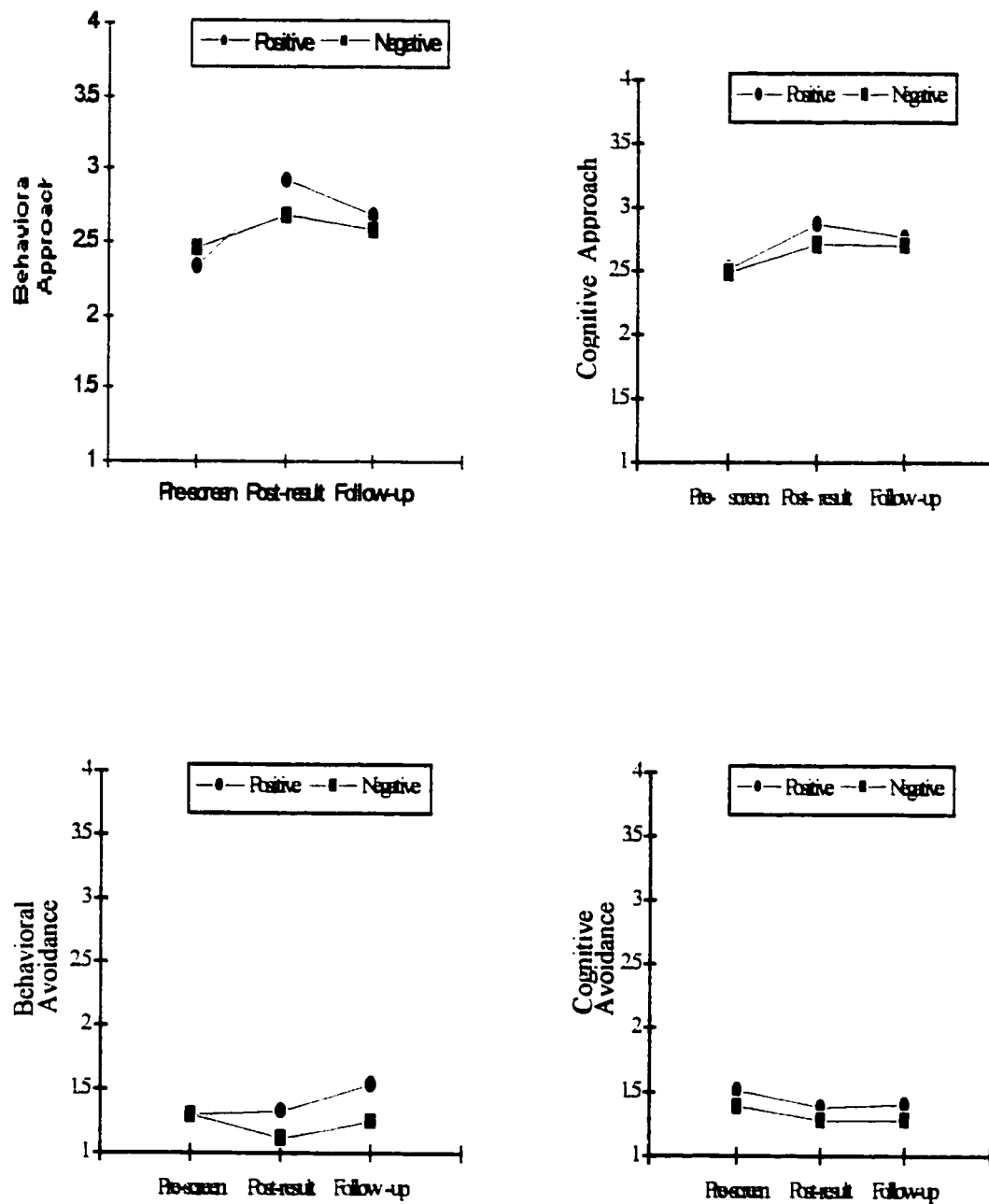


Figure 3. Subjective coping strategies for matched groups of participants with positive and negative screens (pre-screen, n=94, post-result, n=86, follow-up, n=80) across the screening procedure.

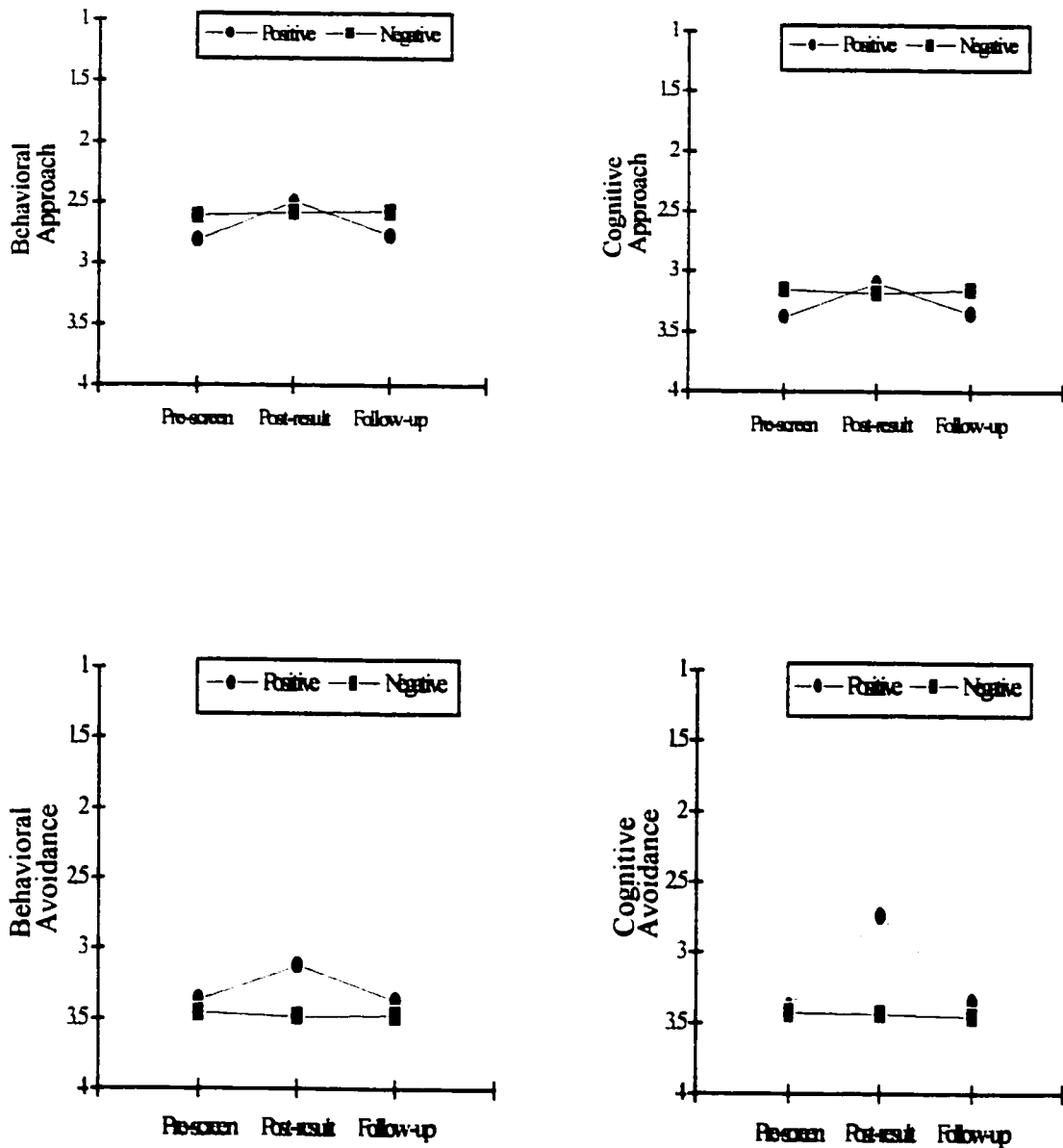


Figure 4. Contextual coping strategies for matched positive and negative screen groups (pre-screen, $n=94$, post-result, $n=86$, follow-up, $n=80$) across the screening procedure. Scale in reverse gradient as 1 indicates more than 4.

Table 22

Means (Standard Deviations) on Subjective Coping Strategies for Matched Groups of Participants with Positive and Negative Screens at Pre-Screen and Post-Result.

Screen Group	Assessment Period	
	Pre-screen	Post-result
Negative		
Behavioral approach	2.54 (0.96)	2.71 (0.99)
Cognitive approach	2.59 (1.00)	2.75 (1.10)
Behavioral avoidance	1.27 (0.47)	1.15 (0.26)
Cognitive avoidance	1.31 (0.46)	1.29 (0.51)
Positive		
Behavioral approach	2.32 (0.90)	2.92 (0.84)
Cognitive approach	2.49 (0.90)	2.85 (0.93)
Behavioral avoidance	1.30 (0.38)	1.27 (0.43)
Cognitive avoidance	1.46 (0.58)	1.33 (0.53)

Note. n=42 per group.

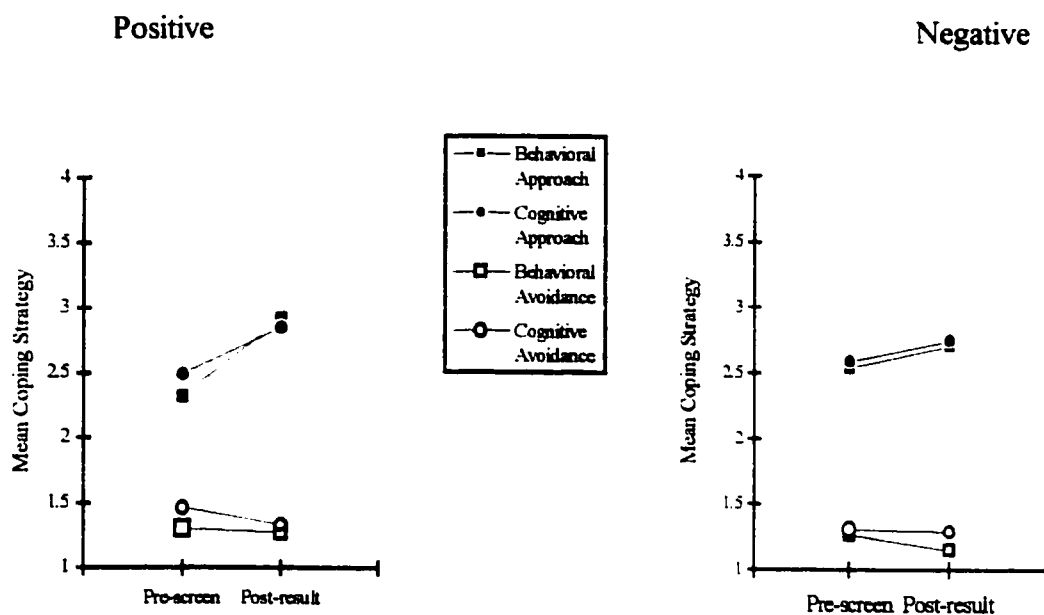
Table 23

Means (Standard Deviations) on Contextual Coping Strategies for Matched Groups of Participants with Positive and Negative Screens at Pre-Screen and Post-Result

Screen Group	Assessment Period	
	Pre-screen	Post-result
Negative		
Behavioral approach	2.62 (0.76)	2.57 (0.77)
Cognitive approach	3.17 (0.54)	3.17 (0.54)
Behavioral avoidance	3.48 (0.59)	3.50 (0.59)
Cognitive avoidance	3.43 (0.67)	3.43 (0.67)
Positive		
Behavioral approach	2.81 (0.63)	2.50 (0.63)
Cognitive approach	3.45 (0.59)	3.10 (0.82)
Behavioral avoidance	3.56 (0.58)	3.12 (0.71)
Cognitive avoidance	3.36 (0.73)	2.73 (0.88)

Note. Smaller means denote larger coping efforts. N=42 per group.

Subjective Coping Strategies



Contextual Coping Strategies

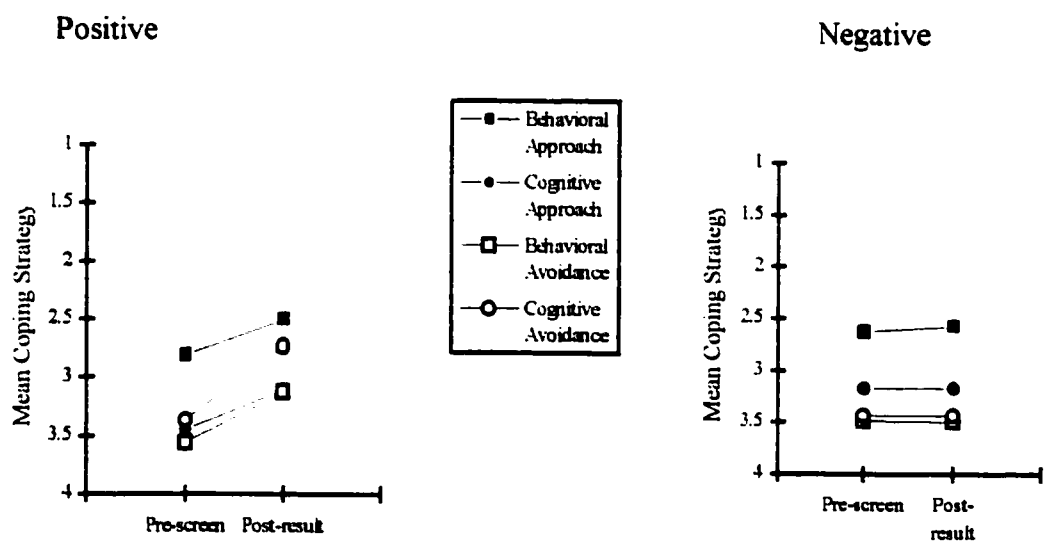


Figure 5. Coping strategies for positives and negative screen groups from pre-screen to post-result by screen result and coping index. Scale in reverse gradient for contextual coping as 1 indicates more than 4.

Table 24

2x2 Mixed Subject MANOVA for Subjective and Contextual Coping across Matched Groups of Participants with Positive and Negative Screens as a Function of the Stage of the Screen.

		Wilk's	
Effect	df	Lambda	α
Subjective coping			
Group	4, 79	.98	.77
Stage	4, 79	.80	.001
Group x Stage	4, 79	.90	.08
Contextual coping			
Group	4, 79	.88	.05
Stage	4, 79	.41	.0001
Group x Stage	4, 79	.43	.0001

and cognitive approach ($F_{(1,82)}=7.28$, $p<.01$) ($M=2.54$ at pre-screen and $M=2.80$ at post-result) were noted. Power was estimated at .60 ($\eta^2=.10$, $\alpha=.05$) and, therefore, the probability of correctly rejecting the null hypothesis was moderate. However, visual inspection of Figures 3, 4 and 5 suggest a group by time interaction.

As for contextual coping strategies, both main effects for the screen group (Wilks'=.89, $p<.05$) and the stage of the screen (Wilks'=0.41, $p<.0001$) as well as the interaction (Wilks'=0.43, $p<.0001$) were statistically significant. For the main effect of the screen group, a trend was noted with the positive screen group displaying greater use of behavioral ($F_{(1,82)}=4.08$, $p<.05$) and cognitive avoidance ($F_{(1,82)}=5.85$, $p<.01$) compared to the negative screen group. The main effect of the stage of the screen showed significant differences on behavioral approach ($F_{(1,82)}=20.18$, $p<.001$), cognitive approach ($F_{(1,82)}=14.04$, $p<.001$) and cognitive avoidance ($F_{(1,82)}=66.62$, $p<.001$). Increases were noted from pre-screen to post-result on all three coping strategies. As for the interaction, significant interactions were noted on behavioral approach ($F_{(1,82)}=10.86$, $p<.001$), cognitive approach ($F_{(1,82)}=14.04$, $p<.001$), cognitive avoidance ($F_{(1,82)}=66.62$, $p<.0001$) and behavioral avoidance ($F_{(1,82)}=5.73$, $p=.019$). In all cases, women from the positive group displayed an increase (i.e. lower rating) in the use of the coping strategy from pre-screen to post-result, whereas the negative screen group used the strategy in a relatively consistent manner across this period.

In summary, a differential pattern of coping strategies was noted for subjective and contextual measures. More specifically, a stage effect was noted with approach strategies increasing from pre-screen to post-result on both contextual and subjective coping measures, and cognitive avoidance increasing for the contextual measure only. As for group differences, a greater use of avoidance strategies by the women with positive screens was only observed for the

contextual measure. An interaction between the groups and the stage of the screen can be visually observed for both contextual and subjective coping, but only reached statistical significance for contextual strategies with this method. Both approach strategies and cognitive avoidance strategies increased for the positive screen group and remained relatively stable for the negative screen group.

3.2.2.3 Within-Group Differences for False- Positive Screen Group on Coping Efforts.

As for Hypothesis 4b, in relation to changes in coping for the false-positive screen group, it was expected that the use of approach strategies would decrease from post-result to follow-up, whereas the use of avoidance strategies would increase from post-result to follow-up. The analysis was conducted on 36 false positive participants. Of the total of 49 participants with false positive screens, 13 were removed because (a) the case was a multivariate outlier ($n=2$), (b) there were no detection of a change point ($n=3$) (i.e., an increase in contextual severity was quickly resolved and returned to the previous rating of contextual severity between two assessment points), and (c) the screen was unresolved at the follow-up assessment ($n=8$). Means and standard deviations for the positive group across the post-result and follow-up stages of the stressful encounter are presented in Table 25 for subjective and contextual coping strategies.

As illustrated in Figure 6, results of the comparisons for participants with false positive results from the post-result to the follow-up assessment periods revealed significant differences for both the subjective (Wilks'=0.75, $p<.05$) and contextual (Wilks'=0.26, $p<.0001$) methods of assessing coping strategies. For the subjective coping strategies, behavioral approach ($F_{(1,35)}=4.62$, $p<.05$) and behavioral avoidance ($F_{(1,35)}=6.49$, $p<.05$) reached statistical significance.

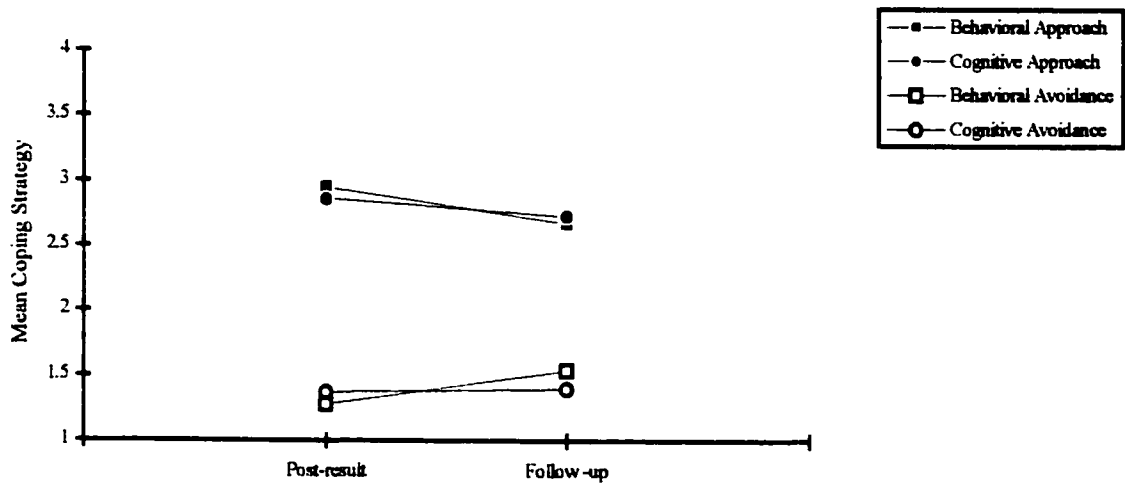
Table 25

Means (Standard Deviations) on Subjective and Contextual Coping Strategies for Participants with False-Positive Screens after the Receipt of the Screen Results and at Follow-up (n=36)

Coping Strategy	Assessment Period	
	Post-result	Follow-up
Subjective Coping		
Behavioral approach	2.94 (0.84)	2.67 (0.90)
Cognitive approach	2.86 (0.94)	2.72 (0.97)
Behavioral avoidance	1.28 (0.50)	1.54 (0.77)
Cognitive avoidance	1.37 (0.54)	1.40 (0.50)
Contextual Coping ^a		
Behavioral approach	2.53 (0.65)	2.75 (0.65)
Cognitive approach	3.11 (0.85)	3.39 (0.60)
Behavioral avoidance	3.25 (0.65)	3.36 (0.68)
Cognitive avoidance	2.69 (0.86)	3.33 (0.76)

^a Smaller means denote larger coping efforts on contextual ratings.

Subjective Coping Strategies



Contextual Coping Strategies

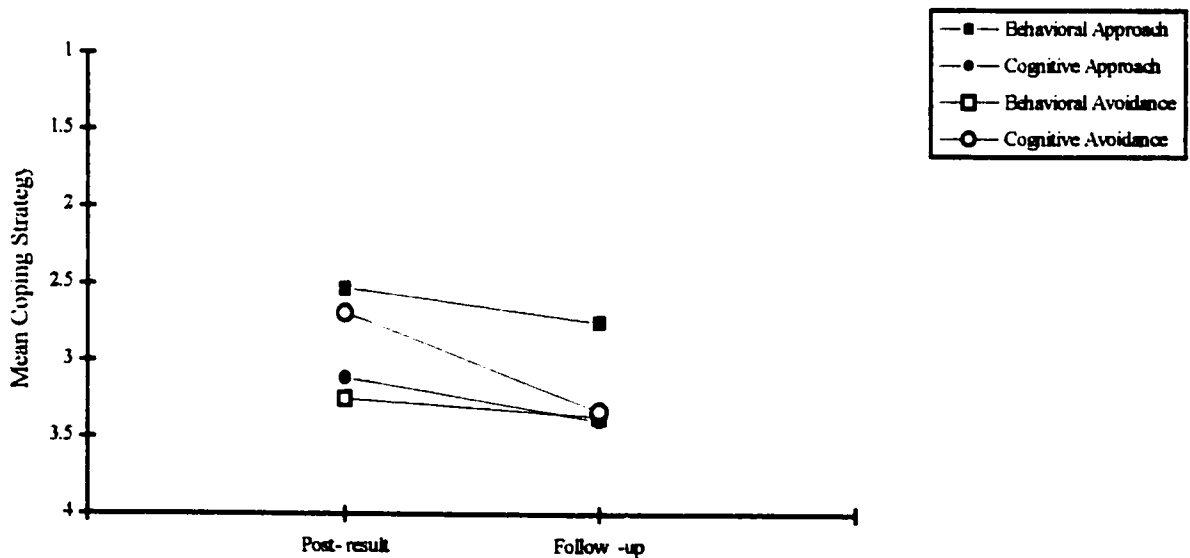


Figure 6. Coping strategies for participants with positive screens from post-result to follow-up by stage of the screen and coping index. Scale in reverse gradient for contextual coping as 1 indicates more than 4.

As expected, the women with positive screens reported decreases in the use of behavioral approach from the post-result ($\underline{M}=2.94$) to the follow-up assessments ($\underline{M}=2.67$), whereas increases in behavioral avoidance were reported over the same period ($\underline{M}=1.28$ at post-result and $\underline{M}=1.54$ at follow-up).

As for the contextual coping strategies, significant univariate differences were noted on behavioral approach ($F_{(1,35)}=6.09, p<.02$), cognitive approach ($F_{(1,35)}=8.66, p<.01$) and cognitive avoidance ($F_{(1,35)}=61.92, p<.0001$). On behavioral approach ($F_{(1,35)}=6.09, p=.019$), a decrease from post-result ($\underline{M}=2.53$) to follow-up ($\underline{M}=2.75$) was reported. As predicted, participants displayed more use of cognitive approach at post-result ($\underline{M}=3.11$) compared to follow-up ($\underline{M}=3.39$). On the other hand, contrary to prediction, more use of cognitive avoidance was observed at post-result ($\underline{M}=2.69$) compared to follow-up ($\underline{M}=3.33$).

Therefore, results showed differential patterns of coping for avoidance-type strategies across measures. Participants reported increased levels of behavioral avoidance, whereas the same strategy as measured by the contextual scale remained the same. In relation to cognitive avoidance, investigator-based ratings decreased whereas self-reported use remained the same. As for approach -type strategies, decreases were noted on both types of measures.

3.2.2.4 Between-Group Differences on Coping Efforts

3.2.2.4.1 Group differences after the receipt of the screen result According to Hypothesis 4c, differences in the use of coping strategies across groups were expected depending on the assessment period. Specifically, it was predicted that women receiving a positive result would use more approach strategies and less avoidance relative to women receiving a negative result as they are faced with an abnormal screen. Comparisons between the two groups were analyzed during the receipt of the screen result. Of 98 participants, a total of six cases and their matched

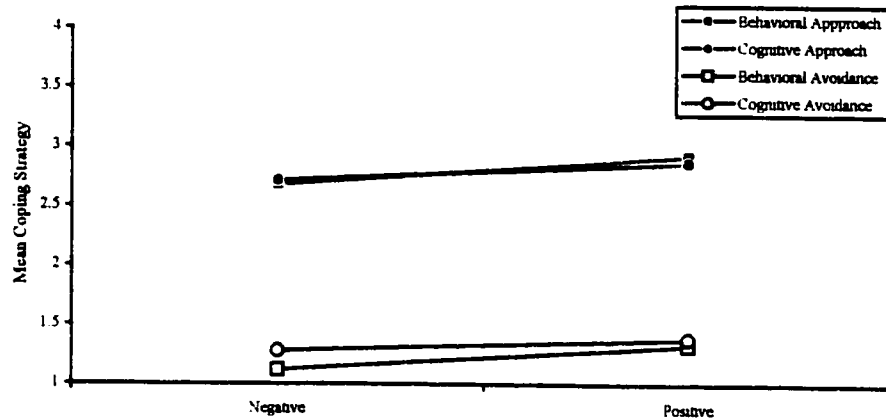
counterparts were removed because the cases were multivariate outliers ($n=4$) or the detection of a change in contextual severity was missed (i.e., an increase in contextual severity was quickly resolved and returned to the previous rating of contextual severity between two assessment points) ($n=2$). In total, two groups of 43 participants matched on age, marital status, education and income were included in the current analysis. The means and standard deviations for the two matched groups were presented in Tables 22 and 23 for the subjective and contextual coping strategies, respectively.

As illustrated in Figure 7, results revealed a significant difference between positive and negative screen groups on contextual (Wilks' $=0.67$, $p<.0001$), but not subjective (Wilks' $=0.90$, $p>.05$) coping strategies. For the contextual coping strategies, univariate analyses revealed statistically significant differences on behavioral avoidance ($F_{(1,84)} = 7.11$, $p<.01$) and cognitive avoidance ($F_{(1,84)} = 17.31$, $p<.0001$). In both cases, women in the positive screen group showed significantly higher use of behavioral and cognitive avoidance than did their negative counterparts.

For the subjective coping strategies, power was estimated at .63 ($\eta^2 = .10$, $\alpha=.05$). Again, the probability of correctly rejecting the null hypothesis was moderate. Tabachnik and Fidell (1996) suggest that a cautious examination of the univariate analysis of a non-significant multivariate analysis may provide suggestions for future research. Indeed, similarly to the contextual strategies, positive screen group reported more behavioral avoidance than negative screen group at post-result ($F_{(1,84)} = 6.16$, $p<.05$) before correcting for experiment-wise error.

3.2.2.4.2 Group equivalence at follow-up Once all participants were informed of a healthy breast, it was predicted in Hypothesis 4c that, similar to pre-screen, there would be no group differences at follow-up. Of the 49 dyads, 40 were included in the following analyses.

Subjective Coping Strategies



Contextual Coping Strategies

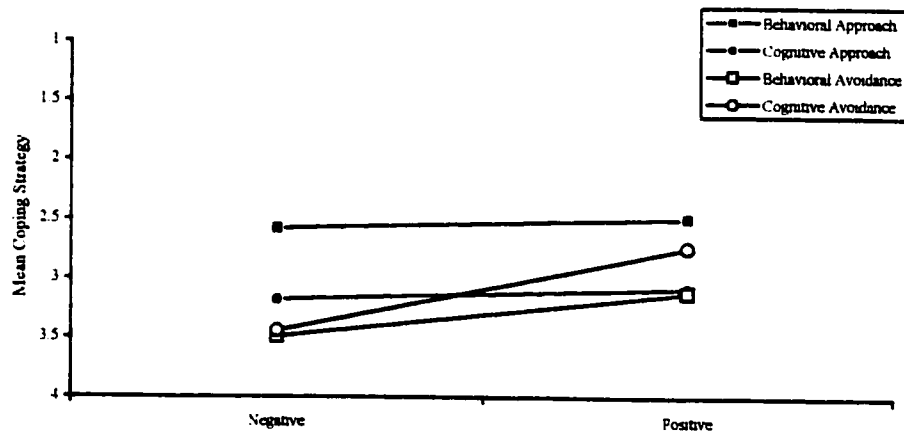


Figure 7 Subjective and contextual coping strategies for groups of matched positive and negative screen groups after the receipt of the screen result (n=86). Scale in reverse gradient for contextual coping as 1 indicates more than 4.

For these analyses, a group of women with positive screen ($n=40$) and a group of participants with negative screens ($n=40$), matched on age, marital status, education, and income were included. Nine participants from the positive group for whom the screen result had not been resolved by the time of the follow-up assessment were excluded along with their negative matched counterpart. Means and standard deviations for the two groups at follow-up are presented in Table 22 for subjective strategies and Table 23 for contextual strategies. In addition, results are graphically presented in Figure 8.

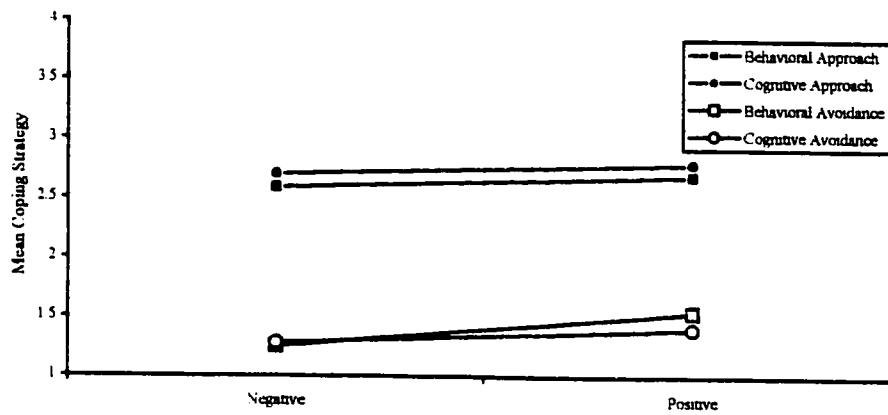
As predicted, no significant differences were found between the two groups for either subjective (Wilks'= 0.96 , $p>.50$) or contextual (Wilks'= 0.94 , $p\geq.20$) coping strategies. Nonetheless, visual inspection suggests a trend for higher levels of self-reported coping and lower contextual ratings of coping. Power levels approximated $.20$ ($\eta^2 = .04$, $\alpha=.05$) for subjective strategies and $.35$ ($\eta^2 = .06$, $\alpha=.05$) for contextual coping strategies. The probability of correctly rejecting the null hypothesis was low in both analyses.

3.2.2.5 Supplementary Analyses

To investigate the impact of the screen process, we examined the role of screening on women's use of coping behaviors at follow-up in relation to their use of coping behaviors prior to the screen using a 2×2 mixed effect MANOVA with screen (false positive and negative) and stage (pre-screen and follow-up) as the independent variables. As suggested by Tabachnick and Fidell (1996), a more stringent alpha level ($\alpha=.01$) was used to explore the data.

Cases with missing data or unresolved screen results along with their matched counterparts were removed from the analysis. This left two matched groups of 39 participants. Means and standard deviations are presented in Table 26 for subjective coping and Table 27 for

Subjective Coping Strategies



Contextual Coping Strategies

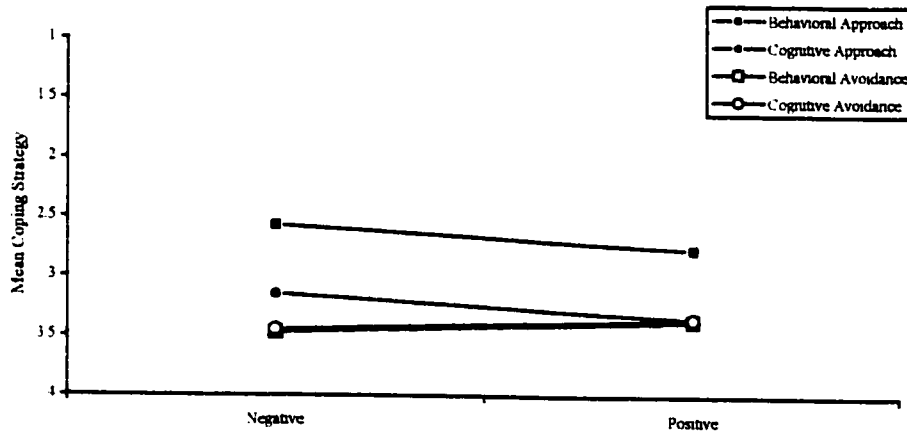


Figure 8. Subjective and contextual coping strategies for groups of matched participant with positive and negative screens at the 90-days follow-up assessment (n=80). Scale in reverse gradient for contextual coping as 1 indicates more than 4.

Table 26

Means (Standard Deviations) on Subjective Coping Strategies for Matched Groups at Pre-screen and Follow-up (n=78).

Screen Group	Assessment Period	
	Pre-screen	Follow-up
Negative		
Behavioral approach	2.40 (0.95)	2.62 (0.98)
Cognitive approach	2.47 (0.99)	2.73 (1.06)
Behavioral avoidance	1.27 (0.48)	1.24 (0.42)
Cognitive avoidance	1.38 (0.52)	1.28 (0.41)
Positive		
Behavioral approach	2.41 (0.88)	2.70 (0.88)
Cognitive approach	2.60 (0.93)	2.76 (0.97)
Behavioral avoidance	1.33 (0.39)	1.53 (0.75)
Cognitive avoidance	1.61 (0.72)	1.40 (0.50)

Table 27

Means (Standard Deviations) on Contextual Coping Strategies for Matched Groups at Pre-screen and Follow-up (n=78).

Screen Group	Assessment Period	
	Pre-screen	Follow-up
Negative		
Behavioral approach	2.59 (0.75)	2.56 (0.79)
Cognitive approach	3.15 (0.54)	3.15 (0.54)
Behavioral avoidance	3.46 (0.55)	3.49 (0.56)
Cognitive avoidance	3.46 (0.68)	3.46 (0.68)
Positive		
Behavioral approach	2.87 (0.64)	2.79 (0.66)
Cognitive approach	3.43 (0.64)	3.38 (0.59)
Behavioral avoidance	3.25 (0.55)	3.35 (0.67)
Cognitive avoidance	3.33 (0.74)	3.33 (0.77)

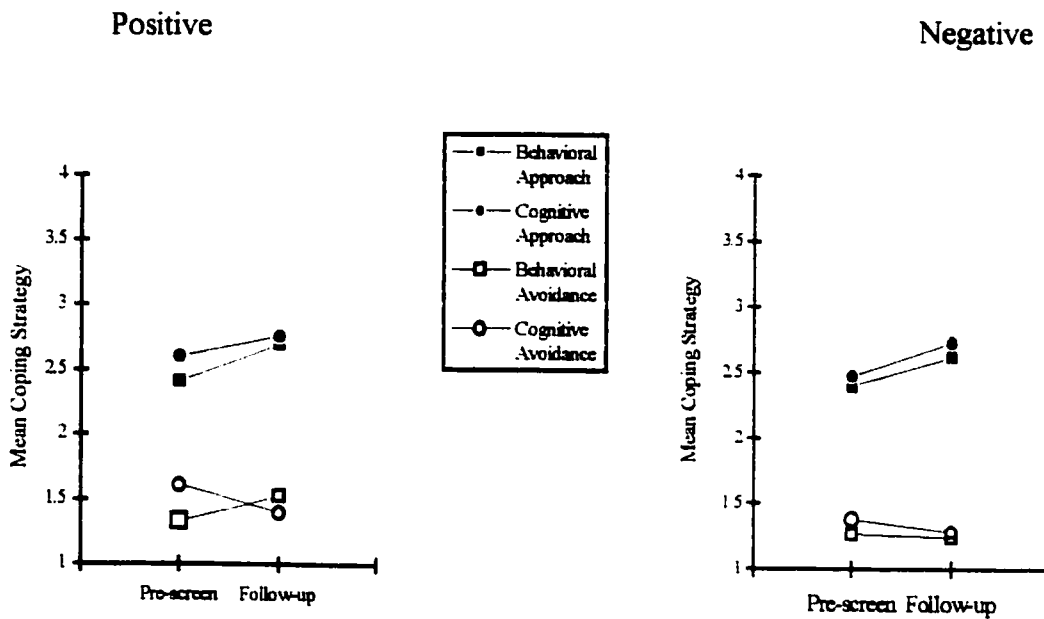
contextual coping, both types of coping assessments are illustrated in Figure 9. Results revealed a non-significant interaction between the stage of the screen and the screen group for the use of subjective coping strategies (Wilks'=0.94, $p>.30$), however a trend was noted on the main effect for the stage of the screen (Wilks'=0.84, $p<.05$) with a tendency for all participants to report the use of more behavioral approach at follow-up ($F_{(1,76)}=5.05$, $p<.05$) and less use of cognitive avoidance ($F_{(1,76)}=5.65$, $p<.05$). As for contextual coping strategies, the main effects for screen group (Wilks'=0.93, $p>.20$) and the stage of the screen (Wilks'=0.93, $p>.10$) as well as the interaction (Wilks'=0.97, $p>.60$) did not reach statistical significance. Power was estimated at .18 ($\eta^2=.03$, $\alpha=.05$). The probability of correctly rejecting the null hypothesis was low.

A different pattern of results was again noted between reported levels and actual use of various coping behaviors. Women tended to self-report increased use of behavioral approach and decreased use of cognitive avoidance as a result of the screening procedure. Contextual ratings of coping strategies, on the other hand, revealed no significant changes in the way women coped with the risk of breast cancer from pre-screen to follow-up. However, visual inspection of the figures shows a slight trend towards higher use of behavioral approach for women having received a false positive result at the end of the screening process.

3.2.3 Objective 3: Predicting Levels of Psychological Stress

The third objective of the study was to investigate the extent to which coping behaviors prior to screening for breast cancer predicted levels of psychological stress following the receipt of a breast screen result. As stated in Hypothesis 5, it was predicted that both coping strategies used during the pre-screen period and concurrent with the notification of a screen result would add to the prediction of psychological stress following the receipt of the screen result. In addition, studies have shown that stressor severity moderates the use of coping on outcome. In

Subjective Coping Strategies



Contextual Coping Strategies

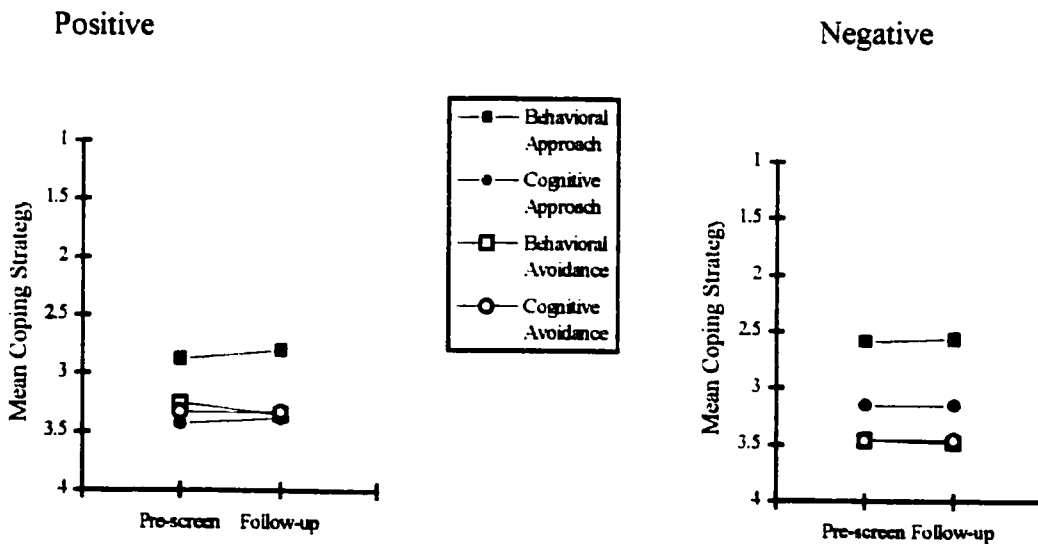


Figure 9. Coping strategies for participants with positive and negative screens from pre-screen to follow-up by screen result and coping index ($n=78$). Scale in reverse gradient for contextual coping as 1 indicates more than 4.

other words, effective strategies used with contextually severe events may not be as effective in the face of less severe events (Mattlin et al., 1990; Zeidner & Hammer, 1992). Given the potential moderating role of contextual severity in the prediction of stress from measures of coping, it was deemed necessary to include levels of severity in the risk of breast cancer at pre-screen and post-result assessments. Similarly, screen results were added in a final step of the analysis to examine whether or not the screen result (i.e., positive or negative screen) added to the prediction of stress over and above the contextual severity of the risk of breast cancer (i.e. combination of actual risk and screen result). The analyses were conducted separately for the contextual and subjective coping strategies, as the two measurement modalities do not share the same variance with the predictor (which is also self-reported).

Prior to beginning regression analyses between coping and psychological stress, zero-order correlations between coping and stress at pre-screen and post-result were examined. The correlation matrix for the subjective coping strategies is presented in Table 28 and for the contextual coping strategies in Table 29. As shown, significant correlations were found between coping and concurrent, as well as prospective psychological stress. Table 30 presents stress levels of the interviewed participants over time.

3.2.3.1 Prediction of Stress Using Subjective Coping Strategies

In an attempt to predict levels of psychological stress during the post-screen stage, a hierarchical standard multiple regression was performed using three sets of variables. In the first step, the four subjective coping strategies and contextual severity during the pre-screen were entered. The second step included the four subjective strategies and contextual severity during the post-result assessment. Finally, the screen group was entered in the final step to examine if the screen result added to the prediction of stress over and above contextual severity.

Table 28

Pearson Correlation Matrix for Stress, Contextual Severity and Subjective Coping Strategies at Pre-screen and Post-result (n=116)

	Strs2	BAP1	CAP1	BAV1	CAV1	BAP2	CAP2	BAV2	CAV2	CS1	CS2
Strs2	1.00										
BAP1	.16	1.00									
CAP1	.11	.86**	1.00								
BAV1	.05	.08	.13	1.00							
CAV1	.30**	.04	.13	.31**	1.00						
BAP2	.14	.49**	.45**	.04	-.02	1.00					
CAP2	.17	.53**	.53**	.05	.01	.91**	1.00				
BAV2	.17	.02	.03	.37**	.28*	-.03	-.03	1.00			
CAV2	.34**	.08	.07	.15	.73**	.07	.10	.31**	1.00		
CS1	.03	.13	.18	.25	.02	.24*	.22*	.02	-.11	1.00	
CS2	-.05	.13	.10	.08	-.05	.13	.12	.03	-.10	.63**	1.00

Note. Strs2= stress, BAP= behavioral approach, CAP=cognitive approach, BAV= behavioral avoidance, CAV=cognitive avoidance, CS=contextual severity; "1" and "2" denote pre-screen and post-result assessments respectively.

* $p < .01$, ** $p < .001$

Table 29

Pearson Correlation Matrix for Stress, Contextual Severity and Contextual Coping Strategies at Pre-screen and Post-result (n=119)

	Strs2	BAP1	CAP1	BAV1	CAV1	BAP2	CAP2	BAV2	CAV2	CS1	CS2
Strs2	1.00										
BAP1	.19*	1.00									
CAP1	.15	.45***	1.00								
BAV1	-.21*	-.53***	-.21*	1.00							
CAV1	-.12	-.32***	-.36***	.24**	1.00						
BAP2	.14	.86***	.36***	-.46***	-.39***	1.00					
CAP2	.01	.32	.71***	-.23*	-.46***	.38***	1.00				
BAV2	-.21*	-.44***	-.24**	.71***	.26**	-.43***	-.12	1.00			
CAV2	-.11	-.34***	-.46***	.23*	.87***	-.35***	-.43***	.32***	1.00		
CS1	.04	.02	.00	.07	.16	-.02	.08	.23**	.09	1.00	
CS2	-.10	-.10	.08	.11	-.05	.02	.15	.26**	.33***	.61***	1.00

Note. Strs= Stress, BAP= behavioral approach, CAP=cognitive approach, BAV= behavioral avoidance, CAV=cognitive avoidance, CS=contextual severity; "1" and "2" denote pre-screen and post-result assessments respectively.

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 30.

Mean and standard deviation of levels of psychological stress for interviewed participants.

Assessment	n	Mean	SD
Pre-screen	129	69.35	28.16
Post-result	125	66.90	28.17
Follow-up	123	66.10	29.32

Prior to beginning the main analyses, assumptions inherent to multivariate analyses were conducted. Normality was examined by calculating the average skewness ($M=.52$) and the average kurtosis ($M=.30$). According to Tabachnik and Fidell (1996), average skewness and kurtosis between $+1.00$ and -1.00 suggest that the data are normally distributed. Spot checks of bivariate scatterplots and plots of predicted versus residual values did not reveal any marked departure from linearity or homoscedasticity. Correlations between the independent variables were examined to check for multicollinearity and singularity. As shown in Table 28, the bivariate correlations between behavioral approach and cognitive approach at both time points exceeded the recommended cut-off ($r>.70$) for inclusion in a multiple regression analyses. Typically, correlations above .90 signal a multicollinear relationship. Conceptually, the deletion of one of the two variables could not be justified and other means of reducing the effects of the multicollinear relationship (e.g., ridge regression) were described as controversial. Hence, both variables were kept in the analysis choosing instead to interpret the findings with caution, knowing that the multicollinear relationships may have inflated the standard errors, and subsequently decrease regression coefficients. With the use of a $p<.001$ criterion for the Mahalanobis distance, a total of four outliers were identified among the cases. In addition to the four outliers, eight cases with missing data and two cases with a positive result prior to the screen (i.e., self-detected lump prior to OBSP screen) were removed from the analysis, resulting in a sample size of 116.

Table 31 displays the unstandardized regression coefficients (B) along with their standard errors, the standardized regression coefficients (β) and the semipartial correlations (sr). R was

Table 31

Hierarchical Multiple Regression of Subjective Coping Strategies, Contextual Severity and Screen Group on Psychological Stress at Post-Result (n=116)

Step	Variable	β	$SE \beta$	B	$SE B$	sr	R	R^2	p
1	CS1	.02	.09	1.00	4.79	.02			
	BAP1	.33	.18	9.66	5.23	.16			
	CAP1	-.21	.18	-6.01	5.17	-.10			
	BAV1	-.04	.09	-2.58	5.80	-.04			
	CAV1	.32	.09	14.34	4.18	.31**			
							.35	.12	.011
2 ^a	CS2	-.11	.12	-3.82	3.96	-.08			
	BAP2	-.07	.22	-2.34	6.58	-.03			
	CAP2	.19	.22	5.36	6.26	.08			
	BAV2	.08	.10	5.07	5.80	.08			
	CAV2	.17	.14	7.26	5.83	.11			
							.41	.17	.027
3 ^b	Screen group	.31	.16	16.85	8.83	.17			
							.45	.20	.013

Note. ^a R^2 change was not statistically significant ($p=.33$). ^b R^2 change was not statistically significant ($p=.06$). CS=contextual severity, BAP= behavioral approach, CAP=cognitive approach, BAV= behavioral avoidance, CAV=cognitive avoidance; 1=pre-screen, 2=post-result.

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

significantly different from zero at the end of each step with no significant increase from Step 2 to Step 3. After three steps, with all independent variables in the equation, $R=.45$, $F_{(11,104)}=2.33$, $p<.05$. Following Step 1, with the four subjective coping strategies and contextual severity during the pre-screen stage entered into the equation, $R^2=.12$, $F_{(5,110)}=3.11$, $p<.01$. Moreover, one of the five variables yielded a significant regression coefficient. Cognitive avoidance at the pre-screen stage of the screen contributed significantly to the prediction of psychological stress, $B=14.34$, $t=3.42$, $p<.001$. After Step 2, with the four subjective coping strategies and contextual severity during the post-result assessment, $R^2=.17$, $F_{(10,105)}=2.15$, $p<.05$. The addition of the five variables in Step 2 did not result in a significant increment in R^2 . Finally, after entering the result of the screen in Step 3, $R^2=.20$, $F_{(11,104)}=2.33$, $p<.05$. The addition of the screen group into the regression equation did not result in a significant increment in R^2 , although there was a trend ($p=.06$). Overall, 20% of the variance in psychological stress was explained by the screen group, subjective coping, and contextual severity at the pre-screen and post-result stages.

Contextual severity and coping strategies reported at the post-result stage did not add to the prediction of stress over and above those reported at the pre-screen stage. Specifically, the use of cognitive avoidance prior to undergoing the breast screen was related to higher stress levels after the receipt of the screen result.

3.2.3.2 Prediction of Stress Using Contextual Coping

In a parallel set of analyses, contextual coping strategies were also used to predict levels of psychological stress during the post-result phase of the screening procedure. A hierarchical standard multiple regression was performed using the three similar sets of variables as for the subjective strategies. In the first step, the four contextual coping strategies and contextual severity prior to the screen were entered. The second step included the four contextual strategies

and contextual severity of the post-result assessment. Again, the screen group was entered in the final step to examine if the screen result added to the prediction of stress over and above contextual severity.

Prior to beginning the main analyses, assumptions inherent to multivariate analyses were again conducted. Normality was examined by calculating the average skewness ($M=.31$) and the average kurtosis ($M=-.52$). Spot checks of bivariate scatterplots and plots of predicted versus residual values did not reveal any marked departure from linearity or homoscedasticity. Table 29 presented the correlation matrix between the independent variables. As shown, none of the correlations exceeded coefficients greater than .90 signalling no multicollinearity. However, the test-retest of each strategy exceeded the recommended cut-off of .70 for inclusion in multiple regression analyses. As previously, deletion of the variables could not ($z=8.59, p<.01$), be conceptually justified, therefore, the variables were kept in the analyses choosing to interpret with caution the results. With the use of a $p<.001$ criterion for the Mahalanobis distance, a total of three outliers were identified. In addition to the outliers, six cases with missing data and two cases with a positive result prior to the screen (i.e., self-detected lump prior to OBSP screen) were removed from the analysis, resulting in a sample size of 119.

Table 32 displays the unstandardized regression coefficients (B) along with their standard errors, the standardized regression coefficients (β) and the semipartial correlations (sr). R was not significantly different from zero at the end of any step. After three steps, with all independent variables in the equation, $R=.35, F_{(11,107)}=1.37, p\geq.19$. Following Step 1, with the four contextual coping strategies and contextual severity prior to the screen entered into the equation, $R^2=.06, F_{(5,113)}=1.45, p\geq.21$. After Step 2, with the four contextual coping strategies and contextual

Table 32

Hierarchical Multiple Regression of Contextual Coping Strategies, Contextual Severity and Screen Group on Psychological Stress at Post-Result (n=119)

Step	Variable	β	$SE \beta$	B	$SE B$	sr	R	R^2	p
1	CS1	.01	.09	0.16	5.11	.01			
	BAP1	.05	.12	2.07	4.68	.04			
	CAP1	.08	.11	3.99	5.23	.07			
	BAV1	-.16	.11	-7.87	5.29	-.14			
	CAV1	-.03	.10	-1.28	3.89	-.03			
							.25	.06	.21
2 ^a	CS2	.09	.17	3.23	5.84	.05			
	BAP2	-.02	.20	-0.88	8.12	-.01			
	CAP2	-.32	.16	-13.27	6.64	-.18*			
	BAV2	-.06	.15	-2.42	6.29	-.04			
	CAV2	.08	.24	2.81	7.94	.03			
							.32	.10	.27
3 ^b	Screen Group	.26	.17	15.06	9.58	.14			
							.35	.13	.20

Note. ^a R^2 change was not statistically significant ($p=.40$). ^b R^2 change was not statistically significant ($p=.12$). BAP= behavioral approach, CAP=cognitive approach, BAV= behavioral avoidance, CAV=cognitive avoidance; 1=pre-screen, 2=post-result.

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

severity during the post-result assessment, $R^2 = .10$, $F_{(10,108)} = 1.24$, $p > .27$. The addition of the five variables in Step 2 did not result in a significant increment in R^2 . However, univariate tests revealed that cognitive approach was a significant predictor of stress $B = -13.27$, $t = -1.99$, $p < .05$. The opposing signs of the simple correlation ($r = .01$) and the standardized regression weight ($\beta = -.32$) suggests that this relationship is under the influence of a suppressor variable. Systematically removing each independent variable out of the regression equation confirmed the presence of a suppressor variable. Finally, after entering the result of the screen in Step 3, R^2 was equal to .12, $F_{(11,107)} = 1.37$, $p > .20$. The addition of the screen group into the regression equation did not result in a significant increment in R^2 . In sum, contextual coping strategies used at either stage of the screen as well as contextual severity and screen group did not predict levels of psychological stress.

CHAPTER 4

DISCUSSION

The purpose of this longitudinal study was to examine the construct of coping using two types of assessment methods following the unfolding of a naturally occurring stressor. Using Lazarus and Folkman's (1984) model of stress and coping, the current investigation attempted to describe the process of coping over the course of a stressor and to predict levels of psychological stress during the acute phase of the event.

The project had three objectives. It examined the reliability of the two assessment methods, and investigated the concordance between them during the unfolding of a natural stressor from anticipation to follow-up. It described between as well as within group differences in coping. Finally, it examined the relative importance of antecedent and concurrent use of coping strategies in predicting levels of stress over and above the contextual severity of the event.

4.1 Concordance between Contextual and Subjective Coping Modalities

In an effort to further our knowledge of coping measurement, the study examined the reliability and intercorrelation of subjective and contextual measures of coping by applying both methods to the same sample facing the same natural stressor. Given the nature of contextual measures, it was predicted that they would be more stable across time compared to their subjective counterparts. The issue of the conceptual overlap between the two measures was also investigated by examining the extent to which similar conceptual strategies correlated over time and as a function of the severity of the stressor. It was predicted that correlations between conceptually similar strategies would be greater than correlations between conceptually different strategies. Furthermore, the distinction was expected to be even more evident when the person was faced with a more contextually severe event.

With regard to establishing the psychometric properties of the two types of indices, a number of findings are noteworthy. First, the internal consistency of the subjective scales were satisfactory, as were the inter-rater agreements for the contextual scales. In relation to reliabilities, test-retest coefficients for the subjective scales fell considerably as the period between assessments extended (above .60 compared to below .40). In both cases, behavioral avoidance had the poorest reliability. Anecdotally, participants often had difficulty understanding how they could behaviorally avoid something abstract, resulting in the low endorsement of these items. Contextual measures, on the other hand, had high test-retest reliabilities (above .90) regardless of the length of time between assessments.

As predicted by the first hypothesis, differences were found in the reliabilities of the subjective and contextual coping scales, especially over the longest interval (i.e., 90 days). The higher stability of contextual measures may be explained, in part, by the retrospective gathering of contextual coping efforts. It is acknowledged that the retrospective collection of contextual information is not superior to the concurrent gathering of such information. Nonetheless, the semi-structured nature of the measure and the strict rating guidelines reduce the likelihood of gathering insufficient or inaccurate data. Moreover, as will be discussed, the pattern of correlations between similar subjective and contextual coping strategies was similar across time points. In other words, contextual strategies reported at the time of the interview were as poorly correlated with the subjective strategies at follow up as were the correlations between the contextual and subjective strategies reported during the first assessment, which suggest that the retrospective gathering of the information does not explain the discrepancy. An alternative hypothesis for the differences may be related to subjective biases in reporting thoughts and behaviors. More specifically, self-reported accounts of coping inherently allow for biased

accounts of how a person is dealing with a particular stressor based on how they are feeling or what they perceive to have done, whereas contextual measures are more likely to rule out the possibility that coping is confounded by outcome, whether or not the participant is aware of the outcome at the time of reporting.

Contrary to predictions, the results of the study failed to find evidence of a significant degree of concordance between conceptually similar strategies across indices, even when the severity of the event was considered. Although trends were noted in the strength of the relations between the subjective and contextual scales of behavioral approach and cognitive avoidance, the findings were not robust across the four assessments periods (i.e., correlations were only significant at one or two of the four time points). The reason for the lack of relationship between the two types of coping indices is unclear. Although there appeared to be a trend when visually inspecting the results, the post-hoc analyses found that women rated by the experimenter as high or low copers tended to report similar levels of subjective coping efforts. One explanation may possibly relate to the power of the statistical test. However, this finding may also simply suggest that participants' perceptions of coping effort do not match with coping efforts assessed by an external rater. More specifically, there may have been a tendency for participants to underestimate their use of avoidance strategies, and overestimate their use of approach strategies, lowering the overall concordance between the two coping indices.

A possible explanation for this finding may be social desirability. Koman (1991) found a significant correlation between subjective accounts of daily hassles and social desirability. More specifically, higher social desirability was related to fewer reportings of daily hassles. Similar factors may play a role in the reporting of coping efforts if people tend to have notions about what represent good and bad ways of dealing with stressors. For instance, approaching the stressor by

using problem solving skills and gathering relevant information are usually viewed as constructive ways of coping, whereas avoidance strategies are perceived as poor, or even cowardly, efforts. As such, when subjectively reporting their use of various coping strategies, one would expect an overestimation of approach strategies and an underestimation of avoidance. In fact, Hatton and Emerson (1995) reported that wishful thinking, a form of cognitive avoidance, was prone to social desirability effects. Consequently, the role of social desirability in the reporting of coping strategies needs to be explored in future research.

The lack of a consistent relationship between subjective and contextual avoidance strategies may also be, as some have suggested, related to the difficulty in self-reporting avoidance. In other words, if a participant effectively denies the existence of a problem, how will she accurately report coping with something she thinks does not exist? For example, one participant whose mother and sister had died of breast cancer needed probing to remember that she had undergone further tests to explore the nature of her suspicious lump. The potential inaccuracy in reporting avoidance cannot be ignored. If a researcher relies solely on subjective reports, it may be difficult to differentiate between the individuals who use avoidance strategies without reporting them and those who simply do not use them. For this reason, a contextual measure of avoidance coping may reflect more accurately levels of avoidance.

Finally, another interpretation may be that the criteria for the various ratings of the extent of coping are inherently different for the respondent and the investigator: Perhaps the investigators are rating the participant's coping in such a way as to suggest that they use less approach and more avoidance strategies than they are self-reporting. For instance, anecdotally, the participants often failed to recognize how an abnormal screen result increased their risk of breast cancer, preferring to wait for the confirmation of cancer before jumping to any conclusions.

As such, the subjective reports of coping efforts did not illustrate the increased use of avoidance. On the other hand, this failure to recognize the increased risk clearly represented the use of avoidance strategies to the independent raters of contextual coping efforts.

The hypothesis that contextual and subjective accounts of coping would be increasingly congruent as the contextual severity of the event increased was not supported. However, the reason for this unexpected finding may be related to the range of severity in the current project. The most severe events in the context of the risk of breast cancer represent stressors of moderate intensity as participants with a cancer diagnosis were excluded from the study. Future studies need to examine the role of contextual severity on reports of contextual and subjective coping in the context of stressors with a wider range of severity.

According to Benson and Hagtvet (1996), examining the relation between relevant observables elucidates the construct validity of coping. The findings of this project highlighted the divergence of subjective and contextual measures of coping, suggesting that they may represent two different psychological processes: Where subjective coping provides insight into self-perceptions of coping efforts, contextual coping measures are more likely to accurately represent coping efforts. Future research will, however, need to examine the recall of information about contextual coping as time elapses before conclusive statements can be made. For instance, checking the accounts of participants with corroborative information from a third party (e.g., spouse or significant other) or concurrent collection of information may prove useful. Nonetheless, life events research would suggest that, although not free of inaccuracy, the collection of information via contextual measures is less influenced by the participant's biases and has shown high retrospective validity (Brown & Harris, 1989).

In sum, the lack of concordance between subjective and contextual coping strategies further reinforce the notion that substituting self-reported measures with observation-based interviews is premature. The findings of the study stress the importance of narrowly defining theoretical domains as the foundation of coping research. Consequently, choices about coping measurement rest on this foundation. Until coping researchers have a better understanding of the overlap and the unique features of the theoretical definitions of coping and their relevant observables, there is a need to incorporate multiple measures.

4.2 Coping Over Time and Across Groups

The second objective of the current project was to describe the use of coping strategies as the breast screen procedure unfolded. This would permit us to investigate whether coping varied as a function of the different stages of the stressor and of the screen result. To improve on past studies, both contextual and subjective indices were used to measure coping as this natural stressor unfolded from anticipation to follow-up.

As predicted, results for the contextual measure showed that coping strategies varied at different stages of the stressful encounter and that these fluctuations also differed as a function of the screen result. More specifically, the use of avoidance and approach strategies from pre-screen to post-result increased for the women with positive screens, yet remained relatively stable across time for those with negative screens. In addition, the use of contextual coping by the positive screen group seemed to return to pre-screen levels at follow-up, where no significant differences between participants with positive or negative screens were noted. Finally, as expected, significant differences between positive and negative screen groups were noted on both behavioral and cognitive avoidance strategies during the acute phase of the screening procedure (i.e., the post-result phase) with the positive screen group using more avoidance than their counterparts in

the negative screen group. However, hypotheses were only partially supported for the subjective coping strategies. As with the contextual coping, significant changes across the stage of the screen were noted but the interaction of time as a function of screen result failed to reach significance. Nonetheless, trends in the expected directions were found. Positive and negative screen groups were similar in subjective use of coping strategies once the stressful encounter had reached its end at follow-up.

Overall, the findings are compatible with previous studies, which found that the use of coping strategies varied as a function of the stage of the event (e.g. Carver et al., 1993; Stanton & Snider, 1993). In relation to changes in particular coping strategies, findings were partially in keeping with previous studies which found that the use of approach-type coping strategies, such as problem solving and planning, decrease once the event has passed (Carver & Scheier, 1994; Carver et al., 1993; Folkman & Lazarus, 1985), whereas significant decreases in avoidant-type coping strategies tend to occur after the results of assessment (Carver & Scheier, 1994; Folkman & Lazarus, 1985; Stanton & Snider, 1993). However, with the inclusion of two types of coping measurement and the notion of contextual severity (i.e., positive and negative screen), our study provides added precision and specificity to our understanding of coping in the context of a health threat.

In relation to approach-type strategies, the findings of the current project suggest that changes tend to be related to the severity of the stressor (i.e., positive or negative screen result) as well as to the stage of the event in its natural progression. As expected, there was an increase in the use of both subjective and contextual approach strategies from anticipation (i.e., pre-screen) to impact (i.e., post-result), followed by a decrease at follow-up with fluctuation being more salient for women facing an abnormality. In fact, the use of contextual coping strategies remained

relatively stable across time for the participants with negative screens. In this study, the participants in the negative group were given a result; one could say that it was good news, however, it simply confirmed that nothing was there, at this time. Previous studies which have been conducted to examine the impact of receiving news have failed to include participants for whom the results confirm the status quo. The participants in breast cancer studies (i.e., Carver et al. 1993; Stanton & Snider, 1993) are informed of a positive diagnosis whereas those students in midterm examinations (Bolger, 1990; Carver, et al., 1989; Folkman & Lazarus, 1985) are given either good or bad results based on their expectations and other situational characteristics (e.g., success in course is based on the mid-term examination mark). As such, the current study goes beyond previous research to illustrate that coping depends on the stage of an event as it progresses and its contextual demands.

Although some similarities were noted between subjective and contextual coping strategies, there are several important differences that need to be highlighted. With respect to avoidance strategies, changes were not robust across coping indices (i.e., subjective versus contextual) or coping modalities (i.e., behavioral versus cognitive). In past investigations (e.g., Carver & Scheier, 1994; Folkman & Lazarus, 1985; Stanton & Snider, 1993), the use of behavioral disengagement decreased only several weeks after the receipt of a cancer diagnosis (Carver & Scheier, 1994; Stanton & Snider, 1993), whereas the use of cognitive avoidance or denial decreased immediately following the news that the assessment confirmed the presence of cancerous cells (Carver & Sheier, 1994; Stanton & Snider, 1993). Contrary to this body of research, we found that levels of contextually assessed cognitive avoidance and behavioral avoidance both tended to increase following the receipt of the screen result for women in the positive screen group. In other words, participants were more likely to cope by disengaging from

the heightened contextual demands. The finding that levels of avoidance subsided by follow-up suggests that the need to avoid decreased along with changes in the contextual severity of the event. The increase in contextual avoidance by participants in the positive screen group may help them to conserve energy and establish the focus required for the gathering of personal and environmental resources to deal with the newly encountered stressor (Holahan & Moos, 1987). It may also be that women "understood" the temporary status of their result and might have awaited further testing and diagnosis before reducing their use of avoidance strategies.

The lack of replication for the subjective avoidant coping strategies suggests that women faced with a significant health threat, such as breast cancer, do not readily perceive or label their thoughts and behaviors as avoidant. It may be that knowing or admitting to the avoidance may somehow thwart their efforts to mobilize themselves to face the stressor. Furthermore, the finding that only subjective cognitive avoidance and not contextual avoidance predicted increased levels of stress implies that the awareness of avoidant coping, not simply the use of avoidant coping, relates to higher levels of distress. As suggested by Suls and Fletcher (1985), the use of avoidant thoughts and behaviors under contextually demanding circumstances may serve an adaptive purpose in the short term.

The reasons for the discrepancies in patterns of coping efforts across indices generate a number of hypotheses. First, differences inherent in the measurement tools may account for some of the discrepancy. As mentioned previously, the participants often failed to recognize how their risk of breast cancer increased as a function of the screen result and, therefore, the subjective reports of coping efforts did not illustrate the increased use of avoidance. On the other hand, this failure to recognize the increased risk clearly represented the use of avoidance strategies to the independent raters of contextual coping efforts. From post-result to follow-up, the significant

decrease in contextual cognitive avoidance was paralleled by increased use of subjective behavioral avoidance for the women with false-positive results. Often times, when participants were asked what they could do about the risk of breast cancer, they answered "go for mammography." The self-reported increase in behavioral avoidance represented by items such as "I reduce the amount of effort I'm putting into solving the problem" may represent their belief that there is little more to do once their bi-annual screening has been completed. Given that the contextual scale cannot consider non-participation in the screening (obviously, everyone in the study is participating) as behavioral avoidance, such changes are not reflected in their scores.

Second, as discussed by Coyne and Gottlieb (1996), the issue of social desirability cannot be ignored. The increased self-reported use of behavioral approach strategies and decreased use of cognitive avoidance by the participants with false positive results without corroborating contextual evidence support this hypothesis. More specifically, the false-positive participants' beliefs about what they *should* be doing rather than what they were actually doing may have interfered with accurate self-reports of coping behaviors. As mentioned previously, the overestimation of behavioral approach and underestimation of cognitive avoidance fit with the notion that individuals know that facing problems head on, rather than escaping or giving up, constitute more noble or effective ways of coping.

Finally, rather than assuming that people want to present themselves in a positive light, it may also be that they need to present themselves as such for better well-being. This hypothesis may be explained by Taylor's theory of positive illusions (Taylor & Brown, 1988). According to this theory, overly positive self-evaluations, exaggerated optimism and sense of control characterize normal thought processes and promote better mental health. For instance, when college students were asked to rate themselves on various personality dimensions, their self-

ratings were significantly more positive than independent ratings made by observers (Lewinsohn, Mischel, Chaplin, & Barton, 1980). In relation to coping efforts, perhaps people also have positive illusions about how they cope with stressful events in order to maintain their psychological well-being. Therefore, it would be interesting to investigate the impact of varying discrepant views of coping efforts on psychological well-being. Keeping in mind that the current findings represent trends in the data, further inquiry into these speculations using larger sample sizes, concurrent contextual coping, and more severe stressors are necessary.

The findings from the supplementary analysis, which examined changes in coping efforts from the pre-screen to the follow-up as a function of the screen group, showed that participants tended to perceive an increased use of behavioral approach and a decreased use of cognitive avoidance. However, no such difference was noted with respect to contextual coping efforts. Social desirability may again be a factor in this discrepancy. Nonetheless, the trend may reflect the participants' feeling of self-efficacy relative to their risk of breast cancer. According to Bandura (1989), people have a tendency to disengage from situations they believe exceed their coping capabilities. Although not directly assessed in this study, the participant's perception of increased use of approach strategies and decreased use of avoidance strategies may be suggestive of an increased sense of self-efficacy. Moreover, as shown by Ozer and Bandura (1990), interventions aimed at increased perceptions of coping self-efficacy were related to an increase in freedom of action and a decrease in avoidant behavior. Over the course of the study there was no increase in approach coping as assessed by the external raters, however, the possible increased perception of coping efficacy may translate itself into the adoption of breast health behaviors and compliance to screening guidelines in the longer term. Prevention programs should nevertheless

note that participation in screening programs does not seem to lead to more active coping in the short term.

4.3 Coping as a Predictor of Psychological Stress

Beyond describing changes in the use of coping strategies as a natural stressor unfolds, we also attempted to predict levels of psychological stress using both subjective and contextual measures of coping. It was expected that coping used in anticipation of the event would be a significant predictor of stress in addition to the coping used concurrently. To expand on previous investigations, we also examined the role of contextual characteristics (i.e., screen results) on the prediction of stress.

The subjective coping strategies and contextual severity during the anticipation of the event, and concurrent with the event, along with the screen results accounted for 20% of the variance in psychological stress levels. However, only prospective levels of cognitive avoidance were a significant predictor. More specifically, increased use of cognitive avoidance while anticipating the screen was associated with greater levels of psychological stress following the notification of the screen result. However, contrary to our predictions, the coping efforts displayed following the receipt of the result did not add to the prediction over and above their efforts displayed prior to the screen. As for contextual ratings, coping efforts during the anticipatory phase of the screen or during the receipt of the results did not account for a significant amount of variance in levels of stress.

Unlike Masel and her colleagues (1996) who argued that coping does not have a long-term effect on adjustment beyond the coping strategies implemented at the time of the actual stressor, we found that concurrent coping did not add to the prediction of psychological stress levels. The reason for the nonsignificant role of concurrent coping efforts, whether subjective or

contextual, in the current study is unclear. Statistically, one has to be cautious not to overinterpret this nonsignificant finding. The relatively high degree of correlation between the same coping strategies across the stages may, in part, explain this finding. In other words, the coping efforts entered first in the equation accounted for most of shared variance between coping and stress before the second set of coping variables were entered.

The finding that cognitive avoidance was the only significant predictor of psychological stress is in keeping with previous results that avoidance strategies are associated with higher levels of distress concurrently and prospectively (e.g., Bolger, 1990; Carver & Sheier, 1994; Compas, Worsham, Ey & Howell, 1996; Litt, Tennen, Affleck & Klock, 1992; Stanton & Snider, 1993). Stanton and Snider (1993) propose that avoidant coping may be maladaptive for women diagnosed with breast cancer in that it may prevent them from engaging in effective cognitive and behavioral processes aimed at reducing the actual or perceived threat of the stressor. In the case of women undergoing breast cancer screening, avoidance coping may have the same impact. More specifically, participants faced with a health threat, such as breast cancer, who chose to ignore or deny their risk may be harming themselves if it interferes with adherence to screening, to formal diagnosis, or to other cancer-related health behaviors.

As for approach strategies, their poor predictive value diverges from the results of past studies. One potential explanation relates to the stress levels experienced by the participants in the study. Levels of stress experienced following the receipt of the screen results, which we attempted to predict, fell below normative values that have been reported for women between the ages of 18 and 65 years. Anecdotally, some participants reported low levels of stress, with many stating that they did not have any worries since retirement, or that routine preventive breast screening did not represent a significant stressor for them. The floor effect may also be linked to

the selective group of attendees at OBSP (i.e., no previous history of breast cancer and no suspected lump). Given that approach strategies are expected to decrease levels of psychological and physical symptoms (Commerford, et al., 1994; Dunkel-Schetter, et al. 1992; Gass & Chang, 1989; Kendler, et al., 1991), attempts to lower stress levels even further may be unproductive in this population.

A few speculations regarding the nonsignificant role of contextual coping efforts in predicting levels of psychological stress is warranted. One possible explanation relates to method variance. More specifically, the shared general method of all paper-and-pencil measures may result in shared common variance (Tepper & Tepper, 1993). In this case, the measures of subjective coping and psychological stress, which are both self-report questionnaires, would likely share more common method variance than the contextual coping measure and the psychological stress measure.

Beyond the possible method variance of self-reported measures, it may also be that what people think they do is a better predictor than what they are perceived to be doing by external raters. In a study by Osowiecki and Compas (1998) examining coping and appraisals among cancer patients, only patient ratings of coping were related to emotional distress. Ratings of coping efforts by external judges failed to predict levels of distress. As mentioned previously, it may be that an individual's positive illusions about how she is dealing with stressful events are beneficial to her well-being.

Another possible explanation relates to the outcome measure. Cunningham and her colleagues (1998) as well as Lerman and her colleagues (1996) have reported significant findings for cancer-specific distress, but not for general distress levels. The two measures used have varying levels of specificity related to the risk of breast cancer. More specifically, the COPE is

designed to measure behavioral and cognitive coping efforts in various settings in order to be generalizable across situations, however, this obviously compromises its specificity to the risk of breast cancer. On the other hand, the semi-structured nature of the LEDS Coping Schedule has an inherent flexibility which permits the investigator to probe into the strategies specific to the risk of breast cancer. Given the degree of specificity permitted by contextual measures when gathering relevant coping information, perhaps the index of contextual coping efforts would relate more strongly to breast cancer specific distress.

Finally, it is noteworthy that, anecdotally, some participants noted that the risk of breast cancer did not represent a significant stressor for them. As with Styra and her colleagues (1993), few women in the study identified breast abnormalities during the study period as their worst current stressor. Therefore, the role of contextual coping in facing their worst current stressor may be a stronger predictor of their current levels of psychological stress. In order to fully understand an individual's level of stress when faced with a particular stressor such as a health threat, their contextual coping efforts in the larger context of their lives when facing other, possibly more severe, events will need to be examined.

4.4. Theoretical and Research Implications of Findings

The findings of the current project have important implications for both the coping literature and the applied setting in which it was studied. Beginning with the research and theoretical implications, the findings from the current project have significant implications for future research in the area of stress and coping. First and foremost, in response to the fundamental question "do people who report a lot of strategy X actually do a lot of X?", it would appear that the answer is complex. For the most part, it appears that people tend to overestimate approach strategies and underestimate avoidance strategies. The divergence of subjective and

contextual measures of coping suggest that two measures, each representing different coping-relevant observables, tap into different constructs of coping. In essence, self-reported accounts of coping efforts and investigator-based observations of coping efforts are separate psychological processes. When developing research projects, the investigator will need to seriously consider the consequences of measuring coping based on self-reported versus investigator-based ratings.

Despite the finding that the participant's accounts of coping efforts may not be accurate reflections of their actual coping efforts, their ratings are better predictors of their levels of psychological stress. If the goal is to accurately describe what the individual is doing in the face of a stressful event, a contextual measure, which reduces subjective bias, is more likely to faithfully represent the coping efforts actually undertaken. On the other hand, if the researcher wishes to predict levels of certain adaptational outcomes, particularly those measured by self-report (which is most often the case), a self-reported measure of coping efforts will most likely be a better predictor, in part because of shared method variance. Where does this leave the area of coping measurement? At the moment, the findings highlight the need for further scientific inquiry into the concordance between the two types of coping indices. The role of memory (Ptacek et al., 1994), positive illusions (Taylor & Brown, 1988), and social desirability (Coyne & Gottlieb, 1996) are potential explanations for the discrepancies, which are worthy of empirical investigation.

The repeated nature of the stressor may also have important implications for our understanding of coping efforts. Unlike some screening procedures (e.g., HIV testing, fetal abnormalities), breast cancer screening for individuals who adhere to suggested guidelines represents a re-occurring stressor. In our sample, most women had had previous mammographies (96%), with 27% of those having had a previous false positive on breast screening (i.e.

mammography and clinical breast examination) and another 22% reporting breast abnormalities (i.e., fibroadenoma and cysts) detected by other methods (e.g., self-detection). Coyne and Gottlieb (1996) argued that development of habitual or automatic coping responses to recurring stressful events may represent an effective mechanism. They propose that individuals with effective reflexive coping responses need to exert less effort when dealing with stressors. For example, a woman who is advised of a breast abnormality for the first time is faced with a greater repertoire of potential coping efforts. She can talk to people with similar experiences, gather information about risk factors and question her need for hormone replacement therapy. On the other hand, the same woman advised of yet another abnormality two years after may not need to engage in such activities if she has already done so: Information gathering would be redundant, the cost analysis of taking hormone replacement therapy has been done, etc. As such, "it would be a mistake to attribute differences in adaptational outcome to their doing less rather than their having less to do" (Coyne & Gottlieb, 1996, p. 965). In the context of breast cancer screening with a low risk population, the ways in which individuals deal with repeated stressors may have important implications for the study of coping.

Finally, Beehr and McGrath (1996) suggest that coping researchers need to be aware of maturational effects. As mentioned previously, some participants noted that the risk of breast cancer did not represent a significant stressor for them. In fact, some women compared it to going to the dentist by saying "it's unpleasant, but you have to do it regularly". Understanding maturational processes and reflexive responses in the use of coping efforts may provide insight into the effectiveness of various strategies when faced with a recurring stressor, or even the accommodation of strategies to other situationally similar stressors.

4.5 Clinical Implications of the Findings

The findings of the current project are relevant to the provision of health services, especially screening programs. First, the finding that levels of cognitive avoidance are related to prospective levels of psychological stress provides possible avenues for intervention. Stanton and Snider (1993) suggest that interventions aimed at minimizing avoidance and increasing approach type strategies may be premature given the inadequate knowledge researchers currently have on the antecedents and consequences of coping skills interventions which target changes in these coping mechanisms. Nonetheless, a woman who readily admits to dealing with the anticipation of the screen by doing things to keep her mind off of it may signal the health care provider of potential difficulties in dealing with the procedure or the receipt of the results.

The impact of using cognitive avoidance may be different as a function of the individual's susceptibility to breast cancer. In light of results which suggest that psychological distress can interfere with compliance to recommended breast screening guidelines in women at high-risk (Lerman et al., 1993), the presence of avoidance coping may become a vicious cycle. As these women continue to cognitively avoid their potential risk which results in increased levels of distress, they may be less likely to undergo screening, which in turn, may increase their distress and so on. As for women at lower risk, it appears that greater concerns about breast cancer increase the likelihood of breast self-examination, clinical breast examination, and mammography (McCaul, Schroeder & Reid., 1996) even for women having experienced a false positive result (Lerman, Trock, Rimer, Boyce, 1991). In one article, Lerman, Trock, Rimer, Jepson and their colleagues (1991, p. 265) suggested that "breast cancer worries might in fact facilitate continued mammogram participation." The role of cognitive avoidance may go beyond its impact on levels of concurrent psychological stress. In combination with findings from other studies, the role of

cognitive avoidance may, in fact, extend to adherence to screening programs. In accordance with Stanton and Snider (1993), it may be premature to recommend interventions aimed at reducing the use of cognitive avoidance until the role of variables such as personal risk of breast cancer can be examined in the larger context of coping, stress and adherence to screening programs.

The finding that there were no differences in the use of coping strategies for women receiving a positive clinical breast exam and women only receiving a positive mammogram emphasizes the weight given to the former by screening participants. The finding that women coped both subjectively and contextually in a similar manner regardless of the origin of the positive result suggests that they place as much importance on the clinical breast examination as the mammography. This, despite the fact that mammograms are more reliable for detecting breast cancer than physical palpations, whether it be done by the women herself, her physician or a nurse examiner. Although not examined empirically in the current study, anecdotal accounts of participants receiving a negative clinical breast examination and a positive mammography (a few days after the screen) suggest that women are genuinely taken back by the news of an abnormality. The impact of the clinical breast examination was obviously underestimated by the clinic staff when the assessment points for the study design were originally set. It only became obvious when conducting interviews with the participants that the assumed time points did not coincide with the actual stage (i.e., anticipation, post-result and follow-up) of the screening procedure. The finding has important implications for communicating results to participants of the screening program and campaigning for the usefulness of mammography above and beyond clinical breast exams.

There has been some debate over the extent to which screening programs are related to adaptational outcomes such as levels of anxiety, worry about cancer, and preventive health

behaviors (e.g., Gram et al., 1990; Lerman et al., 1991; Lerman et al., 1993; Lightfoot et al., 1994; Rippetoe & Rogers, 1987). The current finding that women with false-positive screens resume similar coping efforts as those with negative screens following the disconfirmation of a breast abnormality expands on previous studies, which suggest that the impact of a false-positive result may be transient. With respect to coping, the similarities in coping efforts between women with and without false-positive screens three months after the screen suggests that having experienced a cancer “scare” does not require coping effort to recover, nor does it motivate a greater amount of preventative measures to reduce one’s risk. Moreover, the tendency for self-reported coping efforts to change from the pre-screen to the follow-up independent of the screen result further supports the notion that a false positive result may have a time-limited impact on her way of dealing with the health threat. Participation in the screening procedure itself may be sufficient to mobilize efforts against the risk of breast cancer. This may have implications for other screening procedures which might require remedial actions following the initial scare. For instance, an individual believed to have been exposed to HIV might need to change behaviors following the receipt of a negative result to reduce future exposure to the virus. More extensive interventions are needed to understand the long-term impact of a false-positive result on how people cope with continued health risks.

4.6 Strengths and Limitations

The current research project expands our knowledge of coping and its measurement by addressing a number of methodological shortcomings of previous studies. First and foremost, the longitudinal design allowed for the examination of coping strategies as the women experienced different phases of the screening procedure. As shown by the current findings and results from previous studies (e.g., Carver et al., 1993; Folkman & Lazarus, 1985; Stanton & Snider, 1993),

the incorporation of temporal aspects in the study of coping is essential to understanding the dynamic nature of this process. Moreover, the effort to equate the stages of the event with the situational demands of the stressor, rather than adhering to an a priori chronological sequencing of events, also helped to make the findings more clinically relevant. A failure to do so in the coping and stress literature may help account for discrepant findings across studies.

Conducting the study in the context of a naturally occurring stressor is another significant strength of the study. Primarily, the use of a field study design increases the ecological validity of the findings by expanding knowledge on how people deal with actual health threats.

Understanding such mechanisms is paramount to the provision of health services. Knowing how individuals cope with health stressors, and which strategies are most effective in reducing distress, provides researchers and clinicians with essential information. More specifically, these findings can help guide them toward the development and adaptation of medical interventions which are psychologically sensitive to the needs of the consumer.

The inclusion of an investigator-based measure in response to the criticisms outlined by coping researchers (e.g. Coyne & Gottlieb, 1996) is also a significant strength of the current research protocol. Coyne and his colleagues (Coyne & Downey, 1991; Coyne & Gottlieb, 1996) have stated that the reliance on self-report measures of coping has resulted in equivocal findings. By using the investigator-based interview, problems related to the use of traditional self-report measures such as participant's misinterpretation of the term "coping", specific items or the meaning of the scale are significantly reduced. Moreover, the combination of both subjective and contextual measures in the same protocol has allowed for direct comparisons between the two coping indices. As a consequence, we have gained valuable information about the discrepancies

between what individuals report they do and how investigators rate their efforts when faced with a specific naturally occurring stressor.

In an effort to enhance the likelihood of group equivalence in the quasi-experimental design, steps were taken to ensure group equivalency on socio-demographic factors (i.e., age, marital status, education and income) by matching women with false-positive and negative screens. In a second step, analyses were conducted to further test this group equivalence across socio-demographic factors.

As with most research protocols, decisions about methodology are carefully weighed by examining the strengths and limitations of different designs. As mentioned, the examination of coping in the context of a field study is a significant strength; however, it is also accompanied by certain limitations. For instance, the quasi-experimental design makes it difficult to infer cause. The inability to randomly assign participants to screen results because of ethical considerations decreases the likelihood that participant characteristics are evenly distributed across groups. Although careful matching was performed to maximize group equivalence, the possibility that other extraneous variables may have played a role in group differences cannot be eliminated.

In order to increase the internal validity of the study, it was necessary to select a relatively homogenous sample, which tended to be of middle to upper class. Unfortunately, increases in internal validity are often accompanied by decreases in external validity, thus reducing the generalizability of the findings to other samples and settings. Although the focus on women undergoing population-based screening programs is a significant strength of this study, it also precludes the information gathered from a sample with a wider range of characteristics. For instance, it would be interesting to include women at high risk of breast cancer. Understanding

the process for women experiencing greater risks and potentially higher levels of distress may further our knowledge of coping and the breast screening experience.

A second issue related to the generalizability of the findings is the self-selected sample: volunteers to participate in the screening program and volunteers to participate in the study. Wardle and Pope (1992) suggest that the interpretation of results from the examination of the psychological effects of screening must recognize the potential impact of such factors. Differences in socio-demographic variables between those who participate in screening and those who do not have been noted. For example, Rimer (1992, 1994) found that women with fewer years of education are less likely to adhere to the screening guidelines. Moreover, reasons for participating, and attitudes toward the procedure, may directly relate to a woman's use of various coping strategies which, in turn, may affect adaptational outcomes. For instance, a woman who believes that an ounce of prevention is worth a pound of cure who receives a positive screen result might console herself by thinking that "if it is cancer, they caught it early," potentially creating a sense of relief and reducing distress. Finally, asking for voluntary participation in the study may also have affected the generalizability of the findings. As shown, women from the screening program who participated in the current study were more educated and younger than those who declined. As such, further investigation is needed with a less homogenous sample in order to generalize findings beyond the study sample.

Due to logistical constraints, it was not feasible to gather contextual information concurrently at each time point. As such, certain limits related to retrospective accounts of coping may linger. For example, studies (e.g. Ptacek, et al., 1994) have shown modest correlations between retrospective accounts and daily subjective and objective reports of coping efforts. It is, however, worth mentioning that the contextual measure used in the current project

has a semi-structured nature which assists participants in the recall of relevant information. Moreover, its stringent guidelines and ratings by consensus reduce accounts of coping that are biased by outcome. By presenting to the external raters contextual information with as little subjective information and reactions as possible, you help to ensure that the interviewer's ratings of the coping efforts are not influenced by the participant's subjective reaction to the events. Nonetheless, in order to more fully understand the construct of coping and its measurement, more scientific emphasis needs to be placed on the concordance between the self-report and investigator-based measures, as well as on the factors involved in the discrepancies between them. Psychometric studies, which gather information from a second source (i.e., spouse or friend) to examine the reliability of accounts of coping efforts of the participant, may help to elucidate the concordance, or lack thereof, between the two types of measures. The replication of these results with concurrent gathering of contextual information may allow for greater assurance for the validity of the findings.

Finally, in attempting to apply these findings to a natural setting, it should be kept in mind that, although statistically significant at times, the effects were relatively small. This, in combination with limited sample sizes, reduced the statistical power of certain analyses. As such, one must carefully consider the results, non-significant as well as significant, in light of issues of effect size, sample size and statistical power.

To improve on the current project for future research protocols, it would be necessary to implement a few changes. The ideal methodology would include an experimental design which assigns the participants to the treatment conditions and would control for previous screening experience. This would allow the investigator to ensure that cases in the different treatment conditions were comparable at the outset of the study. However, as Beehr and McGrath (1996)

point out, it is most often not possible to use true experimental designs for pragmatic and ethical reasons in the area of stress and coping. Obtaining a baseline measure of stress and coping prior to experiencing the screening procedure may help to ascertain equivalencies between groups at the outset of the study. Ethical and logistic constraints in the current research setting did not permit us to ask participants to complete baseline measures prior to the day of their scheduled appointments or prior to the intention of having a screen.

Gathering contextual information concurrently at each time point would be the ideal way to describe what the participant is actually doing as she anticipates the screening procedure, as she is being examined by the nurse, and as she awaits the news of the mammography. In order to collect this information, stringent controls would have to be placed on the manner in which results are provided by the nurse examiner as she conducts the clinical breast examination as well as on the delay in which mammography results are given. As mentioned previously, verbal feedback from the nurse as she did the palpation often constituted news of the result for the participants, disclaiming the importance of the mammography. Ideally, if participants were to return to the clinic in order to receive the results of the screen, the researcher could interview them about their use of coping strategies during the anticipatory period. Not only would this standardize the experience for all participants but, the relevant coping and stress information could be gathered when the situational demands are strongest.

Finally, the inclusion of a comparison group which has not been exposed to breast screening would provide a useful benchmark of how individuals not currently faced with the screening cope with their risk of breast cancer. However, given the level of public awareness on the issue of breast screening, finding age-appropriate women who have never been screened (either by clinical breast exam or mammography) is a difficult task.

4.7 Summary and Conclusions

This study examined the use of coping strategies as measured by self-report and contextual measures and the prediction of psychological stress, as a natural stressor unfolded. In a sample of women undergoing breast cancer screening, we found that there was less concordance than expected between people's self-reports and investigator's ratings of coping efforts. More specifically, compared to external raters, there appeared to be a trend for participants to overestimate their use of approach strategies and underestimate the use of avoidance strategies. In relation to changes in coping as the screening procedure unfolded, the use of contextual avoidance and approach strategies tended to peak following the result of the screen for those receiving positive screens, yet remained relatively stable across time for those receiving negative screen results. Moreover, findings suggested that women with a positive screen displayed more behavioral and cognitive avoidance strategies following the receipt of the result than their counterparts with negative screen results. Finally, among coping strategies, prospective use of subjective coping strategies, cognitive avoidance in particular, accounted for levels of psychological stress at the receipt of the result: Higher avoidance being related to higher feelings of stress.

In conclusion, the finding that subjective and contextual accounts of coping are not strongly correlated has important implications for the assessment of coping as well as for theoretical developments in this area. This empirical examination of the concordance between the two coping indices now provides additional knowledge to guide investigators in their choices related to the use of various types of coping instruments. Furthermore, the study helps to expand our knowledge of the process of stress and coping as a natural stressor unfolds. The findings

convey the importance of incorporating the precise stages of the event and the contextual characteristics of the stressor in order to accurately describe changes in the use of coping strategies. Clinically, the similar use of coping by women receiving either a positive clinical breast exam or a positive mammography highlights the impact of the CBE on participants, suggesting the result from the former is equally, if not more, important than the latter. In addition, the role of cognitive avoidance in predicting levels of stress may have important indirect implications for the adherence to screening programs and the identification of women at risk of experiencing distress in response to the screen result. Finally, the findings of the current project have brought to surface numerous questions about the reasons for discrepancies between coping indices including the role of recall of information, the role of habituation to a re-occurring stressor in coping efforts, and the relation of coping and stress to adherence with screening guidelines. Scientific inquiries which address these issues and incorporate concurrent or collaborative collection of information of coping strategies are necessary to further expand our knowledge of the coping process and its measurement.

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Appendix A

Sample Questionnaire

SITUATION: RISK OF HAVING BREAST CANCER

Some women worry about the risk of having breast cancer. We would like to know how you **CURRENTLY** perceive the **RISK OF HAVING BREAST CANCER**. After each question, please circle the number which best describes your perception **CURRENTLY**.

On a scale of 1 to 8, where:

1	2	3	4	5	6	7	8
Not at All	Not really	Very little	A bit	Some- what	Quite a bit	Very much	Extremely

WITH REGARDS TO THE RISK OF HAVING BREAST CANCER:

1. To which degree do you perceive this situation as having *impact* on your life currently? 1 2 3 4 5 6 7 8
2. To which degree do you perceive you *feel mastery* over this situation currently? 1 2 3 4 5 6 7 8
3. To which degree do you perceive *uncertainty* about this situation currently? 1 2 3 4 5 6 7 8

Think about the current **RISK OF HAVING BREAST CANCER**, and how you react to it, **CURRENTLY**. Then indicate the extent to which you do whatever each following statement says:

On a scale of 1 to 4, where:

1	2	3	4
I do not do this at all	I do this a little bit	I do this a medium amount	I do this a lot

WITH REGARDS TO THE RISK OF HAVING BREAST CANCER:

1. I try to get advice from someone about what to do. 1 2 3 4
2. I just give up trying to reach my goal. 1 2 3 4
3. I reduce the amount of effort I'm putting into solving the problem. 1 2 3 4
4. I ask people who have had similar experiences what they did. 1 2 3 4
5. I do what has to do be done, one step at a time. 1 2 3 4
6. I make a plan of action. 1 2 3 4
7. I try to come up with a strategy about what to do. 1 2 3 4
8. I take additional action to try to get rid of the problem. 1 2 3 4
9. I refuse to believe that it is happening. 1 2 3 4
10. I try to get emotional support from friends. 1 2 3 4
11. I discuss my feelings with someone. 1 2 3 4
12. I concentrate my efforts on doing something about it. 1 2 3 4
13. I talk to someone who could do something concrete about the problem. 1 2 3 4
14. I give up the attempt to get what I want. 1 2 3 4
15. I say to myself "this isn't real". 1 2 3 4
16. I think about how I might best handle the problem. 1 2 3 4
17. I pretend that it is not really happening. 1 2 3 4
18. I talk to someone to find out more about the situation. 1 2 3 4
19. I get sympathy and understanding from someone. 1 2 3 4
20. I think about what steps to take. 1 2 3 4
21. I take direct action to get around the problem. 1 2 3 4
22. I admit to myself that I can't deal with it, and quit trying. 1 2 3 4
23. I talk to someone about how I feel. 1 2 3 4
24. I act as though it is not even happening. 1 2 3 4

SITUATION: PERSONAL FINANCIAL SITUATION

Among other stressors, some women worry about their PERSONAL FINANCIAL SITUATION. We would like to know how you CURRENTLY perceive your PERSONAL FINANCIAL SITUATION. After each question, please circle the number which best describes your perception CURRENTLY.

On a scale of 1 to 8, where:

1	2	3	4	5	6	7	8
Not at all	Not really	Very little	A bit	Some- what	Quite a bit	Very much	Extremely

WITH REGARDS TO THE FINANCIAL STATUS:

1. To which degree do you perceive this situation as having *impact* on your life currently? 1 2 3 4 5 6 7 8
2. To which degree do you perceive you *feel mastery* over this situation currently? 1 2 3 4 5 6 7 8
3. To which degree do you perceive *uncertainty* about this situation currently? 1 2 3 4 5 6 7 8

Think about your current PERSONAL FINANCIAL SITUATION, and how you react to it, CURRENTLY. Then indicate the extent to which you do whatever each following statement says:

On a scale of 1 to 4, where:

1	2	3	4
I do not do this at all	I do this a little bit	I do this a medium amount	I do this a lot

WITH REGARDS TO YOUR PERSONAL FINANCIAL STATUS:

- | | | | | |
|--|---|---|---|---|
| 1. I try to get advice from someone about what to do. | 1 | 2 | 3 | 4 |
| 2. I just give up trying to reach my goal. | 1 | 2 | 3 | 4 |
| 3. I reduce the amount of effort I'm putting into solving the problem. | 1 | 2 | 3 | 4 |
| 4. I ask people who have had similar experiences what they did. | 1 | 2 | 3 | 4 |
| 5. I do what has to do be done, one step at a time. | 1 | 2 | 3 | 4 |
| 6. I make a plan of action. | 1 | 2 | 3 | 4 |
| 7. I try to come up with a strategy about what to do. | 1 | 2 | 3 | 4 |
| 8. I take additional action to try to get rid of the problem. | 1 | 2 | 3 | 4 |
| 9. I refuse to believe that it is happening. | 1 | 2 | 3 | 4 |
| 10. I try to get emotional support from friends. | 1 | 2 | 3 | 4 |
| 11. I discuss my feelings with someone. | 1 | 2 | 3 | 4 |
| 12. I concentrate my efforts on doing something about it. | 1 | 2 | 3 | 4 |
| 13. I talk to someone who could do something concrete about the problem. | 1 | 2 | 3 | 4 |
| 14. I give up the attempt to get what I want. | 1 | 2 | 3 | 4 |
| 15. I say to myself "this isn't real". | 1 | 2 | 3 | 4 |
| 16. I think about how I might best handle the problem. | 1 | 2 | 3 | 4 |
| 17. I pretend that it is not really happening. | 1 | 2 | 3 | 4 |
| 18. I talk to someone to find out more about the situation. | 1 | 2 | 3 | 4 |
| 19. I get sympathy and understanding from someone. | 1 | 2 | 3 | 4 |
| 20. I think about what steps to take. | 1 | 2 | 3 | 4 |
| 21. I take direct action to get around the problem. | 1 | 2 | 3 | 4 |
| 22. I admit to myself that I can't deal with it, and quit trying. | 1 | 2 | 3 | 4 |
| 23. I talk to someone about how I feel. | 1 | 2 | 3 | 4 |
| 24. I act as though it is not even happening. | 1 | 2 | 3 | 4 |

SITUATION: YOUR WORST CURRENT STRESSOR

Most people have a situation in their life which is a source of stress for them.

WHAT IS YOUR WORST CURRENT STRESSOR?: _____ ()

We would like to know how you CURRENTLY perceive this YOUR WORST CURRENT STRESSOR. After each question, please circle the number which best describes your perception CURRENTLY.

On a scale of 1 to 8, where:

1	2	3	4	5	6	7	8
Not at all	Not really	Very little	A bit	Some- what	Quite a bit	Very much	Extremely

WITH REGARDS TO YOUR WORST CURRENT STRESSOR (specify) _____ ():

1. To which degree do you perceive this situation as having *impact* on your life currently? 1 2 3 4 5 6 7 8
2. To which degree do you perceive you *feel mastery* over this situation currently? 1 2 3 4 5 6 7 8
3. To which degree do you perceive *uncertainty* about this situation currently? 1 2 3 4 5 6 7 8

Think about your WORST CURRENT STRESSOR and how you react to it currently.

Then indicate the extent to which you do whatever each following statement says:

On a scale of 1 to 4, where:

1	2	3	4
I do not do this at all	I do this a little bit	I do this a medium amount	I do this a lot

WITH REGARDS TO YOUR WORST CURRENT STRESSOR:

- | | | | | |
|--|---|---|---|---|
| 1. I try to get advice from someone about what to do. | 1 | 2 | 3 | 4 |
| 2. I just give up trying to reach my goal. | 1 | 2 | 3 | 4 |
| 3. I reduce the amount of effort I'm putting into solving the problem. | 1 | 2 | 3 | 4 |
| 4. I ask people who have had similar experiences what they did. | 1 | 2 | 3 | 4 |
| 5. I do what has to be done, one step at a time. | 1 | 2 | 3 | 4 |
| 6. I make a plan of action. | 1 | 2 | 3 | 4 |
| 7. I try to come up with a strategy about what to do. | 1 | 2 | 3 | 4 |
| 8. I take additional action to try to get rid of the problem. | 1 | 2 | 3 | 4 |
| 9. I refuse to believe that it is happening. | 1 | 2 | 3 | 4 |
| 10. I try to get emotional support from friends. | 1 | 2 | 3 | 4 |
| 11. I discuss my feelings with someone. | 1 | 2 | 3 | 4 |
| 12. I concentrate my efforts on doing something about it. | 1 | 2 | 3 | 4 |
| 13. I talk to someone who could do something concrete about the problem. | 1 | 2 | 3 | 4 |
| 14. I give up the attempt to get what I want. | 1 | 2 | 3 | 4 |
| 15. I say to myself "this isn't real". | 1 | 2 | 3 | 4 |
| 16. I think about how I might best handle the problem. | 1 | 2 | 3 | 4 |
| 17. I pretend that it is not really happening. | 1 | 2 | 3 | 4 |
| 18. I talk to someone to find out more about the situation. | 1 | 2 | 3 | 4 |
| 19. I get sympathy and understanding from someone. | 1 | 2 | 3 | 4 |
| 20. I think about what steps to take. | 1 | 2 | 3 | 4 |
| 21. I take direct action to get around the problem. | 1 | 2 | 3 | 4 |
| 22. I admit to myself that I can't deal with it, and quit trying. | 1 | 2 | 3 | 4 |
| 23. I talk to someone about how I feel. | 1 | 2 | 3 | 4 |
| 24. I act as though it is not even happening. | 1 | 2 | 3 | 4 |

D.A.S.

**IF YOU HAVE AN INTIMATE PARTNER (HUSBAND, SPOUSE, COHABITEE, BOYFRIEND),
PLEASE COMPLETE THIS PAGE.**

Most people have disagreements in their relationships. Please indicate below the approximate extent of the agreement or disagreement between you and your partner for each of the following three items. Please do not consult your partner.

Please circle for the questions listed below, the number that corresponds best to your situation.

On the scale of 5 to 0, where:

5	4	3	2	1	0
Always agree	Almost always agree	Occasionally disagree	Frequently disagree	Almost always disagree	Disagree

AGREEMENT WITH YOUR PARTNER ON:

- | | | | | | | |
|--|---|---|---|---|---|---|
| 1. Philosophy of life | 5 | 4 | 3 | 2 | 1 | 0 |
| 2. Aims, goals and things believed to be important | 5 | 4 | 3 | 2 | 1 | 0 |
| 3. Amount of time spent together | 5 | 4 | 3 | 2 | 1 | 0 |

How often would you say the following events occur between you and your partner?

On a scale of 0 to 5, where:

0	1	2	3	4	5
Never	Less than once a month	Once or twice a month	Once or twice a week	Once a day	More than once a day

HOW OFTEN DO THE FOLLOWING EVENTS OCCUR:

- | | | | | | | |
|---|---|---|---|---|---|---|
| 4. Have a stimulating exchange of ideas | 0 | 1 | 2 | 3 | 4 | 5 |
| 5. Calmly discuss something | 0 | 1 | 2 | 3 | 4 | 5 |
| 6. Work together on a project | 0 | 1 | 2 | 3 | 4 | 5 |

The dots on the following line represent different degrees of happiness in your relationship. The middle point, "happy", represents the degree of happiness of most relationships. Please circle the dot which best describes the degree of happiness, all things considered, of your relationship.

0	1	2	3	4	5	6
.	.	.	.	.	.	.
Extremely unhappy	Fairly unhappy	A little unhappy	Happy	A little happy	Very happy	Extremely happy

Breast Screening Survey

Part 1. Breast Cancer Information

1. Which factors of the following list do you think may increase a woman's chance of getting breast cancer. Please circle the number 1 or 0 for each of the following items.

	yes	no
a) family history of breast cancer	1	0
b) injury to the breast	1	0
c) age (women over 50)	1	0
d) birth control pills	1	0
e) hormone therapy for menopause (change of life)	1	0
f) obesity (being overweight).....	1	0
g) high alcohol consumption	1	0
h) high fat diet	1	0
i) having no children	1	0
j) having children after 30	1	0
k) late menopause (after 55)	1	0
l) other factors you are aware of:		

2. Which of the following symptoms do you believe may be associated with breast cancer? Please circle the number 1 or 0 for each of the following items.

	yes	no
a) a lump in the breast	1	0
b) a change in the shape of the breast	1	0
c) a discharge or leakage from the nipple	1	0
d) an inverted nipple	1	0
e) a change in the appearance of the breast skin.	1	0

3. Which of the following events do you believe may cause changes in the breasts?

	yes	no
a) menstrual cycle	1	0
b) menopause	1	0
c) pregnancy	1	0
d) diet and nutrition	1	0

4. There are many ways to detect breast cancer. Which of the following ways do you believe allow(s) for the early detection of breast cancer?

	yes	no
a) breast self-examination	1	0
b) clinical breast exam (by health care professionals)	1	0
c) mammography (x-ray of the breast)	1	0
d) biopsy (to take a tissue sample)	1	0
e) surgery (lumpectomy or mastectomy)	1	0

5. Do you believe that maintaining good health habits (e.g. exercise, good nutrition, not smoking, etc.) is sufficient to protect you against breast cancer?

yes	no
1	0

6. According to you, at which time during the menstrual cycle do you believe a woman should perform breast self-examination?

	yes	no
a) immediately before menstruation.....	1	0
b) immediately after menstruation	1	0
c) during menstruation	1	0
d) anytime during the cycle	1	0

7. According to statistics, what is the average number of years that a woman may survive after being diagnosed with breast cancer?

_____ year(s)

- 8a. What do you think are the chances that a woman will have breast cancer someday?

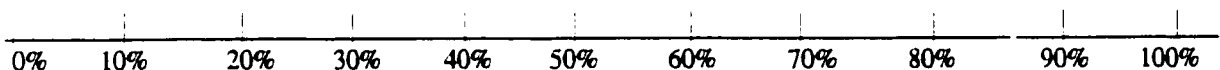
Using the scale below from 1 to 4, please circle the number which best represents to your answer.

<u>Not at all</u> <u>likely</u>	<u>Not very</u> <u>likely</u>	<u>Somewhat</u> <u>likely</u>	<u>Very</u> <u>likely</u>
1	2	3	4

- 8b. More specifically, on a scale of 0 to 100%, what is the probability (risk) that a woman will someday have breast cancer?

--- %

Please also circle your response on the scale below.



Part II. Personal Information

9. Have any of the people identified below that you know ever been diagnosed with breast cancer? Circle the number 1 or 0 for each individual. For those who have been diagnosed with breast cancer, please specify when the diagnosis was made.

	yes	no	when (month/year)
a) your biological mother	1	0	_____
b) your adoptive mother	1	0	_____
c) your sister (blood relative)	1	0	_____
d) your sister (not blood relative, e.g., adoption)	1	0	_____
e) your half sister	1	0	_____
f) your step sister	1	0	_____
g) your sister in law	1	0	_____
h) your aunt (blood relative)	1	0	_____
i) your aunt (by marriage)	1	0	_____
j) your cousin (blood relative)	1	0	_____
k) your cousin (not blood relative)	1	0	_____
l) close friend	1	0	_____
m) colleagues/acquaintance	1	0	_____

10. Have you started your menopause? If so, please specify at what age.

uncertain	yes	no	age
2	1	0	_____ years

11. Have you yourself ever found a lump in your breast? If so, please indicate how many months ago.

yes	no	number of months
1	0	_____

12. Has anyone else found a lump in your breast (doctor, partner, etc.)? Please circle the number 1 or 0 for each individual. If a lump was found by an individual mentioned below, please specify how many months ago.

	yes	no	number of months
a) general practionner/ family doctor	1	0	_____
b) specialist (e.g. gynecologist, obstetrician, etc.)	1	0	_____
c) nurse	1	0	_____
d) partner/spouse	1	0	_____
e) friend or sister	1	0	_____
f) other, specify: _____			

13. How often do you examine your own breasts for lumps or irregularities? Please circle the letter corresponding best to your behavior.

- a) once a month
- b) every 2-6 months
- c) every 7-11 months
- d) once a year or less often
- e) never

14. Have you ever had any medical problems with your breasts?

yes	no
1	0

If so, please specify among the following items, what kind of problem(s) you had by circling the letter(s) corresponding best to your medical problem(s)

- a) cyst or lump
- b) tumour (not cancerous)
- c) malignant tumour/cancer
- d) pain/swelling
- e) breast feeding problems
- f) other (specify) _____

15. How tall are you? _____ foot _____ inches or _____ cm

16. How much do you weigh? _____ pounds or _____ kg

17. At approximately what age did you begin your menstruation? _____ years

18. How confident do you feel performing breast self-examination? Using the scale below from 1 to 4, please circle the number which best represents your answer.

Not at all
confident
1

Not very
confident
2

Somewhat
confident
3

Very
confident
4

19. How comfortable do you feel discussing breast screening, which refers to having a clinical examination of your breast and a mammogram with your doctor? Please circle the number which best represents your answer.

<u>Not very</u> <u>comfortable at all</u>	<u>Not very</u> <u>comfortable</u>	<u>Comfortable</u>	<u>Very</u> <u>comfortable</u>
1	2	3	4

20. Have you ever smoked (cigarettes, cigars or pipe)?

Please, circle number 1 or 0.

yes	no
1	0

a) If so, please indicate for how many years? _____ number of years

b) On average, how many cigarettes per day? _____ number of cigarettes/day

c) Are you still smoking?

yes	no
1	0

21. On average, how many alcoholic beverages do you drink per week?

_____ number of
glasses/week

22. Do you exercise regularly (e.g., swimming, jogging, aerobic classes, walking, etc.)?

a) If so, please specify the number of minutes per week and the type of activity?

yes	no	_____ minutes/ week
1	0	

b) type of activity _____

23. Do you see yourself as overweight? If so, please indicate what your ideal weight would be.

yes	no	ideal weight (pounds)
1	0	_____

24. Do you see yourself as too thin? If so, please indicate what your ideal weight would be.

yes	no	ideal weight (pounds)
1	0	_____

25. Have you ever been pregnant? If so, indicate the number of pregnancies.

yes	no	no. of pregnancie(s)
1	0	_____

a) Number of live birth(s): _____

b) Number of children breast-fed: _____

c) Length of breast-feeding _____ months

26. On a scale of 1 to 7, how would you describe the size of your breast in relation to the average women of your age? Please circle the number which best describes you.

<u>Very</u> <u>small</u>			<u>Average</u> <u>size</u>			<u>Very</u> <u>small</u>
1	2	3	4	5	6	7

27. On a scale of 1 to 7, how would you describe the firmness of your breast in relation to the average women of your age? Please circle the number which best describes you.

<u>Very</u> <u>firm</u>				<u>Average</u> <u>firmness</u>			<u>Very</u> <u>firm</u>
1	2	3	4	5	6	7	

28. On a scale of 1 to 7, how often do you wear a bra?

<u>Never</u>			<u>Half of</u> <u>the time</u>		<u>Always</u>
1	2	3	4	5	6
					7

29. What is your bra size (ex. 36 C)?

____ (number) ____ (letter)

- 30a What do you think your chances are that you personally will have breast cancer someday? Please circle the number which best represents your answer.

<u>Not at all</u> <u>likely</u>	<u>Not very</u> <u>likely</u>	<u>Somewhat</u> <u>likely</u>	<u>Very</u> <u>likely</u>
1	2	3	4

- 30b More specifically, on the following scale from 0 to 100%, what do you believe is the probability (risk) that you will one day have breast cancer? ____ (%)
Please also circle your response on the scale below.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

31. In the last year, have you seen a health professional for a medical examination (check-up)?

yes	no
1	0

32. In the last year, have you had:

	yes	no
a) a clinical breast exam.....	1	0
b) a gynecological exam (pap-test and pelvic exam).....	1	0

33. Do you believe that if you are currently in good physical and mental health, your chances of one day having breast cancer are almost nil?

yes	no
1	0

34. Do you visit your dentist annually (denturologist, hygienist, etc.) for a cleaning or a dental examination (check-up)?

yes	no
1	0

35. From which sources did you receive information about breast screening (mammography)? For each of the following items, please circle 1 or 0.

	yes	no
a) obstetrician/gynecologist (medical specialist).....	1	0
b) medical students (interns, residents)	1	0
c) general practitioner (family physician)	1	0
d) friends	1	0
e) parents or relatives	1	0
f) radio/television	1	0
g) magazines, newspaper, pamphlets	1	0

36. On a scale from 1 to 7, how often do you wear your seat belt when in a car? Please indicate your position on the scale below by circling the number that describes best this frequency.

Never			Half of the time			Always
1	2	3	4	5	6	7

The following is a list of some concerns women have reported about going for a mammogram and physical breast examination.

On the scale of 1 to 4, please indicate the extent to which you are concerned about:

<u>Extremely</u> <u>Concerned</u>	<u>Quite</u> <u>Concerned</u>	<u>Slightly</u> <u>Concerned</u>	<u>Not at all</u> <u>Concerned</u>
1	2	3	4

37. feeling embarrassed	1	2	3	4
38. feeling pain	1	2	3	4
39. radiation from the breast x-ray	1	2	3	4
40. the time it takes to go for screening	1	2	3	4

The following are some statements women have made about breast screening and treatment for breast cancer.

Please indicate the extent to which you agree with each statement by circling on the scale from 1 to 4, the number which best corresponds to your opinion.

<u>Strongly</u> <u>Agree</u>	<u>Agree</u>	<u>Disagree</u>	<u>Strongly</u> <u>Disagree</u>
1	2	3	4

41. Screening would make me worry unnecessarily about cancer.	1	2	3	4
42. Screening could save my life.	1	2	3	4
43. My family would approve of this.	1	2	3	4
44. I'm afraid of finding something wrong.	1	2	3	4
45. It's too much trouble.	1	2	3	4
46. Screening would increase my chances of cure if I did have cancer.	1	2	3	4
47. Screening doesn't apply to me.	1	2	3	4
48. Screening would give me a peace of mind.	1	2	3	4
49. Mammography is useless if you perform breast self-examination.	1	2	3	4
50. Mammography is useless when you visit your doctor annually for a physical breast examination.	1	2	3	4

- | | | | | |
|--|---|---|---|---|
| 51. Mammography is useless because I am too young. | 1 | 2 | 3 | 4 |
| 52. Mammography is useless given that you can notice anything abnormal with your breast when taking a shower or a bath. | 1 | 2 | 3 | 4 |
| 53. Mammography is useless given that you or your partner can notice anything abnormal with your breast during sexual activities or any other ways while being intimate. | 1 | 2 | 3 | 4 |
| 54. I would you be willing to pay for a mammography. | 1 | 2 | 3 | 4 |
| 55. I believe treatments (e.g., radiation treatment, chemotherapy) for breast cancer are <i>effective</i> . | 1 | 2 | 3 | 4 |
| 57. I believe treatments (e.g., radiation treatment, chemotherapy) for breast cancer are <i>unpleasant</i> . | 1 | 2 | 3 | 4 |
| 58. Access to a medical clinic is <i>difficult</i> for me. | 1 | 2 | 3 | 4 |
| 59. Mammography is useless because I am too old. | 1 | 2 | 3 | 4 |
| 60. Mammography is useless because I am too healthy. | 1 | 2 | 3 | 4 |

61. In the last two years, have you had a mammography (x-ray of the breast)?

yes	no	number of months
1	0	_____

62. If you answered yes to question 61 what reason(s) would you give for not have had a mammography in the last two years?
-
-

63. On a scale of 1 to 4, what are your intentions to arrange to have a mammogram over the next two years. Please *circle* the number that corresponds the best to the likelihood of that behavior.

Not at all
likely
1

Not very
likely
2

Somewhat
likely
3

Very
likely
4

Demographic Information

Please indicate:

a) Age: _____ years

b) Current civil status:

1. married _____

4. single _____

2. cohabiting (common law spouse) _____

5. widow _____

3. separated or divorced _____

6. other (specify) _____

c) Total number of completed years of education: _____ years (from 1st grade at elementary level)

d) Personal Annual Income:
(please circle one)

1) 0 to \$9,999

5) 25 to \$29,999

2) 10 to \$14,999

6) 30 to \$39,999

3) 15 to \$19,999

7) 40 to \$49,999

4) 20 to \$24,999

8) \$50,000 and more

e) Spouse's Annual Income:
(please circle one)

0) non-applicable

5) 25 to \$29,999

1) 0 to \$9,999

6) 30 to \$39,999

2) 10 to \$14,999

7) 40 to \$49,999

3) 15 to \$19,999

8) \$50,000 and more

4) 20 to \$24,999

f) Number of paid worked hours per week: _____

g) Main Occupation: _____

h) Number of children living at home: _____

i) Simply for the sake of pairing future questionnaires please enter your date of birth in the following sequence:

D D M M Y Y

Appendix B

Life Events and Difficulty Schedule

INTERVIEW SCHEDULE FOR EVENTS AND DIFFICULTIES

(For use with the LEDS-2; 19/6/89)

MRC team,
RHBNC, Univ of London,
11, Bedford Square,
London WC1B 3RA,
UK.

THE UNDERLINED QUESTIONS ARE THE STANDARD ONES WHICH HAVE TO BE ASKED IF THE POINT HAS NOT ALREADY BEEN COVERED. THE OTHERS ARE SOME SUGGESTED ADDITIONAL PROBES. MATERIAL IN 'BOXES' AT BEGINNING OF SECTIONS ARE SOME SUGGESTED PROBES ONLY FOR USE ONCE AN EVENT/DIFFICULTY HAS BEEN ESTABLISHED.

Note:

- i) At the first stage of the depression research, for methodological reasons questions about events were asked separately from those about difficulties; they are now asked about simultaneously. The older procedure can be adopted if required.
- ii) The 'questions' are often in the form of a reminder to the interviewer of what to cover in questioning.
- iii) This version of the schedule is designed to cover the period from B (the 12-month point before onset, the date of which must have previously been established) up till interview (I). It can, of course, be amended - e.g. in work concerned only with onset and not course so that only the 12-month period from B to C1 (onset of disorder) is covered.
* * * * *
- A. Once an event has been established, question in detail about incidents leading to it, or stemming from it (e.g. decisions preceding a job change or a marriage) in order to establish contextual threat. Use 'boxes' at beginning of sections.
- B. Make sure to relate each event to:
 - i) change-points (e.g. onset case depression),
 - ii) other events or difficulties.
- C. Make sure the respondent knows the range of people routinely included see over).
- D. The interview schedule has been phrased for female subjects. The wording will have to be changed in accordance with the sample.
- E. Remind the interviewee from time to time during the interview both about these terms and about the period of time to be covered by your particular study.

Now I'd like to ask about the period since.....(IDENTIFY PERIOD
AROUND ONSET IF RELEVANT)
and a bit before - that is the period since ...(e.g. 'AUGUST 1985').

I'm going to be asking you questions about things that may have
happened to you or to people close to you, and by close I mean
your:

Husband/boyfriend,
Children (including foster/adoptive children),
Brothers/sisters,
Parents,
Other household members,
Confidants (or main friend if none).

SECTION I - HEALTH

A.

FOR ANY KEY ILLNESS EVENT/DIFFICULTY, SOME SUGGESTED 'PROBES':

FROM DOCTORS:

Reasons for illness.
 Chances recovery/outlook.
 Treatability.
 Future health; implications for work.
 Has anyone else had it in the family?
 Lack of information from doctor.
 Shortcomings in care.

IMPACT ON:

Employment; chance of losing job.
 Sick pay; problems obtaining suitable care.
 Manifestations.
 Handicap. How needed to cut down?
 Pain, symptoms.
 How long in bed?
 Interference with everyday life/hobbies/ future plans.
 Had before? Outcome.

ILLNESS OF OTHERS ONLY:

Was it expected?
 How involved were you?
 Nursing; infectiousness.
 Worry about dying.
 Worry handicap.
 Diet; incontinence; lifting.
 Change behaviour/personality e.g. anger, irritability,
 ingratitude, blame?
 Stigma/embarrassment?

Has anyone in the family been ill?

What about you?

Your husband or children or parents? (etc)

How serious was it? Was it an emergency?

REFER TO BOX 'A', PAGE 2

Has anyone been admitted to, or left, hospital in the time since... (e.g. 'August 85')

For what?

Was it an emergency?

General/local anaesthetic? How long for?

Problems during hospital stay?

REFER TO BOX 'A', PAGE 2

Have any relatives or close friends died?

What of? (USE BOX 'A', PAGE 2 IF NECESSARY)

Did you expect it?

How often seen before/during illness?

Were you involved at all?

Were you present?

Did you have to comfort the bereaved?

Any problems over arrangements for the funeral, or the will?

Impact on S's way of life.

Has anyone else you know died?

Who? (How long known, how often seen?)

Any surgical operations in the time since ... (e.g. AUGUST 1985)
... to self, child or parent, siblings, friends?

Have you had any bad news about illness that's been going on for some time?

Are there any chronic health problems?
For yourself or close relatives/friends?

e.g. Does anyone suffer from any of the following?:

Any chest troubles.
 High blood pressure.
 Heart trouble or stroke.
 Varicose veins or piles.
 Asthma.
 Tuberculosis.
 Chronic bronchitis.
 Gall bladder or liver trouble.
 Stomach ulcer.
 Any other chronic stomach trouble.
 Kidney trouble, or trouble passing water.
 Arthritis or rheumatism.
 Nervous trouble or psychological disturbance of any kind.
 Diabetes.
 Thyroid trouble.
 Blackouts, fainting attacks or dizzy spells.
 Repeated trouble with back or spine.
 Chronic skin trouble.
 Hernia or rupture.
 Epilepsy (or fits).
 Migraine.
 Trouble with periods, or other gynaecological trouble, or trouble over contraception?

Have you any relatives who are a worry to you for other reasons?

Your close friends?

Because of old age? e.g. dementia; or disability.

Or a drinking or gambling problem?

Mental handicap, or anything else?

How about drugs?

Treatment/official contact re abuse?

In the time since ... (e.g. 'AUGUST 1985') has there been any nervous trouble in the family?

Among your close friends?

Has anyone been referred to a psychiatrist/psychologist?

Or been treated at a psychiatric out-patient clinic, hospital, or child guidance clinic?

What about your husband/parents/siblings?

Has there been any attempted suicide?

Has this ever happened in your family outside this time?

IF DISABILITY IN CHILDREN, ASK:

Do you have trouble obtaining: recognition?
 help?
 a diagnosis?

What were you told about: outcome?
 its implications?
 it running in the family?

PROBES CHILD'S DISABILITY:

Effect on behaviour (incontinence/ disturbance).

Effect on personality/ performance (IQ).

Special school? Extra therapy/classes?

IF YES? How long will he/she attend?

Are you worried about managing when he/she grows up?

Have you any plans about this?

IMPACT ON S:

Supervision, care, nursing.

Changing routine/employment.

Chance of a break. Respite care.

Interference with social life.

Special help apart from schooling/therapy.

Help from social services/self-help organisations.

Equipment, modification to home.

Member of supportive association.

REACTION OF HUSBAND/ S'S OTHER CHILDREN/OTHERS?

Relationship with child.

Stigma.

Have there been any accidents?

On the road, or in the home? etc.

What about the children?

Have you been involved in or witnessed any road accidents?

Or anything like that?

How did it happen?

How serious was it? Damage?

Who was hurt?

How far were you involved?

Insurance. Courts.

Has there been any pregnancy in the family, among close friends?

IF YES: Was it planned?
 Impact on finance/career plans.
 Housing implications.
 Complications in previous pregnancy/birth.
 Hospital admission.
 Spouse/partner's reactions.
 Other's reactions.

IF UNMARRIED:

Did you consider termination ... or marriage?
 (TAKE ACCOUNT HERE OF RELIGIOUS BELIEFS).

Any miscarriages or abortions?

ASK IF: (i) MARRIED AND 16-45, OR
 (ii) NON-MARRIED WOMEN UNDER 35 WITH A REGULAR BOYFRIEND
 IN ... (e.g. AUGUST 1985).
 OTHERWISE USE JUDGEMENT:

What about you - have you been pregnant or would you like to have been?

Or worried that you might be?
Did anything go wrong during the pregnancy?

Were any babies born to family or friends?

Complications at birth or afterwards.
 Health of baby/mother.
 First arrival home e.g. sleeping, feeding.
 Other children.
 Help in home.

Has anyone lost a baby?

Have any grandchildren arrived?

Has anyone close been trying to become pregnant and had problems with that?

SECTION II - ROLE CHANGES

B.

FOR ANY INTERACTION CHANGE EVENT:

Temporary. How long away.
 How often seen before the change?
 How much did you do together?
 How often do you see now?
 Distance.
 Telephone contact.
 How did you get on? How about now?
 Preparation. Evidence rejection/guilt.

INCREASE IN INTERACTION:

How fitted in - space/tension.

C.

FOR ANY MARRIAGE/ENGAGEMENT INVOLVING S:

How long known.
 Complications/'delaying tactics'/rejections.
 Family reactions.
 Was there anything about him made you uneasy?

Has anyone in the family got married in the time since ...
 (e.g. 'AUGUST 1985')?

What about your brothers, sisters, parents, children, friends?

*** REFER TO BOX 'B' ABOVE ***

Anyone engaged?

What about your brothers, sisters, parents, children?

When was this? When was it decided?
 When was it first made more official?
 Was it expected?

Has anyone close retired for good e.g. husband, parents?

Was this expected?

What changes did it bring? e.g. financial,
routine changes, etc?

Or has anyone separated from or divorced their husband or wife?

Were you involved at all?

Did you expect it to happen?

What about your brothers or sisters?

D.

FOR ANY DIVORCE/SEPARATION INVOLVING S:

Reasons.

Preparation; anticipation.

Who left? What circumstances.

Forced to leave.

Anyone else involved.

'Alternative' relationship by either spouse.

Finance/housing.

Custody.

Children - their reactions etc.

Clean break/pestering/violence.

Family's reaction.

Legal advice. When.

Maintenance arrangements.

Often seen now.

Anyone started school or college e.g. begun school for 1st time?

Gone away to University?

How did you feel about this?

Has anyone taken any important examinations or qualifications?

What were the results?

SECTION III - LEISURE AND INTERACTION

Have you made any new friends, of either sex, at all?

ASK ABOUT NEW OPPOSITE SEX RELATIONSHIPS.

Have you lost someone you were close to - either because they've moved away, or died, or just drifted apart?

ESTABLISH WHY. IF LOSS OF BOYFRIEND, PROBE ABOUT WHAT HAS HAPPENED TO HIM SINCE THEN.

IF RELEVANT - ANY PROBLEMS WITH SEX, UNRELIABILITY OF PARTNER CONTRACEPTION.

Have there been any big changes in the amount you see of your friends or relatives?

ASK IF APPROPRIATE:

Do you have a boyfriend at all?

FOR SINGLE, SEPARATED OR WIDOWED SUBJECTS: (USE TACT!)

Have you thought of getting engaged or married?
i.e. in the last year or to someone in past years.

How long ago was this? Do you have any regrets about it now?
What happened?

Would you like to get married, do you think?

ASK EVERYONE:

Have there been just the ... of you at home during the time since ... (e.g. AUGUST 1985)?

Has anyone come to stay?

IF YES: For how long?

Was that how long you expected them to stay?

Has anyone left the household at all?

IF YES: Permanently?

Is there anyone you see much less of?

IF YES: Why is this? Do you miss them?

What difference has it made to you?

Have there been any changes in the way you spend your leisure time?

Do you feel that you have enough leisure time?

IF YES: Are there things you'd like to do, but can't?
Why is this, e.g. short of money, transport,
babysitters, etc?

Do you invite friends home at all?

Have you had any difficulties with friends?
Or been worried about them?

Have you had a holiday since ... (e.g. 'AUGUST 85')?

IF YES: How did it work out?
Did you have a good time?
Did anything unexpected or important happen when
you were away..... or on your return?

SECTION IV - HOUSING

Have you moved since... (e.g. AUGUST, 1985)?

E.

FOR ANY RESIDENCE CHANGE EVENT, PROBE:

Why did you move? What happened?
Decision to move.
Were there any difficulties?
Have there been any since then?
Expense.
Consequences.
Did you feel cut off? Baby-minders etc.
New friends.
Impact on job.
Problems re house/neighbours etc.

How long have you lived in your present home?

Do you own it yourself?

IF NOT: ESTABLISH TYPE OF HOUSING. PROBE FOR SECURITY OF
TENURE.

Do you like living in your present house/flat?

Can you tell me if any of the following have been a problem?

Have you got enough room?

IF NOT ALREADY KNOWN, OBTAIN NUMBER OF ROOMS, EXCLUDING BATHROOM.
KITCHEN = 1, IF BIG ENOUGH TO HAVE MEAL IN.

Sharing facilities? Self-contained?

Do you feel it's private enough?

ASK ABOUT SHARING BEDROOMS IN FLAT-SHARES.

Trouble with repairing the house etc?

Anything wrong with roof...
.... dry rot.... damp walls.... rats, etc.

ASK ABOUT PROBLEMS WITH GETTING IT DONE, PAYMENTS ETC.

Have you approached the landlord/Council
about this?

What about facilities for the children playing?

Have there been any problems with the landlord?

Any restrictions?
..... that sort of thing?

ASK WHERE RELEVANT: Does this affect you?

Have there been any problems, that you know of, about paying
for the house, keeping up with the rent/mortgage?

What about with others in the flat/house? How do you get on?

Any difficulties?

What about the neighbourhood? How do you get on with the
neighbours?

Have there been any difficulties with them?
Have you fallen out with any neighbours in the
flat/house?
What about noise in the house/neighbourhood?
Does it affect you?

Have you ever felt cut off in your present home - too far from friends or work/school?

Have you considered living anywhere else?

IF YES: What have you done about it?

IF RELEVANT, PROBE UNCERTAINTY OF E.G. MOVING, OR LIKELIHOOD OF LEAVING HOME.

Do you or your family have a telephone? A car?
Do you drive?

SECTION V - EMPLOYMENT AND SCHOOL

F.

IF ANY IMPORTANT CHANGE ESTABLISHED,
FIND OUT:

How came about, whose decision.
Financial implications.
Convenience, hours etc.

IF FOR S:

Travel, babysitting/
arrangements for children.
Responsibility/demandingness.
Interest; importance.
Plans for future.

A. FOR SUBJECT:

Do you enjoy your job/school/college?

Has anything happened at work/school/college?

Have you been off work/off school/college at all?

Or put onto a new job/course, or changed job/courses?

Any promotions?

Has anyone you worked with closely left in this time since ...?

IF YES, PROBE:

Seen regularly and frequently at work.
Extra-work involvement/ seen out of work hours?
Close relationship required by job?
Effect on subject's job?
Extent of separation.

How do you get on with your workmates/ schoolmates/ collegemates?

Have you had any trouble or difficulties with them?

Were there any other difficulties at work/school/college?

PROBE FOR EVENTS OR LONG TERM DIFFICULTIES

Long hours, low pay, travel,
short-term or temporary contracts, etc.

What do you like about your job/school/college?
Is there anything you don't like about it?

Promotion prospects.
Responsibility.
Wages.

Is there another work/school/course that you would have liked better?

IF YES: Why?

Have you felt that the demands made on you at work/ school/ college were too great?

Deadlines to meet.
Not enough training/information.
Bad physical conditions.
Moving from job to job if a temporary employee.

Have there been any times in your work/at school/college when you didn't know what was expected of you?

For instance when one person wants you to do one thing
and someone else wants you to do something different?

e.g. supervisors/teachers, colleagues/fellow pupils,
juniors.

IF THERE ARE ANY DIFFICULTIES:

Have you ever thought of asking to be
transferred to another section/department/class?

Have you been expecting any changes in your job/at school/
college?

Are you a member of a trade union?
Do you get proper sick pay when ill?

How do you feel about the future, do you think you'll stay in this
job/ until the end of school/ college?

Might you leave for any reason?

*** REFER TO BOX 'F' (PAGE 12) ***

IF RELEVANT, ASK FOR THREAT OF HAVING TO GIVE UP WORK FOR
ANY REASON.

How important is it for you to do well in this job/ course?

IF RELEVANT, ASK ABOUT UNCERTAINTY OF:

Chances of promotion,
or graduation,
time duration of promotion,
or of student or trainee role.

Have you done different types of work in the past?

Have you ever in your life had to give up a job, or been
dismissed from a job?

DO NOT FORGET THAT STUDENTS ALSO OCCASIONALLY HAVE SATURDAY/
PART-TIME JOBS WHICH MAY BE THROWING UP EVENTS AND DIFFICULTIES
AS WELL AS THEIR SCHOOL/COLLEGE.

B. IDENTIFY CRUCIAL WAGE-EARNER IN HOUSEHOLD (if not S).

Has your husband/boyfriend/father (crucial wage earner) been
working all this last 12 months?

WORK HISTORY FOR LAST 12 MONTHS:

Why left, when arranged, etc.
 Any time off through sickness/
 redundancy / strike?
 Preparation
 Chances of new job. What kind.
 Impact on home life - actual/likely.
 Impact on S's household.

Has had any promotion in the job?

Does have any problems in the job at all?

Is he/she a trade union member?
 If your husband/boyfriend/father lost his job, how easy
 would he find it to get another?
 Has he/she any qualifications or special skills?

C. OTHER IMPORTANT HOUSEHOLD MEMBERS.

Has been off work at all in this time?

COLLECT PERIODS OF UNEMPLOYMENT LASTING 4 WEEKS OR MORE.

SECTION VI - FINANCIAL

Have you had any money worries in the time since...(e.g. 'AUGUST 1985')?

Have you had to borrow off anyone?

GET DETAILS OF DEBTS OR LOANS

Does anyone borrow money from you?

Have you gone without things you really needed?

Are you (or have you been) receiving social security or unemployment benefit?

Any problems with state benefits?

Have you got into arrears?

Rent, gas, electricity, rates.

How much do you owe?

Have any of the services been cut off?

Any letters threatening you with eviction or taking you to court?

Have you had any difficulties with credit facilities at all?

Anything repossessed by hire purchase companies?

What about any problems with health insurance?

Do you have a life insurance at all?

Did you have to cut down on anything in that time?

SECTION VII - MARITAL

(INCLUDES COHABITEE AND SERIOUS BOYFRIEND)

FOR THOSE MARRIED/COHABITING:

Have you and your husband/boyfriend both been living at home during this time?

IF YES:

So you've not been separated for any length of time during this time?

Have either of you ever considered a permanent separation or divorce?

When? Why?

*** IF RELEVANT REFER TO 'BOX 'D' (PAGE 8) ***

How well would you say you and your husband/boyfriend get on in general?

Would you say there are any problems about your relationship?

Has anything happened that has made you feel differently about the relationship?

How often do you and he/she have quarrels or tiffs?

Have there been any serious quarrels since....(e.g. AUGUST, 1985)

IF YES:

What are they usually about?

e.g. disagreement about marriage, money etc.

What happens during a quarrel?

Is there any shouting or throwing things?

Does either of you hit the other?

IF YES:

Has there been any injuries?

What happened?

Has this happened before?

Do you feel you can talk to him quite easily?

Do you talk to him/her about things that worry you?

Do you wish you could confide more in him?

Has this changed since.... (e.g. AUGUST, 1985)

When he has problems or worries does he talk them over with you?

Is your husband/boyfriend and affectionate person.... is he demonstrative?

Do you like doing the same things when you are together?

How do your parents get on with him?

And your family?

And what about his parents - do you get on with them?

PROBE FOR ANY TENSION

What about the sexual side of things - have there been any difficulties or problems about this?

Do you ever refuse to have sex?

IF YES: Has this created any problems?

Has he ever forced you to have sex?

What happened?

Any problems with contraception?

IF RELEVANT: ASK ABOUT 'UNPROTECTED SEX'.

As you know in some relationships one of the partners sometimes gets involved with another person, has that ever happened to either of you?

IF PARTNER: When?

How did you first find out about it?

How did things work out?

Does he still ever see that person?

IF S: When was that?

Did your husband/boyfriend find out?

How did things work out?

FOR DIVORCED AND REMARRIED WOMEN WHERE RELEVANT ASK:

Do you ever have contact with your ex-husband?

Have there been any difficulties with him over this?

Any legal or custody problems?

FOR SINGLE MOTHERS ASK:

Continued relationship with husband.

Problems with children e.g. behavioural,
in relation to husband.

Stigma.

Loneliness.

Sexual relationships with men

Financial hardship.

Practical help with childcare (school holidays,
babysitting, illness).

FOR WOMEN LIVING ALONE: ASK ABOUT ANY SEXUAL RELATIONSHIPS SINCE
... (e.g. AUGUST, 1985).

Any problems e.g. fidelity, sex, unreliability partner?

SECTION VIII - INTERACTION WITH PARENTS AND OTHER RELATIVES

How well do you get on with your parents?

FOR S'S MOTHER: (TO BE REPEATED LATER FOR FATHER, SIBLINGS)

A. IF OUTSIDE THE HOUSEHOLD:

Have there been any changes in how you get on/the amount you see of your mother/or how you feel about her since... (e.g. 'AUGUST, 1985')?

IF YES: What difference has this made to you?

B. FOR ALL:

Would you say there's been any tension or difficulty between the two of you?

Do you avoid her....or try to keep out of her way?

Have you felt you could confide in her?

IF YES: Do you find it helpful to talk things over with her?

IF NO: Would you like to be able to confide more in her?
Has this changed?

C. FOR THOSE LIVING WITH MOTHER:

Have you felt that you had to tell your mother about things you do?

For example, do you feel you must tell her where you're going - or if something happens to you like a rise in pay?

Does she like to have a big say in your life - e.g. about the clothes you wear, and your friends, and where you go out?

PROBE FOR INTERFERENCE

IF RELEVANT:

What about your school work - did she put you under much pressure about that?

What about compared to your brothers/sisters/cousins?

Does she often compare you with other people of your age whom she knows - like her friends' children?

Did she have her own plans about your future or is she leaving it up to you?

How do you feel about this?

REPEAT ABOVE QUESTIONS FOR FATHER, AND FOR EACH SIBLING OR OTHER RELATIVE WITH WHOM RESPONDENT LIVED DURING THE STUDY PERIOD.

ASK FOR EVERYONE:

How would you say your parents have got on together?
Are there any difficulties between them?

Did/do they quarrel at all - or have periods of not speaking to each other?

Have they worried you at all?

SECTION IX: CHILDREN (IF RELEVANT)

How would you say you get on with your children in general?

Do you ever have quarrels, or are they quite easy?

How are they getting on at school?

Do you ever worry about the friends they keep company with or the things they might get up to in their spare time?

Any worries about them smoking, taking drugs?

Or stealing?

Or about sex?

Or about anything like that?

Have you discovered anything about them that has surprised or shocked you?

IF RELEVANT:

Are you happy about their boyfriends/girlfriends?

IF ANY DISABILITY AND NOT COVERED EARLIER IN CHILD'S HEATH -
SECTION I (PAGE 4).

SECTION X - CRISES

G.

FOR ANY COURT APPEARANCE EVENT:

Nature of offence.
 First time done it.
 First time in court.
 Other convictions.
 Verdict. Sentence.
 Financial implications.
 What have other people said?
 What have they said at work?
 Driving affected (if licence lost etc).
 Implications re other people involved.
 Were you afraid they would try to get
 their own back?

H.

FOR ANY BURGLARY OR LOSS OR DAMAGE TO PROPERTY:

How did it come about? (S's 'fault'?)
 Did you see the burglar?
 How much was taken?
 Problems with insurance.
 Anything irreplaceable.
 House damaged.

In the time since ... (e.g. 'AUGUST 1985'), has there been any crisis/emergency?

Any crisis involving your husband/children/parents/brothers/sisters, etc.?

Has there been anything in the home?

Such as a burglary or fire?

Or being attacked in the street?

Has that ever happened to you?

Or have you ever been sexually approached by anyone against your will?

IF YES: What happened?
Were you hurt?
Were the police involved?

Have you had to break any bad news to anyone?

Have there been any legal troubles, or having to go to court?

Contact with a solicitor?

IF YES: What about?
What happened?

Have you or anyone in the family had any involvement with the police or courts or prison at all?

IF YES: What about?
What happened?

Or any contact with any social agency.... social worker.....
....welfare officer.... marriage guidance counsel.... probation officer?

What about your brothers or sisters, parents, children, friends?

Have any of your relatives had any crises or troubles with which you've had to help.... e.g. has anyone gone to stay with an ill relative?

Or any in which you've been involved?

What about friends?

Have there been any troubles or difficulties concerning them in the past year you've not already mentioned?

MENTION EACH OF CLOSE TIES BY NAME

Have you lost any pets?

IF LOSS OR 'DAMAGE' TO PET, ASK:

How long have you had it?

How did it happen?

Did you see it? (PROBE FOR GUILT)

Have you thought about getting another?

IF RELEVANT: (FOR 'FOREIGNERS')

Have you had any problems connected with living in this country rather than at home?

PROBE FOR IMMIGRANT VISAS, NATURALISATION OR CHANGE OF NAME.

Sometimes people learn unexpected things about others close to them, such as discovering that their child has been stealing at school, or that their husband/wife has been having an affair, or their boyfriend/girlfriend has been seeing someone else. Have you had anything like this?

News that shook you at all?

Anything like that that made you change your idea of a person's character?

Seeing something in a newspaper which shocked you about something personal?

SECTION XI - FORECASTS

Have you or any member of the family had unexpected news in the time since ...(e.g. 'AUGUST, 1985') about anything that has happened or is going to happen?

For example, sometimes a family will get a letter saying they are going to be re-housed.... or they might perhaps get notification of redundancy.

Anything like that?

GIVE TIME TO THINK.

REFER TO POSSIBLY RELEVANT EVENTS ALREADY ESTABLISHED.

SECTION XII - GENERAL

I have asked a good many questions about changes in the period since ... (e.g. AUGUST 1985) - have there been any changes of any importance to you that you've not mentioned?

Has anything particularly disappointing happened during that time that you haven't mentioned already?
.... like a child failing an exam?

Have you had to make any important decisions over this time?

You will have gathered by now that we're interested in anything upsetting, important or exciting that has happened to you.... exciting in a pleasant or unpleasant way.
Has anything given you special pleasure?

IF YES: A visit from a relative.
 Meeting someone.
 A holiday.
 A child winning a prize.
 A present, a new car, etc.

Anything turned out better than expected?
 Financial windfall?
 Relationships improving in some way?

Now this is a bit of an odd question I'm afraid, but we do ask everyone:

Is there anything about yourself you feel self-conscious about?
.... Your appearance?
.... The way you do things?
.... Anything like that?

In your life so far: Are there things you wish had turned out differently?
Or any regrets you have?
.... Over education, training?
.... Over marriage?

[END OF SCHEDULE]

WHEN THANKING RESPONDENT FOR PARTICIPATING IN THE STUDY, GET PERMISSION:

- (i) TO RECONTACT THEM IF IT IS NECESSARY TO CHECK OUT SOME FURTHER INFORMATION,
- (ii) TO CHECK WITH HOSPITALS, RECORD OFFICES ETC TO IMPROVE ACCURACY OF DATING.

Appendix C

Questions Related to the Risk of Breast Cancer

1. **You have recently accessed the OBSP (when?)**
 2. **You have attended this clinic since (when? Frequency?)**
 3. **Have you accessed any other clinic or program for the same reason?**
 When? Where?
 Have you consulted with your GP on this issue? When?
 Have you consulted with another specialist on this issue? When?
 4. **Has anyone in your family been diagnosed with breast cancer?**
 (mother, sister, grand-mother, aunt, cousin?)
 5. **Have you yourself even been diagnosed with breast cancer?**
 (when? What happened? What did the doctor say?)
 6. **Do you have a history of breast cell abnormalities?**
 (benign lumps or cysts, atypical hyperplasia, adenosis, intraductal pappillomas, lipoma, fibroadenoma, mammary duct ectasia, fat necrosis, mondor's disease)
 (what type? Since when? What happened? What did doctor say?)
 7. **At what age did you begin menstruating? Menopause?**
 8. **Have you had post-menopausal hormol replacement therapy?**
 (Since when? What type? What did doctor say?)
 9. **In the past, have you ever used oral contraceptives? (When? For how long? Which ones?)**
 10. **Do you have any children? How old were you when first child was born?**
 11. **Have you ever interrupted a pregnancy (abortion)?**
 (Context? Age, etc., N of times?)
 12. **Have you ever had a miscarriage?**
 (When? No of times?)
 13. **Since going to OBSP a few months ago, have you had any additional examinations (mammography, ultrasound, surigical biopsy, non-surgical biopsy) for problems with your breasts?**
- Do you anticipate any further tests in the next 12 months? (which ones? When? What does the doctor say? Anticipation of risks? Anasthetic? Days in hospital? Without work?)**

14. Have you received a diagnosis?

(when? In situ versus invasive cancer? Degree of certainty? What does doctor say about location, tumor size, type, node status, metastasis, staging?)

15. Have you had any treatments (e.g. lumpectomy, mastectomy, radiation or chemotherapy) related to breast cancer?

(time period? What did doctor say? Implications, consequences, effect on spouse?)

Do you anticipate any further tests in the next 12 months? (which ones? When? What does the doctor say? Anticipation of risks? Anesthetic? Days in hospital? Without work?)

Appendix D

Guidelines for Rating the Risk of Breast Cancer and Coping

Menace: Risque d'avoir le cancer du sein**Niveau 4:**

- Présente aucun des trois risques primaires (antécédents familiaux, problème avec seins, aucune grossesse ou grossesse retardée). Age est un risque primaire pour les femmes âgées de plus de 70+ ans
- Dépistage n'est qu'une procédure routine en fonction de son âge et son éligibilité au programme.
- Résultats de mammographie(s) antécédente(s) sont normaux
- Résultats en 1996 sont normaux
- ex. Participante sans aucun risque primaire. Tous ses examens antérieurs et présents sont négatifs.

Niveau 3

- Présente un des risques primaires (antécédents familiaux, problème avec seins, aucune grossesse ou grossesse retardée). Age est aussi un risque primaire pour les femmes âgées de plus de 70+ ans
- Étant donné risque, elle participe au programme en tant que précaution.
- Mammographies antérieures anormales qui, par la suite, ont été jugées bénignes
- Résultats en 1996 sont normaux
 - ex. Participante avec un antécédent familial avec des mammographies antérieures négatives, mais que le dépistage en 1996 est négatif.
 - ex. Participants sans risque primaire pour qui le dépistage en 1996 s'avère positif.

Niveau 2b

- Présente plusieurs des risques primaires
- Avisée d'un examen clinique des seins ou d'une mammographie anormaux
- Informée que c'est probablement de la calcification ou autres problème bénins.
- Aucun suivi chirurgical n'est nécessaire
 - ex. Participante avec un des risques primaires qui est informée que le dépistage est positif, mais qu'aucun suivi chirurgical n'est nécessaire.

Niveau 2a

- Doit subir des tests chirurgicaux supplémentaires (ex., biopsie) qui implique une anesthésie générale ou une hospitalisation
 - ex. Participante avec un des risques primaires ayant reçu un dépistage positif qui nécessite un suivi chirurgical
 - ex. Participante sans risque primaire qui est informé que le dépistage est positif et qu'un suivi chirurgical (biopsie) est nécessaire.

Niveau 1

- Présente les risques primaires

- Avisée d'un examen clinique des seins ou mammographies anormaux
- Médecin informe que cela lui paraît cancéreux
- Tests confirmatoires sont demandés
 - ex. Participante est avisée par un professionnel de la santé que le résultat d'un des examens (soit mammographie, soit biopsie) paraît cancéreux.
 - ex. Participante est avisée d'un cancer au sein.

Règles générales:

1. une femme sans risques primaires débute automatiquement avec une cote de "4" sauf si a) elle rapporte avoir ressenti quelque chose d'anormale lors d'un auto-examen clinique des seins juste avant son dépistage ou b) son médecin rapporte quelque chose d'anormale juste avant son dépistage. Si elle est une des ses deux exceptions elle débute à un "3".
2. une femme avec un des trois risques primaires débute automatiquement avec une cote de "3" sauf si a) elle rapporte avoir ressenti quelque chose d'anormale lors d'un auto-examen clinique des seins juste avant son dépistage ou b) son médecin rapporte quelque chose d'anormale juste avant son dépistage. Si elle est une des ses deux exceptions elle débute à un "2b".
3. lorsqu'une participante est avisée d'un dépistage positif (c.à.d. l'examen clinique et/ou la mammographie), la cote de sévérité diminue automatiquement d'un point et elle revient à la cote du départ lorsque les tests confirmatoires s'avèrent négatifs.
 - Alors, une femme sans risque primaire qui est avisée d'un dépistage positif change d'une cote de "4" au T1 à une cote de "3" jusqu'à ce que les examens supplémentaires (eg. échographie, examen clinique des seins, ou deuxième mammographie) confirment une anomalie bénigne. Si la participante sans risque primaire doit subir une intervention chirurgicale (c.à.d. une biopsie), la cote devient automatiquement un "2a". Si les tests confirmatoires sont négatifs, elle redevient une cote de "4".
 - Alors, une femme avec un des trois risques primaires qui est avisée d'un dépistage positif change d'une cote de "3" au T1 à une cote de "2b" jusqu'à ce que les examens supplémentaires (eg., échographie, examen clinique des seins, ou deuxième mammographie) confirment une anomalie bénigne. Si la participante avec un des risques primaires doit subir une intervention chirurgicale (c.à.d. une biopsie), la cote devient automatiquement un "2a". Si les tests confirmatoires sont négatifs, elle redevient une cote de "3".
 - si, à n'importe quel moment lors du processus, la participante (peu importe le niveau de risque) est avisée par un médecin ou la clinique de dépistage que l'anomalie paraît cancéreuse, la cote devient un "1".

Echelles de coping

1) Approche - comportementale (Problem tackling, Seeking Social Support): inclut des comportements qui démontrent que la participante s'engage activement à la résolution du problème ou la diminution des conséquences de l'événement en a) recherchant le soutien nécessaire, b) en s'informant, c) en tentant de résoudre le problème.

Niveau 4: La participante ne démontre aucun effort à résoudre le problème ou à atténuer les conséquences de l'événement.

Niveau 3: La participante fait le minimum pour faire face à l'événement, mais il a évidence qu'elle fait quelque chose. Pour les finances, le minimum est de s'assurer que les factures sont payées à temps.

ex. la participante qui fait l'auto-examen des seins une fois par mois.

ex. la participante discute du résultat positif avec un confidant.

ex. la participante paye ses factures à temps et a une idée générale de ses dépenses mensuelles.

Niveau 2: La participante fait plusieurs choses pour faire face à l'événement, mais se sont tous des comportements que la moyenne des gens font.

ex. la participante qui fait l'auto-examen des seins ou recherche activement de l'information (par internet ou bibliothèque aurait cote plus élevée) sur le risque du cancer sein, en plus de deux autres choses de la liste ci-dessous:

- discute avec personnes ayant vécu événements semblables
- ne consomme pas d'hormones à cause du risque
- deux des trois bonnes habitudes de vie pour prévenir toute maladie (ex.: ne pas fumer, bon régime alimentaire, exercice trois fois par semaine)
- discute du rendez-vous et des résultats du dépistage

ex. En plus de s'assurer que les factures sont payées, elle fait un budget ou trois autres choses sur la liste ci-dessous:

- anticipe les ventes
- a des investissements
- discute des finances avec un confidant
- s'informe au sujet des ses investissements, la retraite, etc.
- regarde ses relevés de compte
- note ses dépenses

Niveau 1: La participante fait tout ce qu'elle peut pour résoudre le problème avant son occurrence ou s'engage activement à atténuer les conséquences de l'événement pour elle et autrui. Il faut avoir au moins un comportement que la moyenne des gens ne font pas (ex. info par internet, Quicken pour finances).

ex. La participante qui fait l'auto-examen des seins plus qu'une fois par mois, recherche information par internet ou à la bibliothèque, l'adoption de bonnes habitudes de vie est motivée par la prévention du cancer du sein.

ex. La participante note toutes ses dépenses dans un logiciel pour le finances de façon régulière (une fois par semaine).

ex. La participante a mis de côté de l'argent en cas d'institutionnalisation.

Règles générales:

1. aller au dépistage régulièrement n'est pas suffisant pour coter un "3".

2) Approche - cognitive (Practical preparation): la participante se prépare de façon cognitive à un événement a) en développant des plans d'action, b) en pensant aux conséquences/antécédents de l'événement, etc.

Niveau 4: Aucun indice que la participante pense à ce qui pourrait se passer, ne développe pas de plan d'action si la situation s'aggrave.

Niveau 3: La participante pense aux conséquences, sans songer à préparer un plan d'action.

ex. La participante qui reconnaît qu'elle a un risque d'avoir le cancer du sein, mais qui se dit qu'elle ne songera pas aux conséquences avant d'avoir la confirmation d'un résultat positif.

ex. La participante songe à la retraite mais n'a pas préparé un plan d'action.

ex. La participante connaît "en gros" sa situation financière (c.à.d. elle a une idée générale des ses dépenses et du montant dans son compte de banque)

Niveau 2: La participante pense aux conséquences à plusieurs reprises, et comprend qu'elle aura peut-être à préparer un plan d'action si les choses s'aggrave ou pense à certaines composantes du plan.

ex. la participante qui pense souvent à son propre risque du cancer du sein et se demande lors du dépistage comment elle annoncerait une mauvaise nouvelle à son époux, ses enfants.

ex. La participante qui planifie activement et présentement sa retraite. Il doit avoir une action concrète qui le démontre (ex. REER, consultation un banquier, etc.)

ex. La participante qui est économe ("frugal"); elle anticipe toutes les dépenses, délibère longtemps avant d'acheter un item, compare les prix, etc.

Niveau 1: La participante est très consciente des conséquences, y pense souvent, et prépare de façon active un plan d'action.

ex. la participante a songé aux conséquences d'avoir un cancer du sein pour son travail, sa famille, etc. Elle sait le traitement qu'elle choisirait si c'était cancéreux, comment elle l'annoncerait à sa famille.

ex. La participante a songé aux aspects financiers d'un décès prématuré d'elle-même ou de son conjoint et a préparé un plan d'action (les funérailles, elle vendrait la maison, etc.).

Règles générales:

- pour avoir une cote de "2" ou "1" dans la situation financière, il faut avoir évidence qu'une action soit prise pour démontrer qu'un plan d'action est fait. Par exemple, la participante qui planifie activement sa retraite doit avoir fait un rendez-vous avec le banquier pour avoir cote de "2". Seulement songer à contacter le banquier serait un "3".

Évitement-comportement (Behavioral disengagement): inclut des comportements qui démontrent que la participante a) remet à plus tard b) diminue ses efforts ou c) abandonne la résolution de problème ou l'atténuation des conséquences pour elle et autrui. (l'absence des comportements listés ci-dessus face au risque du cancer du sein).

Niveau 4: Aucun évidence de réduire les efforts, ou remettre à plus tard la résolution de problème.

Niveau 3: Remettre à plus tard, avec l'intention d'aborder le problème à un temps avec moins d'obstacles à la résolution.

ex. La participante qui ne fait pas l'examen des seins une fois par mois

ex. Participante, sans risque primaire, qui remets à plus tard faire le contact avec son médecin pour discuter du résultat positif.

ex. La participante ne vérifie pas ses révélés de compte, mais elle a une idée générale de sa situation financière

ex. La participante qui donne toute la responsabilité des finances à son conjoint, mais elle sait quoi faire si jamais elle devait tout faire elle-même.

Niveau 2: Remettre à plus tard, sans la présence d'obstacles significatifs à la résolution de problème.

ex. Participante avec un des risques primaires qui re-fixe le rendez-vous pour le suivi sans consulter le médecin

ex. La participante avec un résultat positif qui ne le révèle pas à autrui le besoin d'un examen supplémentaire.

ex. La participante ne fait pas affaires aux banques.

Niveau 1: Abandon complet des efforts, ou ne faire aucun effort pour résoudre le problème.

ex. La participante, avec ou sans risque primaire, qui n'a aucune intention de faire le suivi d'un résultat positif.

ex. La participante dépense plus que son revenu même si elle a des problèmes avec des "credit facilities"

Règles générales:

- pour le risque du cancer du sein, la gravité des répercussions suscitées par l'évitement comportementale doivent être considéré. Par exemple, une femme sans risque primaire qui remets à plus tard le suivi d'un résultat positif est moins sévère (coté comme "3") que le même comportement auprès d'une participante avec un des trois risques primaires (coté comme "2").
- Lors de la cotation, il faut se demander s'il y a des choses que la participante pourrait faire pour résoudre le problème qu'elle ne fait pas

4) Évitement-cognitif (Downplaying, Cognitive Avoidance, Inferred Denial): *La participante ne pense pas, soit de façon intentionnelle ou non-intentionnelle, à l'événement ou ses conséquences pour elle ou autrui. Cette stratégie inclut également minimiser le problème et remettre à plus tard l'élaboration d'un plan d'action.*

Niveau 4: Aucune évidence d'évitement du problème ou des conséquences qui peuvent en découler.

Niveau 3: Un manque de reconnaissance de ses propres risques, les conséquences sont légèrement minimisées.

ex. La participante qui se dit que cela ne lui arrivera jamais, qu'elle a aucun risque ou qu'il n'a rien à faire pour prévenir le cancer du sein.

ex. Participante qui se dit que le dépistage est semblable à une visite chez le dentiste

ex. La participante attend jusqu'à la dernière minute pour ouvrir les factures d'hydro, VISA, etc.

Niveau 2: La participante remet à plus tard l'élaboration d'un plan d'action en absence d'obstacles significatifs. Elle dit qu'elle va y revenir mais elle ne sait pas quand elle le fera. L'événement est fortement minimisé.

ex. La participante avec un des risques primaires (passé familial, résultats anormaux antérieurs, grossesse retardée ou aucune grossesse) qui se dit que cela ne lui arrivera jamais.

ex. La participante avec un des risques primaires qui "oublie" qu'elle va recevoir les résultats.

eg. The participant "doesn't want to think about it not to get gray hairs", even though she has problems paying bills and sometimes comes up short in a month.

Niveau 1: La participante ne reconnaît pas du tout la gravité de l'événement (même de la présence de l'événement) ou des ses conséquences.

ex. La participante avec un risque prononcé (ex. mère et sœur, fume, boit beaucoup d'alcool, etc.) qui "oublie" qu'elle a reçu un résultat positif et qu'elle était allée pour un suivi.

ex. La participante ne pense pas à se sauver de l'argent alors qu'elle est en mauvaise santé et n'est pas certaine si elle pourra continuer son travail et n'est pas éligible pour CPP pour quelques années.

Règles générales:

- une participante avec sans risque primaire qui se dit que ça ne lui arrivera jamais a automatiquement une cote de "3". Si elle continue de penser de cette façon malgré un dépistage positif, la cote diminue automatiquement à un "2".
- un participante avec un des risques primaires qui se dit que ça ne lui arrivera jamais a automatiquement une cote de "2". Si elle continue de penser de cette façon malgré un dépistage positif, la cote diminue automatiquement à un "1".

Appendix E

LEDS Coping Schedule

C RECORD

COPING RECORD:
ALL INTERVIEWS

9 April 1992

Complete the record

(i) For all 'severe complexes'. These are groups of severe events and related difficulties which pertain to the same basic problem. If no events then choose worst difficulty.

(ii) If there is a clear change in coping (during one interview period) then fill in changes record at the end of the schedule

Transcribe full information onto back of schedule - refer to this under individual scales.

ID _____

RATER _____

INTERVIEW No. C1A _____

List relevant severe event first:

	E/D	No.
C2A	E/D _____	No. C2B _____
C2C	E/D _____	No. C2D _____
C2E	E/D _____	No. C2F _____
C2G	E/D _____	No. C2H _____
C2I	E/D _____	No. C2J _____

Summary: Give a full description of aspects of the complex taken into account by the interviewer in the focus of the coping e.g. marital difficulty may include husband's drinking and negative interaction or alternatively his work problems etc. These should be specified.

COPING SCHEDULE/COPING PROJECT

Take into account three perspectives:

(i) Immediate crisis - (event)
Immediate short-term behaviour aimed at reducing the immediate negative aspects of a particular event. If no event rate -1
e.g. coping with husband hitting her.

(ii) Medium term issues
Medium term problem tackling to deal with crises likely to occur in the near future e.g. preventing husband hitting her again in the next few weeks/injunction.

(iii) Underlying problem - (ongoing difficulty)
Problem tackling to deal with resolving the fundamental underlying problem e.g. getting divorced/marital therapy.

SECTION 1 : PROBLEM TACKLING

The following scales deal with the action taken by S in relation to the complex.

PRACTICAL PREPARATION FOR CRISIS

Rate the degree of problem tackling prior to the crisis in order to reduce the potential threat. Rate degree of anticipation in terms of practical activity aimed at reducing the threatfulness of any likely event. This may be rated '1' even though event did in fact occur with high threat.

- 1: Marked preparation
- 2: Moderate preparation
- 3: Some preparation
- 4: Little/no preparation
- 1: No preparation possible or no crisis

(i) Immediate crisis (Event)	C3A	_____
(ii) Medium term issues	C3B	_____
(iii) Underlying problem (Difficulty)	C3C	_____

COPING SCHEDULE/COPING PROJECT

DOES THE CRISIS INCLUDE ASPECTS WHICH REQUIRE PRACTICAL PROBLEM TACKLIN?

Consider here the extent to which the event/ difficulty requires practical problem tackling and action in order to ameliorate or resolve the problem. Thus threats of eviction due to rent arrears would probably require 'marked' practical coping (e.g. going to council office and arranging to pay back excess monthly; borrowing money etc.) At the other extreme, death of VCO would probably be rated 'little/none' since minimally cognitive coping would be required. If S had to deal with funerals, wills etc then a higher rating could be made.

1. Marked practical coping required
2. Moderate practical coping required
3. Some practical coping required
4. Little/ no practical coping required - mainly cognitive coping

- | | | |
|--------------------------|-----|-------|
| (i) Immediate crisis | C4A | _____ |
| (ii) Medium term issues | C4B | _____ |
| (iii) Underlying problem | C4C | _____ |

COPING SCHEDULE/COPING PROJECT

PROBLEM TACKLING IN RESPONSE TO CRISIS

Rate practical problem tackling aimed at ameliorating or resolving the difficult situation, after it has occurred. Where the event involves leaving a gap after a loss, include finding replacements in terms of new relationships or activities.

1. Marked
2. Moderate
3. Some
4. Little/none

-1. No crisis or no practical problem tackling relevant

-1 RATING

Is the event purely cognitive e.g. death of VCO where S has no responsibility for funeral arrangements?.....

Is the difficulty one where no action is conceivably possible e.g. difficulties to other person; inter-personal such as revelation about the past?.....

Difficulty has been going on so long that all strategies have been tried but been ineffective - no other course of action possible.....

Describe:

(see checklist overleaf)

- | | | |
|--------------------------|-----|-------|
| (i) Immediate crisis | C5A | _____ |
| (ii) Medium term issues | C5B | _____ |
| (iii) Underlying problem | C5C | _____ |

COPING SCHEDULE/COPING PROJECT

CHECKLIST FOR PROBLEM TACKLING

Tick if applies - this denotes positive problem tackling:

Has S taken action to ameliorate or resolve situation?.....

Has she enlisted other people's help?.....

Has she sought advice (professional or otherwise) about how to act?.....

Has she sought information with the intention of following through with action?.....

Has she been generally active in response to crisis e.g. tackling side issues (e.g. visiting sick parent?).....

Has she planned future course of action?.....

Is the activity purposeful and appropriate?.....

Describe any other relevant behaviour:

COPING SCHEDULE/COPING PROJECT

INTEREST IN UNDERSTANDING MORE ABOUT THE CRISIS / SEEKING INFORMATION

Rate the extent to which S makes an effort to understand both the reasons for, or causes of, the event and obtaining necessary information about its possible solution. For example asking relevant authorities/ experts (e.g. doctors, police) about what is likely to happen, or getting books out of the library about the topic.

1. Marked
2. Moderate
3. Some
4. Little/none
- 1 No additional information she could reasonably search for.

Underlying problem C6 _____

Does S have the necessary practical resources to resolve/ameliorate implications of event?

Take into account the logically possible courses of action for an individual to take in relation to this event (i.e. rating above) and consider whether S has the necessary practical resources to undertake this line of action. Take into account material resources such as finance, knowing a solicitor, belonging to a union, having relevant 'contacts' etc.)

1. Marked level of necessary resources
2. Moderate level
3. Some
4. Little/no
- 1 No course of action possible

(i) Immediate crisis C7A _____

(ii) Medium term issues C7B _____

(iii) Underlying problem C7C _____

COPING SCHEDULE/COPING PROJECT

DOES S HAVE PRACTICAL CONSTRAINTS AGAINST TAKING APPROPRIATE ACTION?

Given the appropriate action implied in CE8 and CE9, does S have practical constraints against implementing the necessary action. Take into account an obstructive partner, other responsibilities such as childcare etc. This scale differs from the resources scale in the sense that there is an actual 'obstruction' in the environment. Lack of money would not rate here - partner's refusal to give her the necessary money would be rated.

1. Marked level of practical constraints
2. Moderate level
3. Some
4. Little/no
- 1 No course of action possible

(i) Immediate crisis	C8A	_____
(ii) Medium term issues	C8B	_____
(iii) Underlying problem	C8C	_____

COPING SCHEDULE/COPING PROJECT

SECTION 2 : COGNITIVE RESPONSE TO CRISISHELPLESSNESS

Rate how helpless S was in relation to the event, both in her feelings (how helpless she felt she was) and in her actual behaviour (estimated helplessness - an interviewer judgement). Consider the extent to which S is unable to influence the situation in a positive way. Consider both practical problems tackling, seeking help from others and positive cognitive coping. Include helplessness in avoiding the crisis, as well as in dealing with its aftermath.

MASTERY

The reverse of helplessness, here rate how masterful S was in dealing with the crisis. It is possible for both helplessness and mastery to be rated high for different elements of the crisis and/ or different peaks. Take into account practical coping and positive cognitive coping that might be relevant. Also getting relevant help from others.

1. Marked
2. Moderate
3. Some
4. Little/none

Describe

(see checklist overleaf)

ESTIMATED HELPLESSNESS
(Interviewer judgement)

C9A _____

FELT HELPLESSNESS
(subjective response)

C9B _____

ESTIMATED MASTERY
(Interviewer judgement)

C9C _____

FELT MASTERY
(Subjective response)

C9D _____

COPING SCHEDULE/COPING PROJECT

CHECKLIST FOR ESTIMATED HELPLESSNESS/MASTERY

Tick if applies - these denote estimated helplessness

Did she give up and stop trying to influence situation?.....

Did she have the attitude that no amount of effort would make any difference?.....

Did she take a passive and apathetic stance?.....

Did she divert her attention away from problem e.g. distractions such as eating or drinking too much?.....

Did she deny the situation so totally that she saw no reason to do anything about the crisis?.....

Did she get so overwhelmed with emotion that she was unable to do anything constructive?.....

Did she become very pessimistic and hopeless and unable to think of any positive controllable aspect of situation?...
.....

Any other relevant helpless behaviour?

Tick if applies - this denotes estimated mastery:

Was S active in trying to change the situation?.....

Did she try to influence people or peripheral aspects involved?.....

Did she change strategy in order to get a positive conclusion?.....

If no action possible, did she use positive cognitive manouevres to make situation more bearable?.....

Did she utilise support/ other people's efforts to change situation?.....

Did she find out more about situation in order to have more control?.....

FELT HOPE/ OPTIMISM

This is a subjective scale reflecting the degree of hope or optimism felt about the outcome of the crisis. It is to be tied to the difficult situation in particular, but if S has generalized hope / optimism which includes discussion of this crisis, then include. If S can see no positive outcome to the crisis, but thinks some other positive aspect will come about - then include this.

1. Marked
2. Moderate
3. Some
4. Little/none

FELT HOPE/OPTIMISM

C10 _____

CHECKLIST FOR HOPE/OPTIMISM

Tick if applies - this denotes hopefulness/ optimism:

Did she feel that the negative situation would disappear altogether?.....

Did she feel that the situation would improve somewhat?.....

Did she see the situation as unresolvable, but still think deep down that things would turn out well in the long run?.....

Denoting hopelessness:

Did she feel that any attempt on her part would be doomed to failure?.....

Did she rate as 'hopeless' on the PSE for this period? If so, did this include the crisis being rated?.....

Did she feel there was no point in trying to influence the situation because it was unresolvable?.....

Any other relevant comment:

COPING SCHEDULE/COPING PROJECT

RESTRUCTURING OF MEANING

Restructuring of meaning seeks to lower emotional distress by minimising the importance of the thing lost and elevating the importance of a new gain or positive outcome.

Putting greater emotional commitment or value into one aspect involved in the crisis - or an alternative one which is taken up e.g. 'my women friends have become so much more important to me since I lost my boyfriend'. 'My family have become more important to me since I got the cancer'.

Denigrating what was lost in the crisis by withdrawing emotional commitment from it and downrating it as a source of value (e.g. - after loss of boyfriend 'well I never wanted to marry anyway - I like my freedom'. 'Or in context of financial difficulty - 'Money isn't everything - relationships are more important'.

Seeing the situation in some wider context such as the religious one in order to give it meaning e.g. the crisis is a trial sent by God to test us.

1. Marked
2. Moderate
3. Some
4. Little/none

RESTRUCTURING OF MEANING

C11 _____

COPING SCHEDULE/COPING PROJECT

DOWNPLAYING/ LOOKING OF THE BRIGHT SIDE

This scale takes into account two cognitive manoeuvres which coexist:

- (i) Minimising the negative: This involves de-emphasising the negative implications or aspects of the situation; perhaps by normalising ('well, most married people argue, don't they?') or use of humour to make situation seem less threatening. If S is using denial only then do not rate this as minimising. However, it is possible that in different parts of the interview she uses different strategies.
- (ii) Positive outlook: This involves some positive perception of the situation and cheerfulness in assessing it. For example, S thinking of how lucky she is compared with others.

Downplaying/looking on the bright side - takes both into account. At least one must be present to rate 1-3.

(See checklist overleaf)

- 1. Marked
- 2. Moderate
- 3. Some
- 4. Little/none

Describe

MINIMISING NEGATIVE

C12A _____

POSITIVE OUTLOOK

C12B _____

OVERALL DOWNPLAYING/LOOKING ON THE B-S
(Take both minimising and positive outlook
into account)

C12C _____

COPING SCHEDULE/COPING PROJECT

MINIMISING NEGATIVE

Tick if applies:

Does S try to normalise the situation (e.g. well everybody rows don't they?).....

Does she make light of it e.g. retell it very humourously?.....

Does she use understatement frequently 'it was more a tiff than a row'.....

Does she report negative information flatly or lightly (inappropriate emotional response)?.....

Does she fail to see the negative at all - if so this is denial and should not be rated as minimising.....

POSITIVE OUTLOOKTick if applies

Does S look on the bright-side i.e. think of positive aspects to the negative situation (e.g. my cancer has made us closer as a family)?.....

Is she particularly cheerful and hopeful about the situation improving?.....

Does she feel that the negative crisis will be beneficial in the longer term e.g. character building?.....

COGNITIVE AVOIDANCE

This scale is related to the 'denial' rating but is distinguished by its conscious element. S's who cognitively avoid information will be aware that they are trying to keep it out of their minds. Deniers do not have that awareness. Take into account comments such as 'I push it to the back of my mind' or 'I never think about it' as indicating avoidance. Assess the extent to which S puts it out of her mind, turns her mind away.

Although respondents rated high on denial will tend not to be cognitively avoiding at the same time - it is possible to rate highly on both for different aspects of the crisis or at different time points.

1. Marked
2. Moderate
3. Some
4. Little/no

Describe:

COGNITIVE AVOIDANCE

C13 _____

CHECKLIST FOR COGNITIVE AVOIDANCE

Tick if applies - this denotes cognitive avoidance

Does she try to put the information out of her mind totally?.....

Does she 'compartmentalise' information e.g. put it out of her mind temporarily until a more practical time to deal with it?.....

Lack of cognitive avoidance:

Does she worry about the crisis (see PSE)?.....

Does she ruminate about it?.....

Does she keep coming back to the topic during the interview?.....

COPING SCHEDULE/COPING PROJECT

INFERRED DENIAL

This scale concerns the extent to which S is taking a 'blinkered' orientation in assessing the crisis. Inferred denial is an interviewer judgement and can be distinguished from cognitive avoidance by the fact that S is unaware that she is doing this. If S is denying then she may not be making explicit statements about avoidance such as: 'I don't think about the problem'.

Very occasionally S is aware of using denial - particularly seeing things retrospectively.

Take into account

- lack of emotional expression;
- other behaviour which may indicate failure to see the crisis as a problem (such as low problem tackling, failure to confide)
- evasive manner - deflecting questions concerning the crisis.
- gaps in account which may denote denial

It is possible to rate denial as well as downplaying and cognitive avoidance, but usually one of these dimensions will take priority - i.e. have the highest rating.

1. Marked
2. Moderate
3. Some
4. Little/none

Describe

(See checklist overleaf)

INFERRED DENIAL

C14 _____

COPING SCHEDULE/COPING PROJECT

Tick if these apply - denotes denial:

INCONSISTENCIES OF REPORTING AND GAPS IN ACCOUNT

1. Does she give incomplete information with lots of gaps (so that it is difficult for the interviewer to grasp the full crisis)

2. Does she give inconsistent/ contrary information about the crisis in a confusing way?

3. Does she fail to connect aspects of events and therefore have a narrow view of it?.....

FAILURE TO PERCEIVE THREAT

4. Does she describe situation clearly but completely fail to see it as problematic?.....

5. Does she use under-statement continuously - to the extent that it appears she has not really recognised the negative implications?.....
(The extent will determine whether minimising or denying)

LACK OF INSIGHT

6. Does she have a lack of insight into her situation and how her behaviour has brought it about / failed to ameliorate it etc?.....

EVASIVENESS

7. Is she very evasive in the interview - uses language to keep interviewer at a distance with regard to 'sensitive' (i.e. denied) information?.....

8. Does she repeatedly misinterpret the question and give irrelevant information?.....

LACK OF AFFECT

9. Does she have lack of appropriate affect (e.g. report in a very flat or off-hand manner)?.....

10. Does she have a lack of emotional expression to crisis (as opposed to at interview)?.....

LACK OF POSITIVE COPING/SUPPORT SEEKING

11. Is there evidence that failure to confide might be because of failure to see situation as problematic, or to suppress negative affect?.....

OTHER COGNITIVE SCALES

12. Does she realise she has 'blocked out' information? If this is blanket block out then it may constitute denial rather than cognitive avoidance? (e.g. 'I've blanked out that whole period').....

COPING SCHEDULE/COPING PROJECT

SECTION 2: ATTRIBUTION OF RESPONSIBILITY

SELF-BLAME FOR CRISIS

The amount of self-blame/ self-accusation S has about the event. To rate 1 to 3 there has to be negative emotional expression towards the self - i.e. self-reproach. (For sense of responsibility without such reproach, rate on later scale)

1. Marked
2. Moderate
3. Some
4. Little/none

(i) Immediate crisis C15A _____

(ii) Underlying problem C15B _____

CONTENT OF SELF-BLAME

If 1 to 3 rated above, then reflect here the content of the self-blame, whether specific to the situation or characterological and part of S's make-up.

1. Specific
2. Characterological
3. Both

(i) Immediate crisis C16A _____

(ii) Underlying problem C16B _____

S'S FELT RESPONSIBILITY OVER EVENT

The extent to which S sees herself as an agent in bringing the event about, or influencing the threatfulness of the event, regardless of whether she felt self-blame or self-reproach.

1. Marked
2. Moderate
3. Some
4. Little/none

(i) Immediate crisis C17A _____

(ii) Underlying problem C17B _____

COPING SCHEDULE/COPING PROJECT

INTERVIEWER'S ESTIMATE OF JUSTIFICATION FOR RESPONSIBILITY.

Take into account how reasonable the rating of CE6D is in the light of the contextual situation.

1. S exaggerates her responsibility.
2. S is realistic about her responsibility
3. S is under-plays her responsibility

(i) Immediate crisis C18A _____

(ii) Underlying problem C18B _____

BLAME OF OTHERS FOR CRISIS

Take into account the extent to which S holds others blameworthy for the crisis. Negative affect towards the relevant others should be present. Rate this scale independently of self-blame.

1. Marked
2. Moderate
3. Some
4. Little/none

(i) Immediate crisis C19A _____

(ii) Underlying problem C19B _____

CONTENT OF BLAME OF OTHERS

If 1 to 3 rated above, then reflect here the content of the blame, whether specific to the situation or characterological and part of O's make-up.

1. Specific
2. Characterological
3. Both

(i) Immediate crisis C20A _____

(ii) Underlying problem C20B _____

COPING SCHEDULE/COPING PROJECT

S'S PERCEPTION OF OTHER'S RESPONSIBILITY FOR EVENT

The extent to which sees others as responsible for the event, regardless of whether she actually reproaches/ blames them for it. Responsibility can be both for the origin of the event or of its threatening consequences.

1. Marked
2. Moderate
3. Some
4. Little/none

(i) Immediate crisis C21A _____

(ii) Underlying problem C21B _____

INTERVIEWER'S ESTIMATE OF JUSTIFICATION FOR RESPONSIBILITY OF OTHERS

Take into account how reasonable the rating of CE6D is in the light of the contextual situation.

1. S exaggerates others' responsibility.
2. S is realistic about others' responsibility
3. S is under-plays others' responsibility

(i) Immediate crisis C22A _____

(ii) Underlying problem C22B _____

COPING SCHEDULE/COPING PROJECT

SECTION 5 - EMOTIONAL RESPONSE TO EVENT

DISTRESSED RESPONSE TO EVENT.

The extent of S's emotional response to the situation in terms of distress taking into account both her feelings and expression to others.

Note that this is a 5 point scale. In order to rate '1' the emotional response must be rather extreme and may in fact become contaminated by caseness. Rating of '2' or '3' maybe more usual response to a severe event. Ratings of '4' or '5' would indicate blocking of emotional response or downplaying.

- | | | |
|----------------|---|------------------------|
| 1. Very marked | | (Unusually high) |
| 2. Marked |] | |
| 3. Moderate |] | (Within average range) |
| 4. Some |] | |
| 5. Little/none |) | (Unusually low) |

Sadness/distress

(i) Immediate crisis

C23A _____

(ii) Underlying problem

C23B _____

ANGER IN RESPONSE TO EVENT.

The extent of S's emotional response to the situation in terms of anger taking into account both her feelings and expression to others.

1. Marked
2. Moderate
3. Some
4. Little/none

Anger

(i) Immediate crisis

C24A _____

(ii) Underlying problem

C24B _____

COPING SCHEDULE/COPING PROJECT

CX Record

CHANGES IN COPING

Note: The E/D number should be the same as the front of the schedule.

<u>C1</u> <u>Int</u> <u>No.</u>	<u>C2A</u> <u>E/D</u>	<u>C2B</u> <u>E/D</u> <u>number</u>	<u>CX2</u> <u>Variable to</u> <u>be changed</u>	<u>CX3</u> <u>New rating</u>	<u>CX4</u> <u>Date of</u> <u>change</u>
_____	_____	_____	_____	_____	_____ DD MM YY
_____	_____	_____	_____	_____	_____ DD MM YY
_____	_____	_____	_____	_____	_____ DD MM YY
_____	_____	_____	_____	_____	_____ DD MM YY
_____	_____	_____	_____	_____	_____ DD MM YY
_____	_____	_____	_____	_____	_____ DD MM YY

Appendix F

Adapted LEDS Coping Schedule for the Risk of Breast Cancer

T1 = prior to screening at clinic T2 = waiting for results T3 = once results received T4 = time of interview

		T1	T2	T3	T4
C+ (Prep)	<u>Did you think of or make plan of action or come up with strategy to deal risk?</u> ✓ plan future course of action	—	—	—	—
B+ (Inst)	<u>Try to find out more about your risk or go to someone for help to deal with it?</u> ✓ Enlisted other people's help - advice or information ✓ Talk to someone with similar experience	—	—	—	—
SESS (pract)	<u>Has anyone helped you in practical ways to deal with your risk?</u> Spouse? VCO? Confidant? Parents? Children? Relatives? Friends? What sort of things? How often? <u>Want to know more about your risk? What?</u> <u>Did anyone take an interest in how you were managing?</u>	—	—	—	—
B+ (Emot)	<u>Did you talk to anyone about how you felt?</u> Who? How often? For how long?	—	—	—	—
SESS (conf)	<u>Were you able to fully confide in ...?</u> Spouse? Confidant? Friends? Relatives? ✓ fully expressed feelings ✓ held back information or feelings	—	—	—	—
SESS (emot)	<u>Were they very sympathetic or helpful?</u> What was said? Good listener? Could they have been more helpful? Why?	—	—	—	—
SESS (negat)	<u>Was there anyone you were expecting to be sympathetic who wasn't?</u> Who? What did they say or do? <u>Was there anyone who actually seemed to make things worse?</u> In what way? <u>Was anyone critical or unkind?</u> What did they say? Do you think they meant it or were over-sensitive at the time?	—	—	—	—
B+ (Tack)	<u>Did you do any other practical things to start tackling your risk?</u> Pls describe what you've done? When did you start? ✓ Action to ameliorate or resolve the situation ✓ Purposeful and appropriate activity ✓ Constraints against problem tackling	—	—	—	—
B- (Diseng)	<u>At some point, did you stop trying or reduce effort in dealing with the risk?</u> ✓ Feel like giving up? When? ✓ Divert attention away from problem e.g. eating/drinking too much ✓ Saw no reason to do anything about it, no effort would make a difference ✓ Overwhelmed with emotion and unable to do anything constructive <u>Did you ever see the risk of breast cancer as a problem? When?</u> What did you tell yourself about it?	—	—	—	—
C- (CognAvoid)	<u>How far did you just try to forget or ignore your risk?</u>	—	—	—	—
C- (CognAvoid)	<u>Tell yourself there was no risk? or it just wasn't real?</u> Keep going on as usual? ✓ Try to put the information out of her mind. Successful? How long? ✓ Ignore til more practical time to deal with it <u>Any time when you couldn't take your mind off it? When? What thoughts?</u> ✓ Worry or ruminate about the crisis ✓ Keeps returning to topic during interview	—	—	—	—
C- (Denial)	<u>Hide your feelings about it from other people? Why?</u> ✓ Incomplete or inconsistent information with gaps ✓ Describes situation clearly but fails to see it as negative or problematic ✓ Lack of insight into her situation or inappropriate affect ✓ Repeatedly misinterpret the question and give irrelevant information	—	—	—	—

C- (Downplay)	<u>Did you compare your situation with worse things that happen to other people?</u>	—	—	—	—
	Say things could be worse? or make the best of things?				
	Say very unlikely or no big deal because it is curable now?				
	Or opposite, almost certain it will be cancer and I'll likely die from it?				
	✓ Normalise the situation (e.g. everybody fights) or make light of it	—	—	—	—
	✓ Retell negative information flatly or lightly (inappropriate emot. response)	—	—	—	—
Self blame	✓ Look on bright side, hopeful about situation improving	—	—	—	—
	✓ Says negative crisis is beneficial in long term e.g. character building	—	—	—	—
	<u>Feel personally responsible or in some way to blame?</u>	—	—	—	—
	If yes: Entirely?				
	<u>Do you think you could have done something more effectively?</u>	—	—	—	—
	What do you think has been at the root of the problem?				
Optimism	<u>Do you feel in any way angry with yourself or guilty about it?</u>	—	—	—	—
	When did it start? Why?				
	<u>How do you think things will turn out?</u>	—	—	—	—

Appendix G

Letter of Introduction for Participants

Invitation to participate in a study on stress and breast cancer screening

Dr. Louise Lemyre (Professor-researcher at the University of Ottawa), Lisa Sweet and Jo Anne Fournier both doctoral candidates at the School of Psychology of the University of Ottawa are currently conducting a study examining the aspects of psychosocial stress related to breast cancer screening in cooperation with the Ontario Breast Screening Program. The clinic has mailed this letter to describe the study and invite you to participate.

The purpose of the study is to better understand the experience of anticipating screening procedures. We are looking for volunteers whose first language is either English or French and who would accept to fill in a 20-30 minute questionnaire on four occasions and possibly participate at the end of the study (in about 3 months) in a one hour interview. The first questionnaire is completed at the clinic. The other questionnaires are completed at home and returned to the researchers by mail (stamped envelopes are provided). Your participation will contribute to the understanding of stress during the process of breast cancer screening.

All participation is confidential and no names will appear on questionnaires. There are no obligations and you may withdraw at any time. Refusal to participate will in no way affect the quality or type of service you will receive at the Ontario Breast Screening Clinic.

If you are interested in participating in this study or want to know more about it, please arrive at the Ontario Breast Screening Clinic approximately 30 minutes prior to your scheduled appointment. When you arrive at the clinic, please inform the receptionist that you are interested in participating. Lisa or Jo Anne will be present at the Ontario Breast Screening Clinic to answer any questions about the study that you may have. If you choose to participate in the study, the researcher will provide you with the questionnaires on the day of your appointment.

If you would like more information, please do not hesitate to contact us at 562-5800 ext. 4288. **If you are interested in participating but are unable to come to the clinic 30 minutes before your appointment, please contact the researchers as soon as possible so that other arrangements can be made.** If we are not there, please leave a message and we will return your call.

Appendix H

Consent Form

Stress, subjective appraisals and coping in the context of breast cancer screening anticipation

Consent form

The University of Ottawa, School of Psychology is conducting a study on "Stress, subjective appraisal and coping in the context of breast cancer screening anticipation"

This study is being conducted by Lisa Sweet and Jo Anne Fournier who are students doing a doctoral program in psychology under the direction of Louise Lemyre, Ph.D., School of Psychology, University of Ottawa. This study has been approved by the Ontario Breast Screening Program.

Purpose of the study

The purpose of the study is to learn what level of stress women experience at the time of a breast screening examination and how they deal with the stress. This information may help to decide whether additional information or support is required for women who have a breast screening examination.

Women attending the Ontario Breast Screening Program - Ottawa Center are being invited to participate.

What will occur if you agree to participate in the study

If you do decide to participate in this study, you will be asked to complete four (4) questionnaires. You may be asked also to participate in an interview with an investigator of the study.

You will be asked to complete a questionnaire at the time of your visit to OBSP before your screening examination; at two (2) days after your visit to OBSP; at twenty (20) days after your visit to OBSP; and ninety (90) days after your visit to OBSP. Each questionnaire will take approximately 30 minutes to complete and will ask questions about how you feel about having a breast screening examination; how you feel about other events in your life; and how you cope with the events in your life.

You will be contacted by telephone once at two (2), twenty (20) days and ninety (90) days after your visit to OBSP to remind you to complete your questionnaire.

You may be asked to participate in an interview if you have an abnormal breast screening examination (e.g. abnormality found on breast examination or on mammography). You may also be asked to participate in an interview if you have had a normal screening examination (i.e. no abnormalities found). Women with a normal breast screening examination will be selected at

random (by chance) for the interviews. Your chance of being selected at random if you have a normal breast screening examination will be approximately one in ten women.

If you do participate in the interview, it will take approximately 60 minutes (one hour) or less. The interview will be done at your home, at the OBSP-Ottawa Center, at the University of Ottawa School of Psychology whichever is most convenient for you. The date and time will be chosen for your convenience. You will also complete the fourth questionnaire at this time.

Risks from participating in the study

Your participation in this study will take some of your time. Your time will be required to complete the questionnaires and possibly to participate in an interview.

You may also experience stress by completing the questionnaires and possibly participating in the interview. If you do experience increased stress and wish for assistance, you should contact Dr. Louise Lemyre at (613) 562-5800 ext. 4309. She will facilitate your access to an appropriate person who can help you deal with your stress.

Benefits from participating in the study

There are no direct benefits to you from your participation in this study.

Confidentiality and anonymity

All your questionnaires and possibly the interview form will have a number code. During the study, a list with your name and telephone number and code number will be kept. This list will be used to contact you to remind you to complete your questionnaires and possibly to arrange an interview. At the end of the study the list of names and telephone numbers will be destroyed. All that will remain are questionnaires and information from possibly the interview that will also have the same code number. Only the researchers have access to this information.

You will not be identified by name in any publications or communications that result from this study.

Participation in the study

Your participation in this study is voluntary. If you do agree to participate, you may withdraw from this study anytime. If you do withdraw or decide not participate in this study, your medical care including the care received from OBSP will not be affected at anytime.

If you do have any questions regarding this study you should contact Lisa Sweet or Jo Anne Fournier at (613) 562-5800 ext. 4288 or Louise Lemyre at (613) 562-5800 ext. 4309. There are two copies of this consent form one of which is for you to keep for your records.

I agree to participate in the study "Stress, subjective appraisal, and coping in the context of breast cancer screening anticipation".

I have read the above information and have had all my questions answered to my satisfaction by

Signature of principal researcher

Date

Signature of study participant

Date

Printed Name of Participant

Signature of witness

Date

Printed name of witness

Appendix I

Subjective and Contextual Coping Strategies for Women in the False-positive Group Reporting Various Types of Abnormalities.

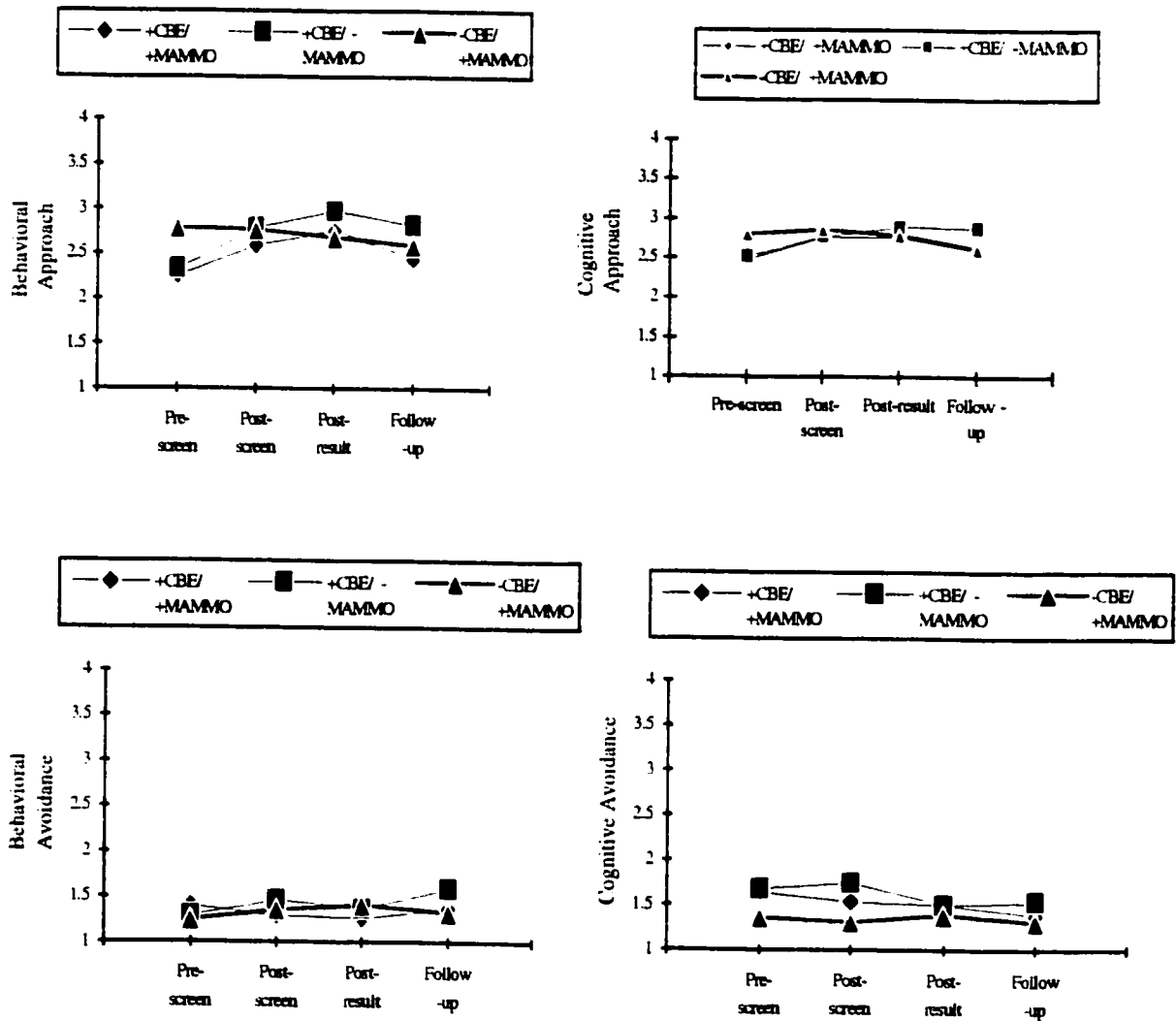


Figure II. Means on subjective coping strategies for women in the false-positive group reporting various types of abnormalities.

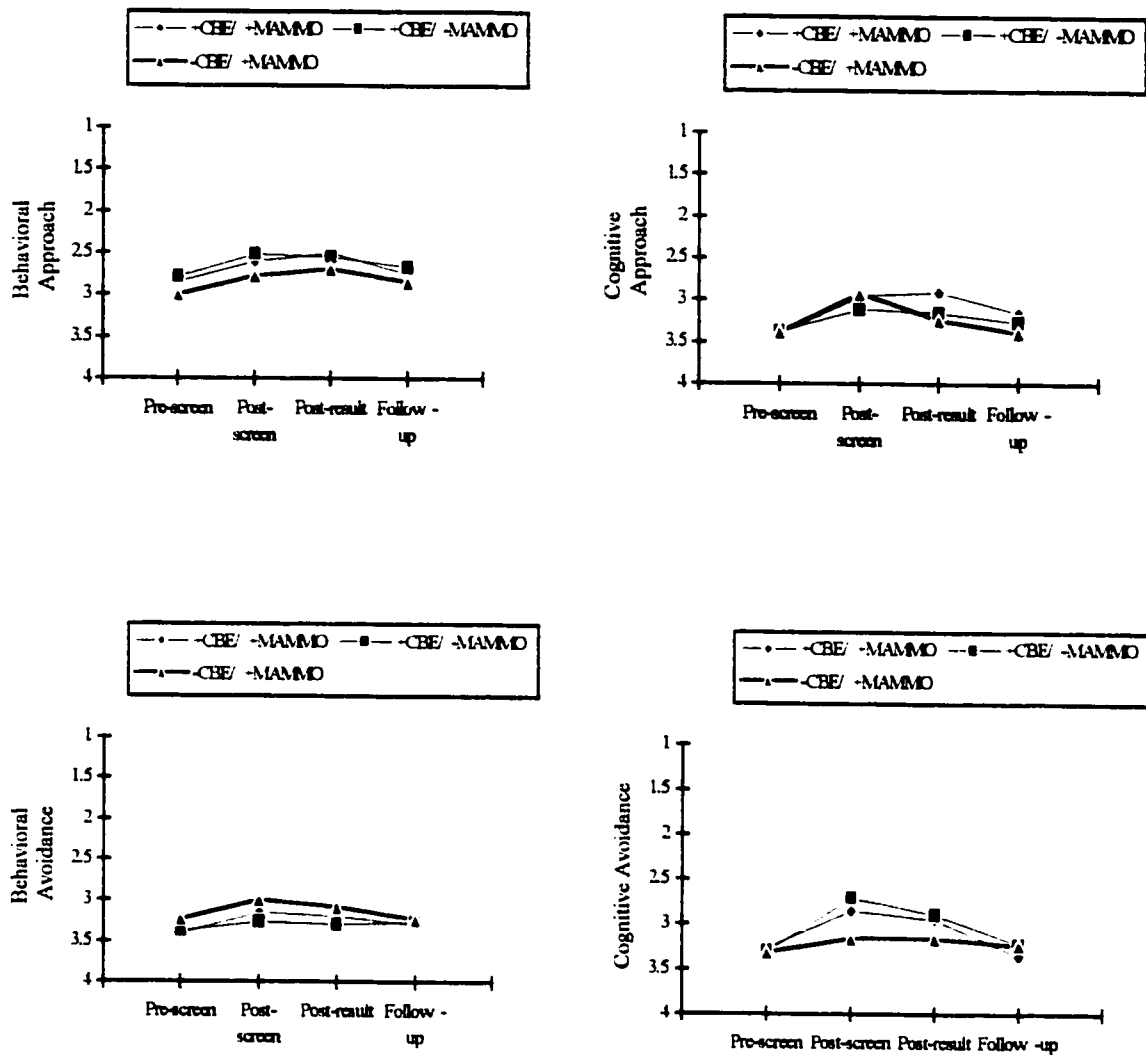


Figure 12. Means on contextual coping strategies for women in the false-positive group reporting various types of abnormalities. Scale in reverse gradient as 1 indicates more than 4.

Appendix J

Factor Structure of the Abridged COPE

Preliminary Analyses.

Prior to beginning hypothesis testing, tests were conducted to ensure for equivalency between participants with a positive screen and those with a negative screen prior to the screening at the first assessment. No significant differences were found on age, $t=-1.20$, $p=.23$, marital status, $\chi^2=0.01$, $p=.91$, education, $\chi^2=1.71$, $p=.42$ and income, $\chi^2=10.53$, $p=.16$. Based on these results, it was deemed appropriate to pool all participants for the following analyses.

To examine the factor structure of the abridged COPE, cases were randomly divided into two groups: one for conducting an exploratory factor analysis of the factor structure ($n=411$) and one for testing the fit of the hypothesized model with the observed data ($n=412$). As shown in Table J1 no significant differences were found on age, $t=-0.64$, $p=.52$, marital status, $\chi^2=1.09$, $p=.95$, education, $\chi^2=3.45$, $p=.18$ and income, $\chi^2=1.11$, $p=.77$, between the two groups.

Factor structure of the abridged COPE

Preliminary analyses.

A total of 67 cases (16.7%) in the sample had missing data. Given that no significant differences were found on demographics between those with missing data and those without missing data, a listwise deletion of cases was performed leaving a sample size of 344. The next step involved testing for outliers. In the current sample, no cases had standardized scores greater than +3 and less than -3, therefore no univariate outliers were identified. In order to identify multivariate outliers, Mahalanobis and Cook's distances were computed. According to Tabachnick and Fidell (1996), Cook's distances greater than 1.00 are considered large, suggesting

Table J1

Demographics of Cases Used in the Exploratory Factor Analysis (EFA) and Those Used in the Confirmatory Factor Analysis (CFA)

Variable	Cases in EFA	Cases in CFA	χ^2	p
Age (yrs)	60.2	60.5	-0.64	.52
Marital status (%)			1.09	.95
Married/common law	72.8	73.9		
Divorced/separated	11.6	9.6		
Single	6.2	6.1		
Widow	9.5	10.4		
Education (%)			3.45	.18
No high school diploma	11.8	16.5		
High school diploma	35.3	35.6		
Post-secondary education	52.9	49.9		
Personal Income (%)			1.11	.77
0 - \$15,000	3.4	2.7		
\$15,000 - \$30,000	12.7	14.5		
\$30,000 - \$50,000	16.7	14.7		
\$50,000 +	67.2	68.1		

that the outlier is influential. In the current data set, no value exceeded 1.00. However, Mahalanobis distances revealed a total of 30 multivariate outliers. Cases with $\chi^2_{(24)} > 51.179, p < .001$, were considered multivariate outliers. Given that no significant differences were found on demographics between outliers and non-outliers, cases were deleted, resulting in a final sample size of 314.

The next step involved testing for the non-violation of the basic assumptions of multivariate analyses (see Tabachnick & Fidell, 1996). The first assumption, where variables are said to be normal distributed, was evaluated by examining the skewness and kurtosis of each variable. Skewness ranged from -0.16 to 2.37 ($M = 1.05$) and kurtosis ranged from -1.41 to 5.23 ($M = .88$). Muthén and Kaplan (1985) suggest that mean skewness and kurtosis values between 1.00 and -1.00 are considered to approximate a normal distribution. Closer inspection of the distribution of the item "I admit to myself that I can't deal with it, and quit trying" showed that 80% of respondents answered "1" on the four point likert scale. Given the uneven distribution, and the high level of skewness (2.37) and kurtosis (5.23), the variable was eliminated from further analyses. Removal of the item resulted in a mean skewness of .96 and kurtosis of .59. The current data set are said to be normally distributed.

The second assumption, that bivariate relations among variables are linear, was assessed using the bivariate distribution of all combinations of variables. A spot-check of bivariate distributions did not reveal a marked departure from linearity. The next assumption of non-multicollinearity or singularity was examined by squared multiple correlations (SMC). Inspection of SMCs (range = 0.16 to 0.77) did not indicate the presence of singularity or multicollinearity. To further assess the presence of multicollinearity, the correlation matrix was examined. Correlations in excess of 0.85 (see Tabachnick & Fidell, 1996) are said to indicate multicollinearity. Table J2

presents all the items included in the factorial analysis. As indicated in Table J3, correlations between C6 and C7 ($r=.88$), two items from the same scale, exceeded this cut-off. To eliminate the impact of multicollinearity, item C6 was deleted from further analyses.

Finally, the factoriability of R was examined. The correlation matrix for the 16 items of the abridged COPE revealed numerous correlations greater than .30, suggesting that the matrix was factorable. Kaiser's measure of sampling adequacy (KMO) was also used to assess the factoriability of the matrix. Current analysis yielded a KMO=0.88, surpassing the minimal criteria of 0.60 for good factorial analysis.

Exploratory Factor Analysis: A Four-Factor Structure.

EFA of the abridged COPE. Principal factors extraction with oblimin rotation was performed on 14 items of the abridged COPE (Carver et al., 1989). Oblique rotation was justified theoretically and confirmed by the examination of the factor correlation matrix where correlations between factors ranged from .14 (factor 1 and factor 2) and .49 (factor 2 and factor 3). The pattern matrix and explained variance for the four factor solution is presented in Table J4. Items loading on the first factor were items from the Planning and Active Coping scales of the COPE (Carver et al., 1989), which reflected an Approach Coping factor. This factor accounted for 36.2% of the variance in the use of coping strategies. The second factor, which accounted for 18.9% of the variance in coping, comprised the four items from the Denial scale, labelled as the Cognitive Avoidance factor. The third factor was comprised of the three Behavioral Disengagement items from the COPE, reflecting a Behavioral Avoidance factor. It explained 5.6% of the variance in self-reported coping. The fourth factor did not reveal any factor loadings

Table J2

Items used in the abridged COPE

Scale	Item	Code
Active Coping	I do what has to be done one step at a time	C5
	I take additional action to try and get rid of the problem	C8
	I concentrate my efforts on doing something about it	C12
	I take direct action to get around the problem	C21
Planning	I make a plan of action	C6
	I try to come up with a strategy about what to do	C7
	I think about how I might best handle the problem	C16
	I think about what steps to take	C20
Behavioral	I just give up trying to reach my goal	C2
Disengagement	I reduce the amount of effort I'm putting into solving the problem	C3
	I give up the attempt to get what I want	C14
	I admit to myself I can't deal with it and quit trying	C22
Denial	I refuse to believe that it is happening	C9
	I say to myself "This isn't real"	C15
	I pretend that is not really happening	C17
	I act as though it is not even happening	C24

Table J3

Correlation Matrix, Means and Standard Deviations of the 16 Items of the Abridged COPE (n=314)

	C2	C3	C5	C6	C7	C8	C9	C12	C14	C15	C16	C17	M(SD)
C2	--												1.27 (.57)
C3	.45***	--											1.38 (.67)
C5	.05	.15**	--										2.56 (1.14)
C6	.01	-.05	.63***	--									2.10 (1.15)
C7	.09	.04	.60***	.88***	--								2.11 (1.13)
C8	.18	.07	.55***	.74***	.77***	--							2.06 (1.12)
C9	.20	.17**	.10	.08	.09	.12*	--						1.49 (.78)
C12	.11*	.08	.62***	.72***	.73***	.75***	.14*	--					2.33 (1.12)
C14	.44***	.13*	.04	.03	.12*	.16**	.23***	.15**	--				1.28 (.57)

*p<.05 **p<.01 ***p<.001

(Table continues)

Table J3

Correlation Matrix, Means and Standard Deviations of the 16 Items of the Abridged COPE (n=314)

	C2	C3	C5	C6	C7	C8	C9	C12	C14	C15	C16	C17	M(SD)
C15	.23***	.27***	.17**	.18**	.18**	.22***	.53***	.21***	.43***	--			1.42 (.66)
C16	.13*	.13*	.60**	.66***	.67***	.66***	.15**	.74***	.18**	.25***	--		2.54 (1.11)
C17	.28***	.28***	.05	.00	.01	.04	.57***	.01	.37***	.60***	.05	--	1.36 (.65)
C20	.14*	.13*	.61***	.67***	.71***	.72***	.09	.75***	.15**	.25***	.79***	.03	2.41 (1.10)
C21	.11	.08	.61***	.65***	.64***	.68***	.08	.66***	.12*	.22***	.71***	.00	2.26 (1.15)
C22	.28***	.22***	.11*	.06	.10	.15**	.37***	.09	.37***	.40***	.08	.54***	1.24 (.56)
C24	.20***	.23***	.09	.03	.05	.07	.53***	-.01	.25***	.50***	.09	.63***	1.42 (.76)

*p<.05 **p<.01 ***p<.001

(table continues)

Table J3
Correlation Matrix, Means and Standard Deviations of the 16 Items of the Abridged COPE (n=314)

	C15	C16	C17	C20	C21	C22	C24
C20	.25***	.78***	.03	--			
C21	.79***	.71***	.00	.81***	--		
C22	.40***	.08	.54***	.10	.08	--	
C24	.50***	.09	.63***	.05	.03	.46***	--

*p<.05 **p<.01 ***p<.001

Table J4

Pattern Matrix and Explained Variance of the Four-factor Model of the Abridged COPE (n=314)Following Oblique Rotation

Item	Factor 1	Factor 2	Factor 3	Factor 4
C20	.91	-.03	.05	-.20
C12	.85	-.02	.02	.13
C21	.85	-.02	.00	-.22
C16	.83	.03	.04	-.11
C7	.83	.00	-.03	.23
C8	.82	.00	.06	.26
C5	.70	.06	-.06	-.02
C17	-.10	.81	.09	.00
C24	-.04	.76	-.03	-.01
C9	.03	.73	-.06	.04
C15	.15	.66	.10	-.05
C2	.00	-.05	.73	.06
C3	-.01	.01	.62	-.08
C14	.03	.12	.59	.03
Variance (%)	36.2	18.9	5.6	1.9

above the .30 cut-off, suggested by Gorsuch (1983). Similarly, the scree test indicated a three-factor solution to be more representative of the data. In sum, substantive and statistical considerations suggest that a three-factor solution most suitably described the data.

EFA of the Approach Factor. A second exploratory factorial analysis was performed using the seven items from Factor 1 to examine if the factor would subdivide into two factors. Using principal factors extraction with oblimin rotation, two factor were hypothesized, however, only one true factor was extracted explaining 69.3% of the variance in approach coping. The second factor (eigenvalue=0.24) did not have any factor loadings greater than .30. The pattern matrix, as shown in Table J5, revealed no cross loadings. The correlation between the factors was .01.

In sum, the exploratory factor analysis conducted on the current sample extracted three factors with a highly interpretable solution. The second half of the sample was used to test the fit of the three-factor hypothesized model to the second sample (n=412).

Confirmatory factor analysis: A Three-Factor Solution

Prior to beginning the analysis, the data was screened for missing data as well as univariate and multivariate outliers. Listwise deletion of cases with missing data resulted in the deletion of 65 cases (15.7%) of the original sample. No differences on demographic variables between those with missing data and those without missing data were found. As such, a listwise deletion of cases resulted in a sample size of 347. The next step involved testing for outliers. In the current sample, no cases had standardized scores greater than +3 and less than -3, therefore no univariate outliers were identified. As for multivariate outliers, Mahalanobis distances revealed a total of 18 multivariate outliers. Cases with $X^2_{(14)} > 31.126$, $p < .001$, were considered multivariate outliers.

Table J5

Pattern Matrix and Explained Variance of the Two-factor Model of the Approach Coping Factor
(n=314) following Oblique Rotation

Item	Factor 1	Factor 2
C20	.91	-.22
C12	.85	.12
C8	.84	.23
C16	.84	-.11
C7	.83	.23
C21	.83	-.23
C5	.70	.00
Variance (%)	69.3	3.5

Given that no significant differences were found on demographics between outliers and non-outliers, cases were deleted, resulting in a final sample size of 329.

The next step involved testing for the non-violation of the basic assumptions of multivariate analyses (see Tabachnick & Fidell, 1996). The first assumption, where variables are said to be normal distributed, was evaluated by examining the skewness and kurtosis of each variable. Skewness ranged from -0.34 to 2.35 ($\underline{M}$ =0.86) and kurtosis ranged from -1.63 to 4.78 ($\underline{M}$ =.62). The data were considered to approximate a normal distribution. The second assumption, that bivariate relations among variables are linear, was assessed using the bivariate distribution of all combinations of variables. A spot-check of bivariate distributions did not reveal a marked departure from linearity. The next assumption of non-multicollinearity or singularity was examined by squared multiple correlations (SMC). Inspection of SMCs (range= 0.16 to 0.77) did not indicate the presence of singularity or multicollinearity. To further assess the presence of multicollinearity, the correlation matrix was examined. No correlations were in excess of 0.85 (see Tabachnick & Fidell, 1996), suggesting no presence of multicollinearity.

A confirmatory factor analysis (LISREL8.12; Joreskog & Sorbom, 1993) was conducted to test the model presented in Figure J1. The current CFA hypothesized a priori that (a) responses to the abridged COPE could be explained by three factors names Approach Coping, Cognitive Avoidance and Behavioral Avoidance, each item would have loading greater than zero on the coping strategy it was designed to measure, and zero loadings on all other factors, (c) the three factors would be correlated and (d) the error/uniqueness values for the variables would be uncorrelated. In order to identify the model, the first item of each scale was fixed at 1.0.

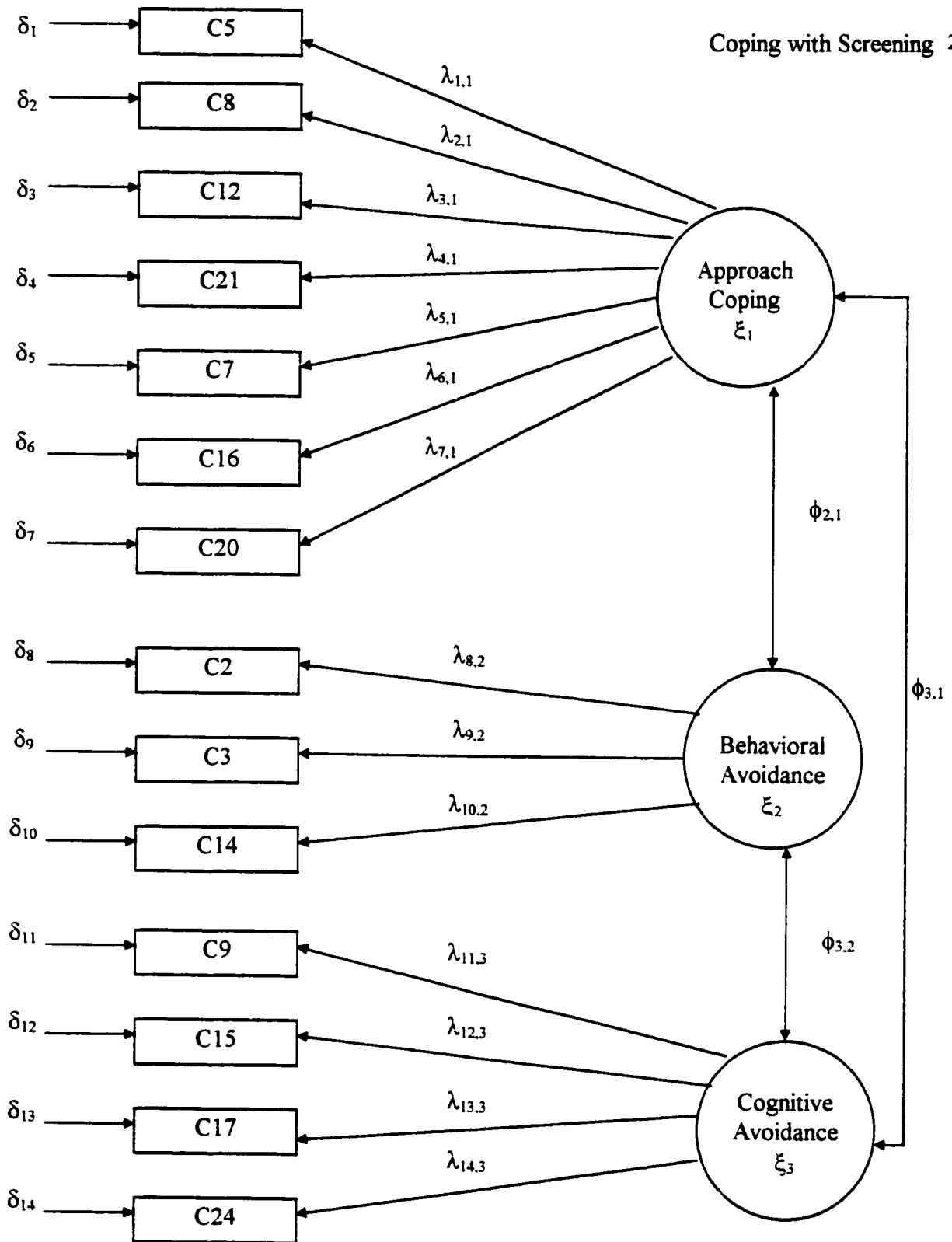


Figure J1. Structure of the hypothesized three-factor structure of the abridged COPE

A number of criteria was used to assess the fit of model at statistical, practical and theoretical levels (March & Hocevar, 1985). On the basis of statistical criteria, the three factor model represented an unsatisfactory fit to the data ($X^2_{(74)}=197.62, p<.001$). Because of the X^2 sensitivity to sample size, Byrne (1998) recommends using other criteria to determine the acceptability of the model fit. As such, examination of the CFI of .95 indicated that the model represented an adequate fit to the data at a practical level. Other indicators of model fit include the RMSEA=.071, $p<.01$ and ECVI=.79. Moreover, all estimated parameters had statistically significant T-values. Finally, squared multiple correlations ranged from .16 for the item “I give up the attempt to get what I want” from the Behavioral Avoidance construct to .77 for the item “I think about what steps to take” from the Approach construct. Overall, the current analysis suggested that the abridged COPE had a robust factor structure which showed an adequate fit when tested by confirmatory factor analysis. Figure J2 presents the estimates of the model.

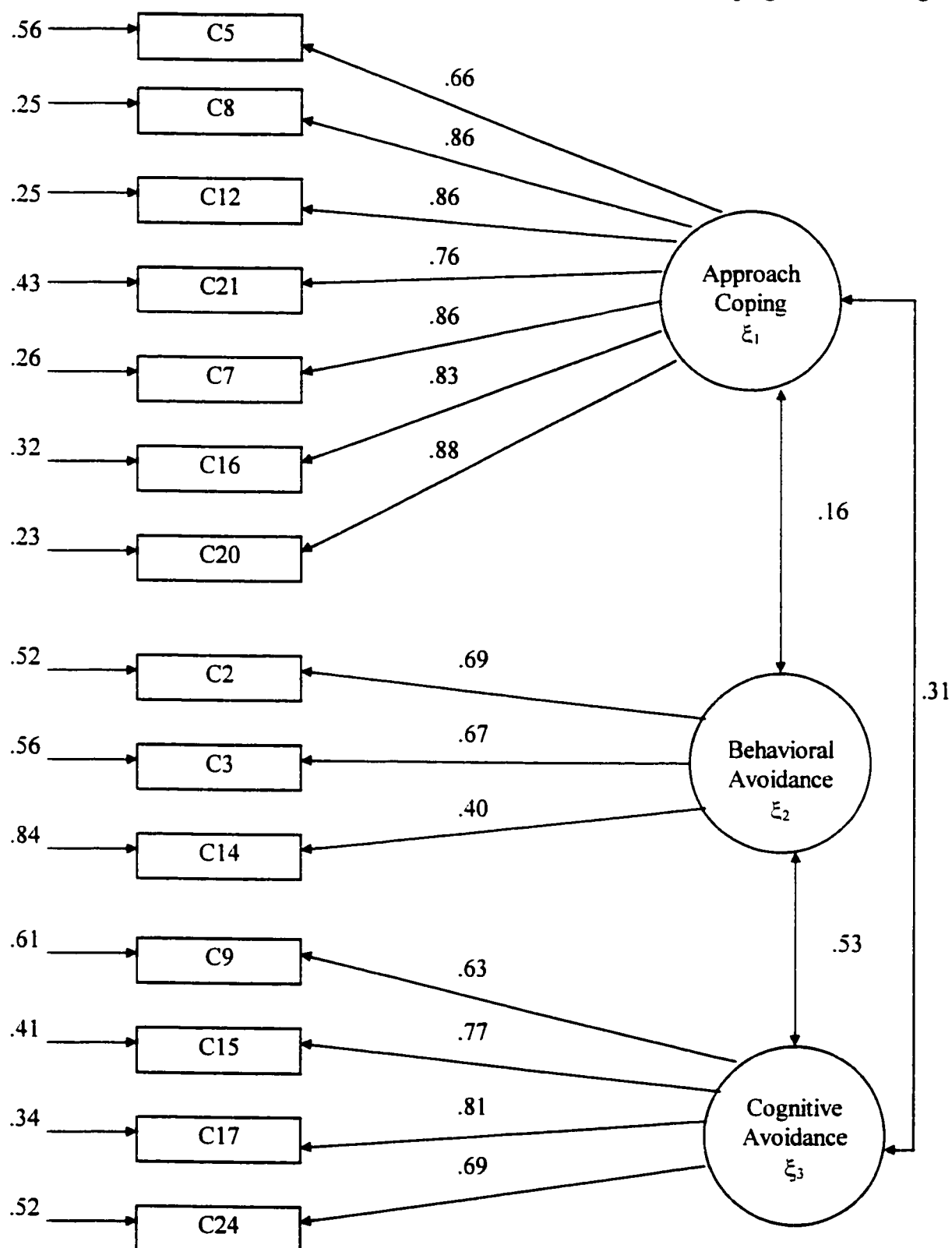


Figure J2. Structure of the three-factor solution of the abridged COPE with estimates from the completely standardized solution ($n=329$).

Appendix K

Pearson Correlation Matrix of Subjective and Contextual Coping Strategies for the Second to the Fourth Assessment Period

Contextual scales	Subjective scales			
	Behavioral Approach	Cognitive Approach	Behavioral Avoidance	Cognitive Avoidance
Time 1 (n=128)				
Behavioral approach	-.07	-.05	.08	.09
Cognitive approach	-.03	-.02	.00	-.03
Behavioral avoidance	.06	.07	-.10	-.18*
Cognitive avoidance	.11	.03	-.12	-.24**
Time 2 (n=124)				
Behavioral Approach	-.21*	-.18*	.13	.07
Cognitive Approach	-.12	-.14	.03	.04
Behavioral Avoidance	.23*	.17	-.14	-.11
Cognitive Avoidance	.24*	.21*	-.14	-.22*

Note. The subjective and contextual coping strategies have opposing scales. Both scales are measured on a scale of “1” to “4”, however, the most frequent use of a coping strategy is represented by “4” for the subjective scales and by “1” for the contextual scales. Therefore, negative correlations reflect agreement between the two modalities.

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

(table continues)

Contextual scales	Subjective scales			
	Behavioral Approach	Cognitive Approach	Behavioral Avoidance	Cognitive Avoidance
Time 3 (n=127)				
Behavioral Approach	-.15	-.16	.00	-.06
Cognitive Approach	.00	-.04	-.03	-.06
Behavioral Avoidance	.17	.13	-.09	-.04
Cognitive Avoidance	.02	.04	-.01	-.02
Time 4 (n=122)				
Behavioral Approach	-.11	-.04	.12	.14
Cognitive Approach	-.07	-.09	.02	.15
Behavioral Avoidance	.12	-.11	-.24**	-.17
Cognitive Avoidance	.05	.02	-.06	-.07

Note. The subjective and contextual coping strategies have opposing scales. Both scales are measured on a scale of “1” to “4”, however, the most frequent use of a coping strategy is represented by “4” for the subjective scales and by “1” for the contextual scales. Therefore, negative correlations reflect agreement between the two modalities.

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

Appendix L

Testing the Statistical Assumption of Hypothesis 4

In the dataset, no cases had standardized scores in excess of ± 3.00 . As such, no univariate outliers were identified. As for multivariate outliers, Mahalanobis distances were examined. To be deemed a multivariate outlier, Mahalanobis distances had to surpass the critical chi-square value of 18.47 ($df=4$, $p=.001$). Two negative cases (#397 and #386) and two positive cases (#262 and #463) were identified as multivariate outliers and removed from subsequent analyses. Moreover, when analyses involved matched participants, the outlier's matched counterpart was also excluded from the analysis. Normality was assessed by examining the skewness and kurtosis of the coping scales. Data are said to be normally distributed if the mean skewness and kurtosis fall between ± 1.00 . For both positive and negative groups at each assessment period, mean skewness (range from -0.60 to 0.97) and kurtosis (-0.42 to -0.13) fell within this range. Finally, visual inspection of bivariate scatterplots between variables most likely to be nonlinear revealed no marked departure from linearity.

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