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**Positive illusions, coping, and inferential reasoning
during the process of organizational change**

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in partial fulfillment of the requirements for the degree of
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ABSTRACT

Over the past two decades, Taylor (1983; Taylor & Brown, 1988) has explored the tendency of individuals to develop positive illusions in coping with stressful, or traumatic events. These illusions consist of unrealistic positive self-evaluations, exaggerated perceptions of control or mastery, and unrealistic optimism. According to Taylor, illusions are important in accomplishing several tasks associated with successful adaptation, namely, search for meaning, regaining a sense of mastery, and restoring self-esteem through processes of social comparison. The purpose of the study was threefold: (a) to explore the construct of positive illusions (PI), (b) to explore employees' use of PI in coping with a stressful work event, and (c) to discover how PI, temporal distance, level of perceived stress, and a priming manipulation affect the type and frequency of inferences made while responding to items taken from a coping inventory.

The study was conducted in two phases. In Phase I, 209 nurses responded to a questionnaire which identified their level of PI, perceptions of occupational climate, and job satisfaction. They were also asked to describe a stressful work situation, and their appraisals and coping strategies used to manage the event. Results demonstrated that the PI construct for this population was best identified by enhanced self-perception, high dispositional optimism, and low internal locus of control. PI were associated with high self-efficacy for resolving the stressful event, appraisals of challenge, positive reappraisal and self-controlling coping, and the nonuse of escape-avoidance coping.

In Phase II, 36 nurses "high" and "low" in PI were assigned to two priming conditions. Nurses participated in a think-aloud procedure during which time they rated 16 coping items in relation to their previously identified work event and gave reasons for their ratings. After protocol analysis, results demonstrated that, (a) the type of prime used affected the consistency of recall even after controlling for temporal distance, and (b) positive illusions, prime, and time interact to produce significantly different patterns of self-statements and contextual inferences for the four groups. The results demonstrate that measures which rely on the recall of coping strategies need to be treated with considerable caution.

RESUME

Taylor (1983; Taylor & Brown, 1988) étudie depuis deux décennies la tendance de certains individus à recourir à l'illusion pour venir à bout de situations stressantes ou traumatisantes. Ces illusions se traduisent par des auto-évaluations favorables et irréalistes, un sentiment exagéré de contrôle ou de maîtrise et un optimisme excessif. Selon Taylor, les illusions jouent un rôle important dans l'accomplissement de plusieurs tâches dont dépend le succès de l'adaptation, comme la quête de sens, la capacité retrouvée à éprouver un sentiment de maîtrise et le rétablissement de l'amour-propre grâce à divers processus de comparaison sociale. L'objectif de l'étude est triple : a) étudier l'élaboration des illusions; b) étudier, chez des employés, le recours à l'illusion comme moyen d'adaptation à des situations de travail stressantes; c) déterminer comment les illusions, l'éloignement dans le temps, le niveau de stress perçu et une intervention (manipulation) affectent le type et la fréquence des inférences formulées pour répondre à des questions portant sur les stratégies d'adaptation.

L'étude a été menée en deux temps. Dans un premier temps, 209 infirmières ont répondu à un questionnaire permettant de déterminer dans quelle mesure elles entretenaient des illusions et d'évaluer leurs impressions sur le climat de travail et leur satisfaction au travail. On leur a également demandé de décrire et d'évaluer une situation stressante, ainsi que les stratégies d'adaptation utilisées pour y faire face. Les résultats démontrent que, dans cette population, ce sont une meilleure perception de soi, une forte propension à l'optimisme et un faible score sur l'échelle de locus de contrôle interne qui permettent le mieux d'identifier l'élaboration des illusions. On a observé une relation entre les illusions et l'auto-efficacité marquée face à la situation stressante, l'aptitude à envisager la situation comme un défi, la réévaluation positive de ce jugement et l'adaptation par la maîtrise de soi plutôt que par la fuite et l'évitement.

Dans un deuxième temps, 36 infirmières qui entretenaient des illusions à des degrés "élevé" et "faible" ont été réparties en deux groupes en fonction du type de manipulation utilisée. On leur a ensuite demandé de réfléchir à haute voix pour évaluer 16 éléments d'adaptation liés à la situation de travail qu'elles avaient préalablement décrite, en justifiant leur évaluation. Après l'analyse du protocole, les résultats démontrent que a) le type de manipulation utilisé affecte la cohérence de rappel même si l'on tient compte de l'éloignement dans le temps, et b) que les illusions, la manipulation et le temps produisent, par interaction, des schémas très différents d'auto-énoncés et d'inférences contextuelles dans les quatre groupes. Les résultats démontrent en outre qu'il faut traiter avec beaucoup de circonspection les mesures qui reposent sur le rappel des stratégies d'adaptation.

ACKNOWLEDGMENTS

A professor once expressed an idea for a study which would examine the reasons behind the choice of topics made by graduate students for their doctoral dissertations. Little did I comprehend the full personal relevance of his question at that time. I had thought my interest in understanding illusionary thought processes simply resulted from years of skepticism surrounding the act of retrospective self-report. Having worked as a nurse in psychiatry for over fifteen years, and after eight years in private practice as a counsellor and psychologist, I knew my concerns were warranted. My clinical experience had allowed me a first hand knowledge (or should I say observation) of the complex nature of human thought and reasoning, so naturally, reliable self-report was suspect in my eyes. However, six years later, I now have a new insight into my choice. The construct of positive illusions probably appealed to me because it describes me 'to a tee' and in fact, if it were not for my "high" illusion, I would not have found the determination and motivation required to complete the arduous, and sometimes traumatic, process of completing my thesis.

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CHAPTER I:

Introduction

Background of the Problem

The proliferation of research on coping over the past several decades is a testament to its felt importance in mediating between antecedent stressful events and outcomes such as depression, anxiety, somatic complaints, and psychological distress, (see Lazarus, 1993, for a review). The need to understand what factors contribute significantly to a successful, or unsuccessful, outcome has driven much of this work, and the methodology has typically relied on self-report measures. For example, in exploring how individuals cope with stress, the types of coping strategies used, and the outcomes of using particular strategies, coping inventories (e.g., the Ways of Coping Questionnaire by Folkman and Lazarus, 1988b) have often been one of the primary measures upon which findings have been predicated. While, in general, there appears to be agreement and consistency among many of the studies, there is now increasing criticism directed at the reliability of such measures, especially when used alone (Coyne & Gottlieb, 1996; Suls & David, 1996). Criticisms have centered on the inherent limitations of self-report and one's access to accurate cognitions and feelings, the validity of the measures, and the obvious difficulties with measuring such a complex and dynamic process as coping.

In addition to the concerns expressed about measurement, there has also been a growing debate as to the nature of cognitions that contribute most to a successful and healthy adaptation. While coping measurement in the past has been based primarily on theories in which the individual is considered capable of making "realistic" appraisals of a stressful situation, there is increasing evidence that those who actually cope best hold somewhat distorted and self-enhanced views of reality. The extent to which these distortions enter into the appraisal of a stressful event, and then influence an individual's choice of coping strategies is a current point of interest in the literature. A further point of interest is to what

extent these distortions or "biases" influence individual's recall of their coping with a past stressful event.

To date, studies on self-enhancement have found evidence that in order to maintain self-esteem individuals generally gather and interpret information in a way that is positively biased (see Kunda, 1990; Taylor & Brown, 1988, for reviews). Perhaps no theory represents this emerging perspective of self-serving bias or self-enhancement better than the cognitive adaptation theory put forward by Taylor (1983; Taylor & Brown, 1988; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). Over the last two decades, the tendency of individuals to adhere to enduring, and pervasive "positive illusions" in response to stressful, or traumatic events, has been extensively explored by Taylor and her colleagues (Taylor 1983, 1989; see Taylor & Armor, 1996; Taylor & Brown, 1988, for reviews). Contrary to popular beliefs regarding mental health, they have proposed that the presence of positive illusions actually assists in the healthy adjustment of individuals who are experiencing stressful events and as such, should be considered in any theory concerning adaptation. To date, Taylor has investigated the utilization of positive illusions in coping with AIDS (Schneider, Taylor, Hammen, & Kemeny, 1991; Taylor, Kemeny, Aspinwall, & Schneider, 1992; Taylor et al., 2000); breast cancer (Dunkel-Schetter, Feinstein, Taylor, & Falke, 1992; Taylor, Falke, Shoptaw, & Lichtman, 1986; Taylor, Lichtman, & Wood, 1984; Wood, Taylor, & Lichtman, 1985); violence (Collins, Taylor, & Skokan, 1990); adjustment to college (Aspinwall & Taylor, 1992); marital discord (Buunk, Van-Yperen, Taylor, & Collins, 1991); and the deliberation and implementation of personal goals (Taylor & Gollwitzer, 1995). In examining how individuals utilize positive illusions in coping with traumatic events, Taylor and her colleagues have used interview protocols, as well as various personality measures, which assess factors such as the individual's locus of control, illusion of control, dispositional optimism, self-esteem, perceived vulnerability to negative events, mood, and the use of upward and downward social comparisons (see studies by Aspinwall & Taylor, 1992; Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Taylor & Gollwitzer, 1995; Taylor, Lichtman, & Wood, 1984; Taylor & Lobel, 1989; Wood, Taylor, & Lichtman, 1985, for different methodologies).

The cognitive adaptation theory proposed by Taylor (1983, 1989; Taylor & Brown, 1988) delineates three important themes in a person's attempt to adapt to a stressful event: (a) a search for meaning, (b) an attempt to regain a sense of mastery, and (c) an attempt to restore self-esteem through processes of social comparison. Taylor and Brown have concluded that in making a successful adaptation, mentally-healthy individuals characteristically manifest three "pervasive, enduring, and systematic" (p. 194) illusions, namely, (a) unrealistic optimism, (b) exaggerated perceptions of control or mastery, and (c) unrealistically positive self-evaluations. Taylor and Brown describe illusions as a major component of cognitive restructuring in which facts may either be distorted in order to yield a more positive position for the individual, or at times, have no factual basis at all. Positive illusions have been shown to play an important role in meeting the criteria commonly associated with mental health, namely the ability to hold positive attitudes toward the self, to care for and about others, to be creative and productive in one's work, and to grow, develop, and self-actualize especially in response to stressful events. In a discussion regarding effective coping resources, Folkman and Lazarus (1984) have strongly supported the importance of viewing oneself positively, stating that positive beliefs "serve as a basis for hope and . . . sustain coping efforts in the face of the most adverse conditions" (p. 159).

Taylor's theory has provoked an interesting debate as to what constitutes "mental health", and how this should be measured. Jourard and Landsman (as cited in Taylor & Brown, 1988) have stated that: "The ability to perceive reality as it 'really is' is fundamental to effective functioning. It is considered one of the two preconditions to the development of [the healthy personality]" (p. 75). Supportive of this position are many others who maintain that successful adaptation involves individuals having realistic, and accurate perceptions of the world around them, and making decisions based on that information (Haan, 1977; Vaillant, 1977; Schulz, 1977; Jahoda, 1958; Erikson, 1950; Maslow, 1950; Allport, 1943; Rogers, 1957; as cited in Taylor & Brown, 1988; Colvin & Block, 1994a).

In a recent article which supports this position, Colvin and Block (1994a) assert that the theory proposed by Taylor and Brown flies in the face of

traditionally held views of mental health, and they refer to a statement made by Copleston (as cited in Taylor & Brown, 1988) :

According to Western philosophical tradition spanning more than 20 centuries, the unique quality of humankind is the ability to engage in rational, adaptive thought and to distinguish the real from the apparent. (p. 3)

Social psychologists such as Festinger (1954), Heider (1958), Kelley (1967), and Trope (1979) have also identified the need of individuals to seek accurate information. However, in a summary of research findings done by Taylor (1983; Taylor & Brown, 1988), she strongly challenges the notion that an accurate perception of reality is a basic criterion for mental health, and mild distortions in thinking may not only be adaptive, but unavoidable. In support of her position, Chaiken, Giner-Sorolla, and Chen (1996) have suggested that "even though a person may be driven to seek accuracy, the actual result of processing may fall short of this goal" (p. 557). They point out that in attempting to attain accuracy, the individual must have the capacity to process systematically, have enough information about the issues, and also have the opportunity to concentrate on the message. In situations where ambiguity is high these objectives may be very difficult to achieve.

This position can be extended from worldviews to self-views. For example, in regards to accuracy about oneself, Brown and Dutton (1995) have stated:

Our analysis leads us to conclude that instead of possessing accurate self-views, most people possess overly positive self-views. This occurs, in large part, because people do not characteristically seek accurate information about themselves; they preferentially seek and accept, as valid, positive information . . . we believe that under many circumstances these tendencies are assets, not liabilities. This is the case because people are often focused on process, not outcomes, and because positive self-views are often as important to success as is ability per se. (p. 1294)

From this ongoing debate regarding positive illusions, the first set of questions that concern this study emerge. In regards to positive illusions and coping they are: (a) to what extent are positive illusions present in a population which is currently experiencing a work-related stressor, and (b) to what extent are positive illusions related to appraisals (e.g., threat, challenge, harm, benefit, and self-efficacy), behaviors (e.g., coping strategies), and perceptions about work, that lead to successful adaptation?

In addition to these initial exploratory questions, several others concerning the effect of the level of positive illusions on the actual measurement of coping are also of interest: (a) do positive illusions (such as self-enhancement, unrealistic optimism and exaggerated perceptions of control) bias an individual's self-report on measures of coping, and as such act as a nuisance variable, and (b) does the extent to which one holds these positive illusions affect the frequency and type of inferences (about the self, others, and the situation) that emerge when considering a stressful event retrospectively, and (c) does this in turn influence the reliability of item-response on a coping inventory over time? These latter questions concerning coping measurement will now be addressed.

In exploring an individual's response to change events, coping research has typically relied on self-report measures, such as stress and coping inventories, to understand the processes by which individuals respond to, and adapt to stressful situations. Some complaints about the coping research have been its tendency to measure single events and to make inferences about the process of change from these data (Aldwin, 1996). Other criticisms have pointed to confusing results, circular arguments, and the view that coping inventories "render an incomplete and distorted portrait of coping" (Coyne & Gottlieb, 1996, p. 959). In response to coping process research over the past several decades, which Watson and Hubbard (1996) have described as "puzzling, paradoxical, or disappointing" (p. 739), it has been suggested that coping models must explicitly recognize the importance of both situational and dispositional influences on coping. By doing so, the "flexibility and consistency" of coping responses can be better explained.

In the introduction to a series of articles on coping, Suls and David (1996) summarize three generations of coping research: the first generation which

emphasized the dispositional nature of coping; the second which downplayed dispositional importance and emphasized the person-environment interaction known as the coping process; and the third, more recent approach, which emphasizes the need to consider both the structure (dispositional factors) and the process of coping together. This latter generation of coping research which appears to have gained more popularity over the last decade, has been generated from concerns regarding the low priority given to dispositional measures in the process approach, and the disappointing nature of research in the process model.

In support of this third generation of coping research, Watson and his colleagues (Watson & Hubbard, 1996; Watson & Tellegen, 1985) have successfully demonstrated that pervasive personality traits can predispose a person to experience varying levels of positive and negative mood or affect. Dispositional affect, in turn, has been shown to be significantly correlated with coping styles. Two reasons they offer in explaining dispositional influences on coping are: (a) dispositional differences have important implications for the intrapsychic and interpersonal resources that are available to the person who is stressed, and (b) a study done by Costa, Somerfield, and McCrae (1996) which concluded that coping responses do not differ fundamentally from other cognitive, affective, and behavioral responses (as cited in Watson & Hubbard, 1996). As such, Watson and Hubbard feel that there is strong evidence that broad dimensions of personality are ultimately associated with certain preferred modes of coping. Specifically, Watson and Hubbard have identified dispositional positive and negative affect as two such dimensions worthy of consideration.

In the past, research on dispositional affect and stress has focused primarily on the dimension of negative affect. One important reason for this is the apparent tendency of negative affect to inflate self-report measures of stress and strain. Watson and Tellegen (1985) have underlined their belief that negative affect acts as a strong nuisance factor in health research, "one that taps psychologically important but organically spurious variance in physical symptom measures" (p. 249). In support of this, a number of studies have shown that self-report measures of stress and strain do not correlate with actual health outcomes (Brief, Burke, George, Robinson, & Webster, 1988; Chen & Spector, 1991; Depue & Monroe, 1986; Watson & Pennebaker, 1989). Positive affect, on the

other hand, has been shown to predispose individuals to viewing situations in a positive light, and as a result, contribute to a person's motivation to accomplish goals and tasks (Watson & Hubbard, 1996). While positive affect may have similar confounding effects as negative affect, these appear to be less understood and have been addressed only minimally in the research.

The dispositional tendency of individuals to demonstrate positive affect, and the documentation of numerous benefits associated with positive affect (e.g., prosocial behavior, job satisfaction, increased motivation to accomplish goals) would appear to give support to the adaptiveness of positive illusions which Taylor (1983, 1989) has clearly described as "enduring, pervasive, and systematic." Furthermore, a propensity towards positive or negative affect may be a personality factor that could subsequently influence an individual to appraise particular events as either threatening or challenging. The strength of the relationship between positive affect and positive illusions has not been explored, although there are some references linking the two (Avia, 1997; Heath & Jourden, 1997; Taylor, Wayment, & Collins, 1993; Watson & Hubbard, 1996). Interestingly, Taylor and Armor (1996) have questioned this dispositional link in regards to positive illusions and affect, emphasizing instead situational factors in the stress-coping process, and the conceptualization of positive illusions more as a coping strategy. They stated that positive illusions "is not a personality style so much as it is a set of mentally healthy responses to trying situations that the majority of people are able to muster under some circumstances, and that most people are equally likely to put away under others" (p. 892).

Suls and David (1996) have challenged Taylor and Armor's position and propose that not only can positive illusions be considered within the context of individual differences, but that they can also be considered an outcome of coping. Sulz and David have suggested that the problems in defining positive illusions rests with Taylor and Armor's definition which states that positive illusions are only "modest" departures from reality. As a result, Sulz and David have called for more empirical attention in regards to positive illusions in order to better define "modest departures", as well as their role in affecting coping response and adaptation.

Therefore, it would appear that any research which tries to examine an individual's response to stressful, or traumatic events, would benefit from the incorporation of ideas and findings from the theories discussed above concerning illusions, coping, and dispositional affect. This debate regarding coping and the relative importance of dispositional compared to situational factors has importance, perhaps, in helping to explain some of the criticisms aimed at coping measurement (e.g., confusing results, circular arguments, and the view that coping inventories render an incomplete and distorted portrait of coping). For example, the adaptiveness of positive illusions is ultimately demonstrated in the person's choice of effective coping strategies, while its proposed nature as "enduring and pervasive" may be best understood by exploring whether or not illusions are significantly related to dispositional positive affect. If there is a relationship between positive illusions and positive affect, an important question regarding measurement might be "to what extent do positive illusions influence item response (through bias or distortion) on a self-report measure, for example, one that measures coping response?." In much the same way that negative affect has been shown to inflate self-reports of stress and strain, positive illusions (if related to positive affect) may result in the minimization of stress and strain reports.

Statement of the Problem

How are the coping processes of individuals who use distortion, or hold positive illusions, best understood and ultimately measured? There appears to be agreement in the literature that the process of coping involves numerous phenomena, and that the task of examining and measuring this process is very complex. As discussed above, coping may involve the use of a number of different strategies depending on the individual's appraisal of the event, that is, whether the event is viewed as either a threat, challenge, or as having some harm-loss or beneficial effect. The following sections discuss some of the issues regarding coping measurement.

Dispositional Factors in Coping Measurement

Coping measurement has typically relied on self-report and the use of coping inventories, one of which is the Ways of Coping Questionnaire (WCQ; Folkman & Lazarus, 1988b). Recently, there have been strong criticisms aimed at coping checklists in general. For example, Coyne and Gottlieb (1996) have complained that the checklists are grounded in too narrow a conception of coping, that they cannot capture the full range of thoughts and actions that mediate between the stressful event and the outcome, that psychological processes significantly interfere with the subject reporting accurately on the checklist, and that there is too much inconsistency in the interpretation of coping scales (see Coyne & Gottlieb, 1996; Coyne, et al., 1993; Gignac & Gottlieb, 1996; Gottlieb & Gignac, 1996, for studies that support these assertions).

Perhaps the most disturbing criticism is that Coyne and Gottlieb have challenged the very assumption that the WCQ does in fact measure the construct that Folkman and Lazarus (1985) intended it to, that is, a transactional process of coping. In a series of interesting studies, Coyne and his colleagues (Coyne, et al., 1993; Gignac & Gottlieb, 1996; Gottlieb & Gignac, 1996) compared respondents' descriptive narratives of a stressful event to their answers on a coping checklist done immediately following the writing of their narrative. Coyne and Gottlieb state that their findings demonstrated that "the structure imposed by a checklist assessment of coping only fits some of the people some of the time" (p. 973). Of particular interest is an idea expressed by Coyne and Gottlieb that people may not always follow through a clear sequence of primary and secondary appraisal and that sometimes they just "muddle" through. If this is the case, how does one understand the "muddling", and to what extent does a coping inventory reflect this process? Does the "muddling" reflect a response where individuals fall back on some other automatic cognitive process to assist when their immediate appraisals are not clear or attended to? Do the inventories in fact minimize, or possibly ignore important differences between individuals in terms of their cognitive engagement in understanding their stressful events and their response to them?

As a consequence of these stated concerns, Coyne and Gottlieb have called for the "contextualization of the study of coping, which involves specifying meaningful patterning and regularities in person-environment transactions" (p. 971). In addition, they maintain that it is essential that future researchers consider a broader range of methods for assessing coping, including semi-structured interviews, diaries, customized checklists that fit their hypothesis and objectives, and most importantly traditional trait measures. In addressing the general resistance of researchers to do so, Coyne and Gottlieb refer to Folkman and Lazarus's (1984) position regarding trait measures:

[Folkman and Lazarus] suggest that a transactional perspective requires a process orientation in which the focus is on what the person actually does in particular situations, how these thoughts and actions are responsive to context, and how they shift as stressful episodes unfold . . . The use of coping checklists is construed as epitomizing a transactional perspective whereby the application of personality trait measures is the antithesis. (p. 971)

The consideration of personality variables as a primary factor, rather than just a confounding variable, is considered by the authors as a way of enriching the present knowledge regarding coping, and they caution against the continuing rejection of trait theory in the coping process literature.

The Nature of Positive Illusions

How, then, does this debate relate to the individual who utilizes positive illusions to cope with traumatic events? As previously mentioned, Taylor (1983, 1989) has described positive illusions as "enduring, pervasive, and systematic", and has suggested they function more as a coping strategy. Taylor and Armor (1996) have maintained that individual differences in personality play little or no role when considering the formation of positive illusions and stated that "situational factors can explain 100% of the variance in the degree to which people demonstrate positive illusions" (p. 891). However, others strongly oppose this position taken by Taylor (Coyne & Gottlieb, 1996; Suls & David, 1996;

Watson & Hubbard, 1996). Considering that unrealistic optimism is considered by Taylor to be an important component of positive illusions, these criticisms may be justified in light of studies, for example, on dispositional optimism (Scheier & Carver, 1985, 1987; Scheier, Matthews, Owens, Magovern, Lefebvre, Abbott, et al., 1989; Scheier, Weintraub, & Carver, 1986). The same may be said about enhanced self-perception (another component of positive illusions) and its relationship with self-esteem. In relation to positive illusions, however, Taylor does not appear to have moved from her position. Recently, even Lazarus (1993) has acknowledged the research of Scheier et al. (1986) which explored how the tendency to be either optimistic or pessimistic influenced coping response, and as a result, Lazarus has himself expressed the continued need to explore how the choice of coping strategies are influenced by the social context, personality variables, or both.

Therefore, two important questions emerge from these discussions: (a) where does the construct of positive illusions fall on the continuum that exists between the dispositional perspective as suggested by Watson and Hubbard (1996) and the social perspective proposed by Taylor and Armor (1996), and (b) how does the construct of positive illusions ultimately affect the choice of coping strategies and subsequently, their measurement? In the final analysis, it is likely that the components that make up the construct of positive illusions fall within the two domains, and that positive illusions are important factors in the coping process. Of course, the measurement of positive illusions is another issue in and of itself.

Automatic Cognitions and Self-Schemas

Another concern of Coyne and Gottlieb's (1996) that has relevance for this study, is the fact that traditional coping measures do not pick up on mechanisms such as automatic thoughts, behaviors, and habits. In fact, Lazarus and Folkman (1984) have excluded these from their definition of coping, including only those responses that require "effort." In a review of the literature, Coyne and Gottlieb support their argument by referring to concepts such as pervasive worldviews (Axelrod, 1984), negative automatic thoughts (Beck, 1967; Haaga, Dyck, & Ernst, 1991), defensive pessimism (Cantor & Norem, 1989), and anticipatory coping, as

examples of cognitions which may not require specific "effort" but which may still have a significant impact on the way an individual copes with a situation. Coyne and Gottlieb have suggested:

An adequate theory of coping requires that we develop an understanding of anticipatory coping and patterns of automatic response and routines, not just deliberate strategies constructed in the midst of a particular stressful episode (p. 964).

To what extent, therefore, should automatic processes be considered in the measurement of coping? The influence of people's judgment on the causes and meanings of behavior has been explored by Nisbett and Ross (1980). They have stated that in trying to make sense of events individuals use "knowledge structures", and it is within these structures that theories and beliefs about self and others rest. In the case of a self-schema, the beliefs about oneself (for example in the areas of self-esteem, perceived control, and self-efficacy) can be powerful determinants in shaping one's behavior, despite situational deterrents. However, while Nisbett and Ross have described people as intuitive scientists who are gifted and who are generally successful in their causal explanations, they point out that at times a person's attempt to understand, predict, and control events in the social sphere may be seriously compromised by specific inferential shortcomings. It has been demonstrated that although we value accuracy in our judgments about people and events around us, our causal inferences have the potential to demonstrate significant error and bias, especially as the ambiguous nature of the event increases.

If this is so, to what extent could an overly-positive self-schema (as perhaps that demonstrated through the expression of positive illusions) shape and potentially bias the response of an individual who is asked how they coped with a particular stressful event in the past? Are, in fact, the responses indicated by a coping inventory a realistic and accurate account of how that person coped, or is it more a product of a relevant self-schema attached to act of coping. If the latter case is true, then dispositional factors that make up a component of that

self-schema are indeed relevant to the study of coping. Coyne and Gottlieb (1996) point out the following:

Recognizing that respondents' recall of how they coped may be imperfect, investigators have nevertheless assumed that responses to coping checklists are relatively accurate reflections of what respondents actually thought and did in stressful episodes. We maintain that coping is not as rational and deliberate as the narrative imposed by checklists suggests. (p. 980)

Summary

Given the concerns expressed in the theoretical papers and research findings regarding coping and coping measurement, an important question for this study was "is it methodologically possible to gain a better understanding of the cognitive processes that occur as a person responds to a coping checklist?" For example, in the transactional process it is assumed that both "realistic" self and situational appraisals occur and interact simultaneously and then have a direct effect on the choice of coping strategies made by the individual (Folkman & Lazarus, 1984). While this process may occur as described while the individual is actually coping with a stressful event, is it possible that with the passage of time, that with particular individuals under certain conditions, one set of appraisals (either self or situational) prevail when that person is asked to recall how they coped with that same event. Are there individual differences (e.g., those reflected by the extent to which a person engages in illusionary thinking) that influence, or bias, a person to focus more on one set of causal attributions about the event rather than another set (e.g., dispositional rather than contextual inferences) while responding to a coping inventory?

In addition, is it possible that those appraisals might be more strongly influenced by something other than the stressful event, for example, the conditions under which they recall the event (e.g., temporal distance, the level of stress experienced during the actual event, and priming stimuli that assist individuals to recall their experiences). These questions shaped the direction of the present study.

Purpose of the Study

The purpose of the study was fourfold: (a) to explore employees' use of positive illusions in coping with a stressful work event, (b) to better understand the construct of positive illusions and its relationship with other personological and situational factors, (c) to discover how positive illusions, temporal distance, level of perceived stress and a priming manipulation affect the type and frequency of inferences (about the self, others, and the situation) made while responding to items taken from a coping inventory, and finally, (d) to discuss the reliability of using a coping inventory retrospectively.

The construct of positive illusions was operationalized in this study through the combined and separate measurement of the following four components: self-perception, perceived invulnerability, dispositional optimism, and internal locus of control. Taylor (1983, 1989; Taylor & Brown, 1988) has emphasized the first two components (i.e., self-perception and perceived invulnerability) as being central to the concept of positive illusions. However, as many studies of coping and adaptation to traumatic events have also included measures of dispositional optimism (Taylor, & Gollwitzer, 1995; Taylor, Kemeny, Aspinwall, Schneider, Rodriguez, & Herbert, 1992) and locus of control (Taylor & Gollwitzer, 1995; Taylor, Lichtman & Wood, 1984), these components were also included. The inclusion of these latter variables also allowed for some comparison between personality variables considered to be rather stable indices of adaptive functioning (i.e., dispositional optimism and internal locus of control) and the variables suggested by Taylor (1983, 1988) which are viewed as being "flexible" and "situationally responsive" (i.e., enhanced self-perception and perceived invulnerability).

Phase I. In order to meet these objectives, the study was conducted in two parts, or phases. The main purpose of the first phase of the study was to explore to what extent positive illusions interacted with other personological and situational variables in coping with a stressful work event, and also to gather a large, random sample from which a smaller sample was then selected for Phase II. The relationship between positive illusions and variables such as primary appraisal, dispositional affect, self-efficacy, coping strategies, job satisfaction and

occupational climate was explored in Phase I. The construct of positive illusions was examined in two ways: as a total score, or TotPI (which consists of the four measures of dispositional optimism, internal locus of control, perceived invulnerability, and self-perception summed together) and as a component score, CompPI (where the four measures were considered separately).

In addition, Phase I explored to what extent positive illusions were influenced by several situational factors: (a) the stage of organizational change the employee was in at the time of Phase I (i.e., the anticipation of a stressful event, experiencing the impact of the change, or in the period of post-impact after the change event had occurred), and (b) the context of change (i.e., whether the employee experienced the change event individually as in the case of being "bumped", or as part of a group as in the case of a merger). Several personological variables were also examined: (a) age, (b) the number of years in present position, and (c) the number of years of relevant work experience in nursing.

Phase II. This phase of the study explored the inferential reasoning processes that occurred when an individual responded to items on a coping inventory, and how this varied as a function of the level of positive illusions, temporal distance, perceived stress, and a priming manipulation aimed at enhancing recall. The purpose of this part of the study was to explore the extent to which attribution error or bias entered into the process of self-report, and to what extent these factors (i.e., positive illusions, temporal distance, perceived stress, and priming) covaried with the types of inferences made by the respondent. Exploring temporal distance, perceived stress, and priming manipulations enabled the researcher to see if certain conditions increased, or decreased, the reliability of the measure when used retrospectively. How did these retrospective memories and item responses compare to the responses made when the person was actually experiencing the stressful event during Phase I and was employing coping strategies to deal with the event, and to what extent was this retrospective process influenced by potential errors in attribution?

Significance of the Study

This study addressed four important issues. The first issue concerned the construct of positive illusion as a set of variables and its association with other variables demonstrated by way of previous research to be reflective of healthy adaptation. The second issue addressed the reliability of coping measurement which requires the participant to rely on retrospective recall, and the extent to which recall might be influenced by factors such as level of positive illusion, temporal distance, level of stress, and a priming manipulation. The third issue considered the nature of positive illusions and to what extent they are dispositionally anchored, and to what degree they are situationally responsive. The final issue concerned the participants of the study and the lack of research available on the personological (rather than the organizational) effects that occur as the result of downsizing and reorganization within the health care system.

Positive Illusion Construct

Challenges to the premise that healthy adaptation requires a realistic perspective at all times needed to be addressed, as the criterion of "accurate reality orientation" has been a fundamental component of most theories of mental health, and as a consequence, a major component in shaping what is seen as appropriate interventions. Taylor (1983, 1989; Taylor & Brown, 1988) has suggested a major shift in the generally accepted mental health paradigm, and only through systematic research can this paradigm be acknowledged, or rejected.

How to actually measure a participant's utilization of these positive illusions is another important issue. Many studies on coping rely on simple correlations between individual variables, and as such do not allow for a good understanding of constructs which incorporate multiple components (e.g., positive illusions). The discussion of the construct of positive illusions in this study relies on canonical correlations which allows for a better understanding of the structure and strength of associations between sets of variables.

In regards to some practical applications of the theory, much of Taylor's previous research (and that of her colleagues) regarding positive illusions have

used university students or clinical populations (e.g., those with AIDS and breast cancer) as their participants. Positive illusions have not yet been adequately explored within other stressful life domains. For example, positive illusions have not been explored within the context of work where changing conditions, or expectations, are perceived by the employee as stressful and in some cases (depending on the individual's reaction to change), traumatic.

Coping Measure Reliability

Most importantly, there are several disturbing issues concerning the actual measurement of the coping process that were addressed in the study: (a) the variability in stressors, (b) the reliance on retrospective self-report measures, and (c) the arguments concerning dispositional factors in coping research. As coping inventories are used so extensively in research, concerns regarding their reliability must be addressed. In addition, the results of studies such as this one can be extrapolated to other self-report measures which rely on the respondent in a similar way to make use of retrospective memories.

Variability in stressors. In regards to the first issue, Aldwin (1994) has stated that process approaches to studying coping have typically relied on respondents recalling specific, recent events that were perceived as stressful, and recounting their cognitions and behaviors in coping with those events. As a result, Aldwin proposes that the individual differences in coping strategies have been confounded with variability in stressors. To correct this problem, it has been recommended that individuals who are all undergoing a similar stressor be studied. Targeting a hospital population who could, for the most part, all relate to the experience of either anticipated, or actual organization change, allowed this study to draw from a large population in exploring stressors which are more similar.

Another concern regarding variability in reported stressors is the suspicion that people believe they do one thing, while in actual fact they do quite another. This can be a problem when conducting studies in which participants are asked to report on their general coping skills (e.g., "How do you cope in general with a stressful event?"). In order to minimize this error and to improve reliability, Aldwin has again suggested asking respondents to recollect a specific

stressful event, and to recount their cognitions and behaviors in coping with that episode only. This study followed Aldwin's recommendation, by asking respondents to describe the most stressful event associated with downsizing and reorganization within the hospital system.

Retrospective recall. In regards to the second issue, there have been numerous criticisms directed at the tendency of researchers to rely heavily on retrospective inventory data in order to make inferences or predictions about coping (Stone, 1999, 2000). Three specific concerns regarding retrospective recall were addressed in this study: (a) that coping inventories offer only a restricted range of coping strategies, (b) the effects of respondent bias when responding to coping items, and (c) the tendency to choose "what fits" according to a predominate self-theory rather than what strategies were actually utilized.

The first concern is that the coping inventories force the respondent to "adopt a particular theory-saturated form of narrative in thinking about and reporting on the stress and coping processes in their lives" (Coyne & Gottlieb, 1996). As such, the reporting of coping strategies may be restricted and miss critical information about the way in which an individual actually coped with a particular situation. Do coping inventories cover the full range of possible coping strategies or are there techniques or strategies that have been overlooked (e.g., cognitive strategies or automatic thoughts that may be more difficult for a participant to identify on an inventory)? In this study, through the use of a "think-aloud" methodology, participants were free to express ideas which may not be contained on a traditional inventory, thereby adding to our understanding of their recall of coping with a stressful experience, and the types of strategies used. There is no other published study on self-report measures that uses this type of methodology, therefore, this represents a new approach to studying self-report measures.

The second concern has to do with the possibility that certain biases, or heuristics (cognitive short-cuts) may influence why one type of coping item is chosen more often, or rated more strongly, than another, especially over time. While Lazarus has suggested that the choice of coping strategies is the result of "realistic" primary and secondary appraisals that arise from interactions with the stressful event, this study explored to what extent other conditions (perhaps not

so realistic) were affecting the nurse's choice. The extent to which positive illusions influenced the frequency and type of contextual and dispositional inferences was an important question in this study, and again has significance regarding reliability.

And the last concern regarding the reliance on retrospective self-report is that the items selected by an individual may not truly reflect the individual's actual pattern of coping strategies used in the past, but rather may be the result of a dispositional tendency to choose "what fits" according to a relevant personal schema. A good example discussed by Coyne and Gottlieb (1996) concerns the optimistic individual who may respond to the item "I tried to see the bright side of things" as a coping strategy, not necessarily because they used it in the particular situation being considered, but rather because it reflects a desired value orientation concerning being optimistic. Examining the four components of positive illusions allowed for a better understanding of the contribution of the proposed stable elements (i.e., optimism, internal locus of control) with the potentially more flexible elements (i.e., enhanced self-perception, and perceived vulnerability) to item response. The results address the issue that traditional measures cannot be used on their own for understanding these processes.

Dispositional Factors in Coping

The previous concern regarding dispositional factors and recall within the context of coping measurement, overlaps with the third issue concerning dispositional factors in coping research. The "third generation" of coping research has made a significant case regarding the need to consider personality factors that influence the way in which a person may select certain strategies, or adopt certain coping patterns. The case of positive illusions is an interesting one to consider as there is ongoing debate as to whether it is situationally-responsive (Taylor & Armor, 1996) or dispositionally anchored (Coyne & Gottlieb, 1996). Taylor and Armor differentiate between two general approaches to personality: the first concerns "stages, conflicts, or stages through which most, even all people pass, which may be resolved to a greater or lesser extent"; the second concerns "meaningful differences in attributes that discriminate among individuals and are associated with different patterns of responding in important life situations"

(p. 890). The authors respond that the theory regarding positive illusions has more in common with the first approach and that illusions are "statelike" rather than "traitlike."

Of particular interest to this author is the potential relationship between the construct of positive illusions and the empirically demonstrated construct of dispositional affect, more specifically, that of positive affect (Watson & Tellegen, 1985). While the study of negative emotion has dominated the field of research over the last few decades, there is a concern that the study of positive emotion has been neglected (Avia, 1997). The importance of this study is reflected in the need to improve knowledge in the area of positive emotion, to better understand the extent to which it is functional and adaptive, and to explore conditions under which it may act as a nuisance factor in stress research, perhaps in a way that is similar to what has been demonstrated for negative affect.

Employee Response to Organizational Change

Finally, an important practical reason for this study will be the exploration of how hospital employees are presently coping with actual, or anticipated, organizational change. Over the last few years, major financial constraints and changes in the philosophy of health care delivery within the health sector have resulted in the extensive reorganization of hospital personnel. These events have, and will continue to require thousands of health care employees to adjust to numerous changes in terms of routines, physical resources and supplies, work roles, and colleagues. Many employees have been, and will be, required to assume new positions, often with new responsibilities and job descriptions in order to maintain job security. This process of downsizing, common in the corporate world for well over a decade now, has now made its way into the public sector as federal and provincial governments attempt to reduce spending, and streamline services.

How employees actually cope with organizational downsizing at different points in time, and what psychological mechanisms, or coping processes, assist them in adjusting has been poorly addressed in the literature (Kets de Vries & Balazs, 1997). Despite widespread reorganization of the health care system, there are surprisingly few published studies that explore the hospital employee's

ability to cope with numerous position and departmental closures, and mergers (Armstrong-Stassen, 1993; Godfrey, 1994; Golembiewski, Boudreau, Sun & Luo, 1998; Smeltzer, 1994).

While it is fully expected that such changes in the health sector will continue to occur over the next decade, it is imperative that the organization's most important resource, its employees, be considered in this potentially stressful (and for some, traumatic) process. For those who are responsible for supporting and assisting these employees in making the necessary transitions, how and when they could intervene most effectively is of great importance. This study aimed at gaining a better understanding and perspective on some of the factors involved, and to revisit traditional values of "reality orientation" in counselling in an attempt to understand when "illusions" are functional and adaptive.

CHAPTER II:

Review of the Related Literature

Coping

How people respond to and cope with stressful situations has been the focus of literally thousands of research studies. Coping processes, or strategies, have been identified as having an important mediating role between antecedent events that are perceived by the individual as being stressful, and outcomes such as anxiety, depression, psychological distress, and somatic complaints (Billings & Moos, 1981, 1984; Coyne, Aldwin, & Lazarus, 1981; Endler & Parker, 1989, 1990; Pearlin & Schooler, 1978). Suls and David (1996) have summarized three generations of coping research: the first which emphasized the dispositional nature of coping; the second which downplayed dispositional importance and emphasized the person-environment interaction known as the coping process, and the third, more recent approach, which now emphasizes the need to consider both the structure (dispositional factors) and the process of coping together.

According to Suls and David the first generation that focused on coping response was strongly influenced by the psychoanalytic model, and as such equated personality and coping strategies. "Coping was conceived of as defense mechanisms that were unconscious means of dealing with internal sexual and aggressive conflicts" (A. Freud, 1937; S. Freud, 1984/1964, as cited in Suls & David, 1996, p. 712). Suls and David provide a review of subsequent research regarding coping and cite the following authors and their work: trait-like dispositions or styles of coping (Byrne, 1964; Goldstein, 1973); on identifying hierarchical models of defense mechanisms used in coping (Vaillant, 1977); distinguishing between coping and defense mechanisms (Haan, 1963, 1977); the personality variable of "hardiness" (Kobasa, 1979; Kobasa, Maddi, & Kahn, 1982; Kobasa, Maddi, & Puccetti, 1982); and the Type A Coronary-Prone Behavior pattern (Friedman & Rosenman, 1959; Glass, 1977; Matthews, 1982).

The second generation of coping research began several decades ago, and its main impetus came from the work of Lazarus and his colleagues (Coyne & Lazarus, 1980; Lazarus, 1966, 1981; Lazarus, Averill, & Opton, 1974; Lazarus & Folkman, 1984a, 1984b; Lazarus & Launier, 1978). The transactional theory has provided a popular and influential framework over the years for examining an individual's adjustment to stressful events. According to Folkman and Lazarus (1985), stress is defined as "a relationship between the person and the environment that is appraised by the person as relevant to his or her well-being and in which the person's resources are taxed or exceeded" (p. 152). Moving away dramatically from the first generation of coping, Folkman and Lazarus have consistently emphasized the importance of examining the "process" of change (i.e., the changes in stress-related phenomena and one's changing adaptation to events over time) versus the "structure" of change (i.e., stable factors such as personality traits or static features of the environment). Their theory has a phenomenological perspective which implies that the meaning of the event to the person shapes the emotional and behavioral response. However, concerned about some of the negative connotations of assuming a phenomenological stance, they make two strong statements about cognitive appraisals: (a) that appraisals are "generally correlated with reality", and (b) that appraisals have antecedents and consequences and as such can avoid the criticism of circularity (e.g., an appraisal is inferred from what a person says). One problem with this approach appears to rest with the presumption that appraisals are "generally correlated with reality." Considering the substantial amount of literature concerning cognitive error and bias in formulating causal attributions about daily events (Fiske & Taylor, 1984; Nisbett & Ross, 1980) there appears to be a weak link in the transactional coping process proposed by Folkman and Lazarus (1985).

The third generation of coping research, which has been gaining popularity over the last decade, has arisen from concerns regarding the low priority given to dispositional measures in the process approach and the disappointing nature of research in the process model (Suls & David, 1996). Some complaints of previous research concerning coping have been about its tendency to measure single events and to make inferences about the process of

change from these data (Aldwin, 1996). Other criticisms have pointed to confusing results, circular arguments, and the view that coping inventories "render an incomplete and distorted portrait of coping" (Coyne & Gottlieb, 1996, p. 959). In response to coping process research over the past several decades, which Watson and Hubbard (1996) have described as "puzzling, paradoxical, or disappointing" (p. 739), it has been suggested that coping models must now explicitly recognize the importance of both situational and dispositional influences on coping. By doing so, the flexibility and consistency of coping responses can be better explained.

The next section will describe in more detail the transactional theory proposed by Folkman and Lazarus (1980) in order to provide a context for some of the objectives of this study (i.e., the relationship of positive illusions to coping strategies and coping measurement most often used, and referred to, in coping research). The association between positive illusions and the third generation of coping research will be presented later in the literature review.

Cognitive-Transactional Theory

One of the researchers most commonly associated with the second generation of coping research concerning the "process" of coping, is Lazarus, along with his many colleagues (Coyne & Lazarus, 1980; Lazarus, 1966, 1981; Folkman and Lazarus 1980, 1985; Lazarus, Averill, & Opton, 1974; Lazarus, Coyne, & Folkman, 1982; Lazarus & Folkman, 1984a, 1984b; Lazarus, Kanner, & Folkman, 1980; Lazarus & Launier, 1978). The cognitive-transactional theory of Folkman and Lazarus has dominated the coping research and their two scales (the Ways of Coping Checklist [WCC] and the Ways of Coping Questionnaire [WCQ]) are widely used. The transactional theory focuses on the processes of cognitive appraisal and coping responses made by an individual who is facing a stressful event. Cognitive appraisal refers to evaluative cognitive processes that intervene between the encounter and the reaction, and are referred to as primary and secondary appraisals. These evaluative appraisals acknowledge the existence, or absence, of environmental and personal resources (primary appraisal), and the individual's ability to choose appropriate coping responses (secondary appraisal).

Folkman and Lazarus (1985) have suggested that coping has two major functions, namely, "the regulation of distressing emotions [emotion-focused coping] and doing something to change for the better the problem causing the distress [problem-focused coping]" (p. 152). Problem-focused coping describes cognitions or actions taken by the individual to change for the better the problem causing the distress, whereas, emotion-focused coping involves cognitions and actions aimed at reducing, or regulating, the distressing emotions that occur during a stressful encounter. Folkman and Lazarus (1980) have found in their work that most individuals will use both categories of coping responses, with problem-focused coping occurring most often in situations that are appraised by the individual as changeable, while emotion-focused coping is utilized most often in situations appraised to be unchangeable. Lazarus is careful to point out the following regarding these two categories of coping strategies:

Of the two functions of coping, problem-focused and emotion-focused, there is a strong tendency in western values to venerate the former and distrust the latter . . . Nevertheless, there is ample evidence that under certain conditions--particularly, those in which nothing useful can be done to change the situation--rational problem-solving efforts can be counterproductive, even likely to result in chronic distress when they fail; then emotion-focused efforts would offer the best coping choice. (as cited in Collins, Baum, & Singer, 1983, p. 238)

Lazarus (1992) summarizes the metatheoretical principles that are most representative of the construct of coping as a process. First of all, coping thoughts and actions under stress must be measured separately from their outcomes in order to examine, independently, their adaptiveness or maladaptiveness (e.g., the use of denial may, or may not be adaptive depending on the context). Related to this is the belief that what a person does to cope depends on the context, and that this will change over time because what the person attends to also changes over time. Next, coping measurement must describe what the individual is thinking and doing in an effort to cope with stressful encounters, and that this needs to be repeated over time and across different stressful situations. Also,

coping must be seen as an individual's "ongoing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 237). Finally, Lazarus has stated that there are at least two major functions of coping: problem-focused in which the individual acts directly on the environment, or himself, and emotion-focused in which there is a change in the way the environment is attended to, or the relational meaning of what is happening is altered.

Research reviewed by Lazarus (1992) regarding coping processes have shown that people tend to use multiple strategies when dealing with a stressful encounter (Byrne, 1961); some strategies are more stable across encounters compared with others, for example, positive reappraisal compared to seeking social support (Folkman & DeLongis, 1986; Folkman & Dunkel-Schetter, 1986); coping changes from one time to another in any given stressful encounter (Folkman, 1985); in situations viewed as uncontrollable, or "refractory to change", emotion-focused coping predominates whereas problem-focused coping predominates when the situation is viewed as controllable (Folkman & Lazarus, 1980; Lazarus & Folkman, 1987); and finally, that "coping is capable of mediating the emotional outcome, that is, it changes the emotional state from the beginning to the end of the encounter" (Lazarus, 1992, p. 239).

Coping and Appraisal

Given that people can differ considerably in their interpretation and reactions to the same event, it is important that the cognitive processes that intervene in the interpretation of a stressful event receive careful attention. The proverb "one man's meat is another man's poison" reflects the potential of a single event to have different cognitive appraisals by two separate individuals. Appraisal of a situation, as described by Grinker and Spiegel (as cited in Folkman & Lazarus, 1984), "requires mental activity involving judgment, discrimination, and choice of activity, based largely on past experience" (p. 25). While Folkman and Lazarus (1984) acknowledge that appraisal determines emotions and can be immediate in response to strong, or subtle, stimuli, they have suggested that attention be placed more on the complex, meaning-related cognitive activity.

Folkman and Lazarus (1988) have stated that two types of appraisals occur when an individual faces a stressful event: primary and secondary. These appraisals are interdependent and occur simultaneously, and it is through these cognitive appraisal processes that the person evaluates the significance of what is happening for his or her well-being. Primary appraisal occurs when a person determines whether the situation is (a) irrelevant, that is, of no significance to the person (b) benign-positive i.e., a good outcome is indicated, or (c) stressful, that is, that the situation is characterized by threat, challenge, or harm-loss.

According to Folkman and Lazarus (1985) threat refers to the potential for harm or loss that have not yet occurred but are anticipated by the individual. Emotions associated with threat typically involve negative emotions such as fear, anxiety, and anger. Challenge-benefit refers to the potential for growth, mastery, or gain, and is typically characterized by pleasurable emotions such as eagerness, excitement, and exhilaration. Harm-loss refers to injury already done, as in harm to a friendship, health, or self-esteem. Folkman and Lazarus (1984) point out that these primary appraisals are not "poles of a single continuum" (p. 33) and can occur simultaneously, that is, that a person can experience both emotions of challenge and threat together.

Secondary appraisal occurs when an individual evaluates available resources, and then decides on what course of action they could take. Folkman and Lazarus (1984) describe secondary appraisal as "a complex evaluative process that takes into account which coping options are available, the likelihood that a given coping option will accomplish what it is supposed to, and the likelihood that one can apply a particular strategy or set of strategies effectively" (p. 35). They are clear to distinguish between the two actions described in this definition: the knowledge of what must be done to achieve a particular outcome, and the belief that one has the capabilities to carry out the particular action required. Referring to Bandura's work (1977, 1982; as cited in Folkman & Lazarus, 1984) on self-efficacy, they label these actions "outcome expectancy" and "efficacy expectation" respectively. They are in agreement with Bandura who believes that self-efficacy judgments strongly influence the kinds of activities people engage in, how much effort they will expend in an activity, and how long they will persist when faced with obstacles.

While Lazarus has been very clear in his convictions that appraisals are based on "reality", he has gone so far as to state that cognitive appraisal differs significantly from attributions of causality:

Attributions of causality are cold perceptions or cognitions; they are simply statements about how things work. They are relevant to emotions, but not equivalent to cognitive appraisal, which adds the dimension of the significance of the of the attribution for the person's well-being. (p. 272)

It is difficult to understand how Lazarus is able to separate appraisals from causal attributions. Causal attribution is the process by which people form causal interpretations about events that occur around them. The basic tenets regarding attribution is that it is a pervasive activity; that it can occur spontaneously, or it may involve more deliberate inferential or deductive activities; that attributions are often not accurate; that people often behave according to these perceptions and their understanding of them; and that attributional activity serves the needs of human adaptation (Harvey, Weary, & Stanley, 1985). It would seem that in many ways, appraisal shares much in common with attribution. If so, then Lazarus's claim of appraisals being grounded in "reality" may, in fact, be "unrealistic" due to the demonstrated propensity of attributions to involve errors and bias especially in ambiguous situations.

Coping and Emotion

Folkman and Lazarus (1985) have proposed that a person's emotional response is the product of the initial appraisal of the stressful encounter, and as such may have diagnostic value. As appraisals change, so does the individual's emotional response. As it has been shown that heightened emotions generally interfere with effective problem-solving, Folkman (1984) has suggested that the effectiveness of problem-focused responses depends on the success of emotion-focused coping. Therefore, in response to these dynamics, coping serves the function of responding both cognitively and affectively to the perceived stress in

an effort to manage the event. In a study of emotion and coping, Folkman and Lazarus (1985) examined the changing emotions and coping patterns of college students faced with a mid-term examination. Their findings suggest that stressful encounters need to be viewed as dynamic, unfolding events, during which individuals may experience contradictory emotions and states of mind, and that these events require that coping be acknowledged as a very complex process in which individuals use multiple combinations of coping responses.

Coping is thought to affect emotion in two ways. The first way concerns emotion-focused strategies and consists of cognitive coping processes that change only the way the event or relationship is attended to or interpreted, for example, through denial, psychological distancing, and reframing. The second way concerns problem-solving strategies which brings about an actual change in the event or relationship. Lazarus (1991) differentiates between appraisal and cognitive coping in that appraisal is an "evaluation of what might be thought or done in that encounter", while coping refers "to what a person thinks and does to try to manage an emotional encounter" (p. 113). It has also been suggested that "appraisals are more strongly related to emotional experience than are causal attributions, and they [results of their present research] suggest that appraisal mediates between attribution and emotion" (Smith, Haynes, Lazarus, & Pope, 1993, p. 927). In regards to appraisal, coping and emotion, Lazarus (1991) states the following:

The view I am proposing is that, although coping does indeed flow from emotion and is often directed at the regulation of emotional distress (as in emotion-focused coping), [coping] also directly follows an initial appraisal of harm, threat, or challenge and can modify the subsequent appraisal, thereby changing or even short-circuiting the emotional reaction (cf. Lazarus & Alfert, 1964; and Opton, Rankin, Nomikos, & Lazarus, 1965). The term short-circuiting implies an analogy to an electric current that has been shunted somewhere else. (p. 113)

A study by Lazarus and Folkman (1988) supported the idea expressed above. Looking at stressful events retrospectively, participants who had used

either emotion-focused or problem-focused coping strategies, later reported an improvement in their emotional state as the stressful event progressed towards resolution. They found that negative emotions decreased (e.g., anger and anxiety), as more positive emotions increased (e.g., happiness and confidence). In another study, Folkman and Lazarus (1988) assessed individuals' emotional states at the beginning and end of a number of stressful situations. The study was retrospective and found that coping strategies such as planful problem-solving and positive reappraisal were significantly associated with the respondent's report of their stress being satisfactorily resolved. Strategies such as confrontive coping and distancing, however, were associated with unsatisfactory outcomes. Their findings were later supported by Bolger (1990) who "obtained findings that strongly supported the proposition that coping plays a causal, mediational role in the emotional outcome" (as cited in Lazarus, 1992, p. 6).

Coping and Control

Cognitions regarding control can be considered as either: (a) cognitions regarding the environment or event, or (b) cognitions regarding one's interactions with the environment or events (self-efficacy). Folkman (1984) has stated that generalized beliefs about control (e.g., locus of control) influence primary appraisal. Personal control and its relationship to stress has received much attention and has been associated with outcomes such as feelings of competence and mastery (Perlmutter & Monty, 1977), positive feelings regarding achievement outcomes (e.g., Weiner, 1985), more positive health behaviors (Strickland, 1978) and lower levels of depression (Seligman, 1975).

Folkman (1984) has stated that in most stressful situations both problem-solving and emotion-focused coping are utilized by the individual. However, it has been shown in situations perceived by the individual as controllable, that problem-focused coping strategies are most often utilized, while emotion-focused coping strategies are primarily chosen when the situation is deemed uncontrollable. It has also been suggested that in very stressful situations the use of emotion-focused coping may be initially undertaken to deal with high emotions, which then allows the individual to more effectively utilize problem-solving responses (Folkman, 1984).

The concept of locus of control was first developed by Rotter (1966) and was based on his social learning theory. According to the theory, an individual's apparent failure to respond to reinforcement contingencies was result of a "generalized expectancy" that their actions would not lead to the attainment of rewards or the avoidance of punishment. Originally designed as a unidimensional scale, Rotter's Internal-External Locus of Control measured an individuals tendency to either view situations as ones in which they could exercise some control (internal) or ones in which they could not (external). Since the time of the original scale, it has been criticized for its relationship with social desirability, confounding different types of locus of control, and for its difficult reading level (Nowicki & Duke, 1973). As a result, other scales have emerged to take its place (e.g., Levenson's Locus of Control, 1981; Nowicki & Strickland's ANS-IE, 1973). Levenson attempted to correct the weaknesses in the Rotter scale by developing a multidimensional scale that measures internal locus of control , powerful others and chance.

A general review of findings regarding the concept of locus of control has demonstrated the adaptiveness of holding a generalized belief of internal locus of control. This is manifest in the tendency of internals to seek situations in which control is possible (Kabanoff & O'Brien, 1980); the tendency for internals to be more sensitive to information regarding their performance (Krolick, 1979); the tendency for internals to seek new information more actively when that information has personal relevance. They also use information better, and are more concerned with information than with the social demands of the situation (Phare, 1976). Internal locus of control has also been shown to be negatively related to anxiety (Archer, 1979). Within organization settings, Spector (1982) has stated, based on findings, that internals appear to exhibit greater personal career effectiveness, exert greater effort, perform better on the job as long as they perceive their effort will lead to valued rewards, and demonstrate greater job satisfaction.

Coping and Optimism

Optimists have been defined as those who "tend to be favorable in their outlook [and who] expect things to go their way, and generally believe that good rather than bad things will happen to them." (Scheier & Carver, 1985, p. 219). Dispositional optimism has been further defined as a stable personality characteristic in which the person holds generalized expectancies of positive outcomes (Scheier & Carver). Research concerning the nature and adaptiveness of optimism is extensive, and it has recently been associated with actual physical well-being (Aspinwall & Taylor, 1992; Litt, Tennen, Affleck, & Klock, 1992; Scheier, Matthews, Owens, Magovern, Lefebvre, Abbott, et al., 1989; see Scheier & Carver, 1992, for a further review). In regards to coping and optimism, it has been suggested that optimists differ from pessimists in the types of coping strategies used, and in their general coping tendencies over time. For example, Scheier, Carver, and Bridges (1994) found that optimists used more problem-focused strategies, and when this was not possible, they used more adaptive emotion-focused strategies such as acceptance, use of humor, and positive reframing. Furthermore, they suggested that optimists hold positive expectancies for their future compared with pessimists, and are more likely to make use of social support (Scheier & Carver, 1985).

Aspinwall and Taylor (1992) conducted a longitudinal investigation of the impact of individual differences and coping on college adjustment and performance. They found a direct effect of optimism on adjustment; however, most of the predicted effects were mediated by coping methods such as the nonuse of avoidance coping, greater use of active coping, and greater seeking of social support. After two years, it was self-esteem and control that predicted greater motivation and higher grades.

Taylor, Kemeny, Aspinwall, Schneider, Rodriguez, and Herbert (1992) have also explored optimism, coping, psychological distress, and high-risk sexual behavior among gay men at risk for acquired immunodeficiency syndrome (AIDS). They found that dispositional optimism was associated with less distress, less avoidant coping, positive attitudes as a coping strategy, and fewer AIDS-related concerns. In this study, men who knew they were seropositive for HIV were significantly more optimistic about not developing

AIDS than men who knew they were seronegative for HIV. This AIDS-specific optimism was related to higher perceived control over AIDS and to active coping among seropositive men only and to health behaviors in both serostatus groups. They concluded that optimism is psychologically adaptive.

Coping and Self-Efficacy

Self-efficacy is yet another construct that assists us in understanding how individuals' perceptions about themselves influence how they subsequently cope with, and adjust to, stressful events. Self-efficacy, as defined by Bandura (1986), refers to "people's judgments of their capabilities to organize and execute courses of actions required to attain designated types of performances" (p. 391). Cervone and Peake (1986) point out, however, that "[j]udgements of self-efficacy are not generalized feelings of success or control, but assessments of how well one can perform in specified settings" (p. 492).

In the secondary appraisal process described by Folkman (1984) factors that influence the individual's ability to make evaluative attributions regarding the situation come into play. Here an individual considers the coping strategy, or strategies, they think would be most effective in dealing with the event, evaluates his or her ability to carry out the coping response, and then considers the outcome. The central concept of self-efficacy is the person's belief that they can produce the desired outcome through taking action. According to some (Beck, 1976; Chwalisz, Altmaier, and Russel, 1992; Sarason, 1975), the strength of one's self-efficacy beliefs will ultimately influence the number of coping strategies an individual chooses in managing the event.

In a study that looked at causal attribution, self efficacy cognitions, and teachers' ability to cope with stress, a model in which self-efficacy mediates the relationship between attributions and coping was compared to a model in which attributions and self-efficacy simultaneously affect coping (Chwalisz, Altmaier, & Russell, 1992). In this study, "burnout" among teachers was found to be associated with emotion-focused coping and low self-efficacy in resolving the problem at hand. Problem-focused coping showed a marginally significant relationship to lower levels of burnout. Causes of events rated as less stable were seen by respondents as more controllable. However, an interesting result of this

study was that the perception of an event as uncontrollable by self, or others, lead to greater levels of self-efficacy. Further analysis demonstrated that these results were due to teachers who saw the event as uncontrollable, but who had an internal locus of control. The only significant causal pathway demonstrated by this study was that higher self-efficacy was associated with greater use of problem-focused coping strategies while low self-efficacy was associated by greater use of emotion-focused coping.

Bandura (1986) believes that self-efficacy judgments influence the kinds of activities people engage in, how much effort they will expend in an activity and how long they will persist when faced with obstacles. According to Hackett and Lent (1992) self-efficacy "is a dynamic aspect of the self-system that is specific to a given performance domain and that interacts complexly with other person, behavior, and environmental factors [and that] self-efficacy expectations are crucial to the initiation and persistence of behavior in all areas of psychological functioning" (p. 433). The measurement of career self-efficacy (Betz and Hackett, 1981) has been useful in examining how an individual views his ability to succeed in, and make changes in, his career situation. The authors have posited that self-efficacy influences career decisions, achievements, and adjustment behaviors of both men and women, and their research has primarily focused on applying self-efficacy theory to career choice and decision making, gender differences and efforts to modify self-efficacy.

Coping Style versus Coping Process

One ongoing debate is between viewing and subsequently measuring coping in terms of "style", compared to viewing and measuring it as a "process." Coping style refers to considering coping as a stable characteristic of the individual, while coping process, refers to the many strategies an individual may employ in response to fluctuating demands of the environment or by the person themselves (Aldwin, 1994).

Lazarus (1993) has stated that an earlier view of coping as a process can be seen in the work of Freud (1933) who conceptualized coping as a defense mechanism in response to external negative events. Interestingly, Suls and David (1996) have characterized Freud's earlier work as characteristic of a dispositional

position, as Freud gave prominence to internal processes rather than situational processes. Haan (1963, 1977; as cited in Suls & David, 1996) who is a proponent of the psychodynamic perspective of coping, makes a clear distinction between coping and defense mechanisms in terms of process. She proposed that the behavior of coping was "flexible and purposive, reality- and future-oriented, and derived from conscious and preconscious elements", while the behavior associated with defense mechanisms are characterized as "rigid, reality-distorting, driven by issues from the past, and derived from unconscious elements" (as cited in Suls & David, 1996, p. 713). Freud may have considered coping to be primarily unconscious, yet the work of others (Billings & Moos, 1981; Folkman, 1984; Folkman & Lazarus, 1980; McCrae, 1984) considered coping to involve primarily conscious styles or strategies.

According to Lazarus (1993), hierarchical and developmental approaches to coping (e.g., Menninger 1954; Haan, 1969; Vaillant, 1977; as cited by Lazarus) grew out of this psychoanalytic formulation and greatly contributed to the trait measures of coping. Personality factors, rather than situational factors, predominate in this dispositional approach to coping where individuals were viewed as having particular styles, or patterns, which were considered to be used more or less consistently in response to different events (Carver, Scheier, & Weintraub, 1989; Ender & Parker, 1989; Fleischman, 1984; Miller & Porter, 1988; as cited in Lazarus, 1993).

During the 1960's, a new approach that emphasized process over structures, or dispositions, emerged and was later developed in the work of others (Leventhal & Everhart, 1980; Meichenbaum, 1977; Moos, 1977; Silver and Wortman, 1984, as cited in Lazarus, 1993). During this period, the view of coping as a process emerged to replace traditional trait or style theories. Most active in this field of coping research was Lazarus and his colleagues (Folkman, 1984; Folkman & Lazarus, 1980, 1985, 1986; Lazarus, 1966, 1991; Lazarus, DeLongis, Folkman & Gruen, 1985). The cognitive-transactional theory of stress (Lazarus, 1966; Lazarus and Folkman, 1984) posited a dynamic transaction between the coping styles of the individual, and the environmental and psychological demands that arise from stressful situations. Their focus was on the kinds of strategies individuals use in various situations rather than on trying to identify,

or type-cast, individuals into particular styles which are consistent across different situations. The theory suggests a dichotomy of coping along behavioral and cognitive dimensions. Coping is hypothesized to be a dynamic and complex process in which coping varies amongst individuals, depending on the situational context, and depending upon the individual differences in their appraisals (Aldwin, 1994).

As discussed earlier in the introduction, there is now a growing trend to consider both style and process variables in understanding how individuals cope with stressful events. Given this situation, a reconsideration of how coping is actually measured needs to occur.

Measurement of Coping

The Ways of Coping Questionnaire-Revised (WCQ) is a widely used coping scale developed by Folkman and Lazarus (1988b) and is a reformulation of an earlier coping checklist (Ways of Coping Checklist; Folkman & Lazarus, 1980). The WCQ contains 66 coping items (e.g. "I prepared myself for the worst."; "I took it out on other people.", "I jogged or exercised.") which the respondent rates on a 4 point scale ranging from 0 (did not apply or not used) to 3 (used a great deal). According to Endler and Parker (1989), the development of their scale (MCI; Multidimensional Coping Inventory, 1989), was in response to the psychometric problems inherent in many of the existing inventories (including the WCQ). Their goal was to create an inventory "with logical (rational) and empirical bases" (p. 846) which would tap into both coping styles and coping process. In addition to the generally accepted dichotomy of problem-focused coping and emotion-focused coping (Billings & Moos, 1981, 1984; Carver et al., 1989; Folkman & Lazarus, 1980, 1985; Pearlin & Schooler, 1978; Wong & Reker, 1984, as cited in Endler & Parker, 1989), Endler and Parker identified through factor analysis a third component in the coping response, that of avoidance-coping. Their approach was that of the interindividual perspective which uses coping scores aggregated over different measurement occasions which they claim represents a more stable index of the individual's coping processes and styles. Endler and Parker's goal was to develop a reliable and valid measure of coping styles and to identify within individuals "coping preferences." Of less

interest to these researchers was the intraindividual approach to coping of Folkman and Lazarus (1986; as cited by Endler & Parker, 1990) whereby "the behaviors of the same individual are studied across situations [in order to study] the process of coping, that is, the impact of specific stressful situations on coping behaviors" (Endler & Parker, 1990, p. 846). While the authors conclude that the MCI is a reliable and valid multidimensional measure of stylistic or dispositional coping, they go on to state that "empirical support would be greatly advanced if more care and attention were directed at the theory development, validation, and psychometric properties of coping measures" (Endler & Parker, 1990, p. 853).

Responding to the criticisms of Endler and Parker regarding the poor reliability and validity of the WCC and the WCQ, Aldwin (1994) has provided an interesting argument in defense of these instruments:

By [their] reasoning, any change that appears to occur across situations using process measures of coping is primarily due to the unreliability of the instrument rather than to any important contribution of the situational context per se. By focusing only on approach-avoidance coping, [they] have been able to demonstrate that their measures of coping styles are psychometrically superior to process measures and have thus argued that trait measures are generally superior to process measures. The problem with this line of reasoning is that these researchers are taking the criteria for what constitutes good personality instruments and inappropriately applying it to field instruments Process instruments designed to be used in a field setting, however, are designed precisely not to be stable. These instruments are meant to tap variability and change, making them almost by definition unreliable. (p. 115)

Lazarus (1992) has admitted that the WCQ is limited in its ability to measure the "whole person, who has a particular goal hierarchy and situational intentions, belief systems, and a life pattern of plans and social connections" (p. 242). However, in support of his theory, Lazarus quotes Block (1991, as cited in Lazarus, 1992) in which he states: "Human beings are not simply linear response systems effectively at the mercy of the situations they encounter" (p. 9).

Lazarus acknowledges that coping process measures would be more meaningful if more was known about the person, the contextual framework in which that person lives, and more importantly, the motivational intentions of the person in choosing particular coping strategies.

While determining the ways in which individuals cope with stressful events is important in understanding adaptation, it is clear that the pursuit of this is very complex. In the late eighties, Aldwin and Revenson (1987) reported that there were over 20 coping measures, and that the point upon which most authors agreed was coping's multidimensionality. As of 1994, Aldwin was able to provide a list of just over 70 scales used for measuring coping in various domains, although she acknowledges that many more exist.

Conclusions

It is clear that the process of coping is very complex, and by its very nature, equally complex to observe, understand, and therefore measure. Although the process described by Folkman and Lazarus (1985) of cognitive appraisal, followed by coping response, reappraisal, subsequent response, and so on, appears in principle rational, its very weakness is the "irrationality" of human thought that does not appear to be adequately addressed. The next section will discuss some of the relevant research in this area that impacts on coping response and adaptation.

Positive Illusions

In an effort to better understand and explain successful coping and adaptation to threatening events, Taylor (1983, 1989; Taylor & Brown, 1988) proposed a theory in which the success of one's adjustment rests fundamentally on that person's ability to sustain and modify positive illusions. Taylor and Brown have proposed that mentally-healthy individuals characteristically manifest three "pervasive, enduring, and systematic" (p. 194) illusions, namely, unrealistic optimism, exaggerated perceptions of control or mastery, and unrealistically positive self-evaluations. Taylor believes that these illusions buffer

not only against present threats facing individuals but that they also determine how they view, and prepare themselves, for possible future setbacks.

Following exploratory research with cancer patients, cardiac patients, rape victims and other individuals facing life-threatening events, Taylor has proposed an adaptation process which focuses around three themes: a search for meaning in the experience or causal attributions, an attempt to regain mastery over the event, and an effort to enhance one's self-esteem.

Causal Attributions

In the first stage of the adaptational process, Taylor (1983) has suggested that the individual embarks on a search for meaning in regards to the event that has occurred: why has this happened, how did it come about? She draws on the work of Heider (1958) and Kelley (1967) in attribution theory which suggests that following a dramatic or threatening event, people make causal attributions in order to understand, predict, and control the environment in which they find themselves. Taylor, Lichtman, and Wood, (1984) found this to be supported in a study of cancer victims, where 95% of the individuals formulated some explanation of why the cancer had occurred. Taylor et al. later extended their study of patients diagnosed with breast cancer, and examined how their attributions affected subsequent adjustment. Although most of the respondents made causal attributions for their cancer, no particular attribution (e.g., stress, diet) was associated with better adjustment. Analysis of attributions of responsibility for the cancer to the self, environment, another person, or chance yielded only a negative correlation between adjustment and blaming another person.

Taylor (1983) has suggested that the arrival at some explanation for the traumatic event often leads to the next step in which one reappraises one's life and rethinks "attitudes and priorities to restructure one's life along more satisfying lines" (p. 1163). Taylor pointed out that causal attributions are intertwined with the next stage of mastery, as the causal explanations often fall within categories in which the person can exercise some control (e.g., diet, stress).

Mastery and Control

The second theme regarding mastery rests on fundamental beliefs about personal control. Again, in her study with cancer patients, Taylor, Lichtman, and Wood (1984) found that two-thirds of patients believed they had some control over the course or reoccurrence of their cancer, that efforts at control were mental, and that a common manifestation was a belief that a "positive attitude" would keep the cancer from coming back. For many patients, a sense of mastery was achieved if they possessed a perception of discontinuity between the period proceeding their cancer and their present life, whereby the initial perceived cause of the cancer was believed to be no longer in effect. Efforts at mastery also involved behavioral changes, becoming more knowledgeable, and an attempt to control peripheral, or secondary, aspects of the event (e.g., controlling the side effects of chemotherapy). The authors also found that both the belief that one could now control one's cancer and the belief that another (e.g., the physician) could also control the cancer were significantly associated with good adjustment. Of the different types of control, cognitive control was most strongly associated with adjustment, behavioral control was less strongly associated with adjustment, and information control and retrospective control were unassociated with adjustment.

In a later study, Taylor, Helgeson, Reed, and Skokan (1991) examined self-generated feelings of control and adjustment to physical illness in a sample of patients with cardiac disease, cancer, and acquired immune deficiency syndrome (AIDS). They concluded that perceptions of personal control are generally adaptive and appeared to reduce anxiety and depression while cognitions concerning control by others yielded mixed results. They also found that while women and patients with good prognoses appear to profit psychologically from feelings of vicarious control, men and patients with poor prognoses do not.

Folkman (1984) has stated that "when experience does not reinforce internal control beliefs, an illusion of control (Langer, 1975) can be created through cognitive coping or reappraisal" (p. 848). It has been suggested that helplessness and depression often occurs if reappraisal and cognitive coping do not alter the meaning of the situation in order for personal control to be achieved (Coyne, Aldwin, & Lazarus, 1981). Referring to Rothbaum, Weisz and Snyder's

(1982) description of secondary control, Folkman (1984) describes ways in which individuals achieve illusory control: aligning themselves with the "force of chance"; associating with powerful others; and searching for meaning and understanding.

Process of Self-Enhancement

The last stage of the adjustment process incorporates the efforts one makes toward enhancing the self and thereby restoring one's self-esteem. Taylor (1983) reports these cognitive efforts were often quite direct, for example, with clients often reporting better adjustment to life, compared to their life before the diagnosis of cancer. Taylor has also stated that social comparison plays an important role in restoring one's self-esteem after a traumatic event. What she found in her study was that the majority of female cancer patients made downward social comparisons in which they compared themselves with other women perceived as being the same, or less fortunate than they were. Taylor also found that an important aspect in this process of social comparison is that the individuals picked a "dimension" in which they could feel that they had some advantage over another.

In another study of breast cancer patients by Wood, Taylor, and Lichtman (1985), the results of both closed-ended questions and spontaneously offered comparisons also yielded a preponderance of downward comparisons. Taylor outlines the usefulness of social comparison and defends the illusions in the following:

The [social] comparisons were particularly important because self-enhancement, and indeed cognitive illusion generally, is often written off as defensive and dysfunctional. Instead, these illusions may have multiple functions. In addition to self-enhancement, they can instill motivation and provide information, as these downward comparisons apparently did for some of our respondents. (p. 1166)

Buunk, Collins, Taylor, VanYperen, and Dakok (1990) examined the affective consequences of social comparison to see if a comparison in a given

direction (upward or downward) would lead to a particular affective reaction. Their findings suggested that a comparison can produce either positive or negative feelings about oneself, independent of its direction. Moderating factors identified in the first part of their study done with cancer victims were:

(a) persons low in self-esteem and low perceived control over their symptoms and illness were more likely to see downward comparisons as having negative implication for themselves and, (b) persons with low self-esteem also perceived upwards comparisons as negative. In the second part of their study, the findings revealed that individuals with high marital dissatisfaction and those who felt uncertain about their marital relationship were more likely to experience negative affect from upward and downward comparisons. In their conclusions, Buunk et al. point out that high self-esteem individuals were better able to make use of either upward or downward comparisons for the purpose of self-enhancement than are low self-esteem individuals.

Taylor and Lobel (1989) found in another study of social comparison with groups under threat that self-evaluations were often made against a less fortunate target (downward evaluation), but information and affiliation was sought out from more fortunate others (upward contacts). They suggested that these effects occur because downward evaluation and upward contacts appear to serve different needs, the former ameliorating self-esteem and the latter enabling a person to improve his or her situation and simultaneously increase motivation and hope.

In a paper which discussed social comparison, stress, and coping, Taylor, Buunk, and Aspinwall (1990) suggested a reconsideration in traditional social comparison frameworks when it comes to understanding the coping responses of individuals undergoing stressful events. Taylor et al. suggested that individuals under stress experience many barriers that hinder normal social comparisons. For example, following a stressful or victimizing event, strong emotions may keep people from affiliating with others, hindering the ability of the individual to make helpful comparisons and obtain validating information considered to be important. In addition, an individual under stress may be unable to identify others who are faced with the same stressor or may find it too difficult to share feelings with others. Also, inappropriate comparison targets may be used for

self-evaluation and as a consequence the individual may participate in more divergent, inappropriate, and misleading comparison activity. Taylor proposes that people under stress may more often find themselves in forced social comparison situations compared to individuals not under stress. To the extent that appropriate models are lacking, individuals may have to compare themselves to what models are available, appropriate or not, and this comparison process is even stronger if some form of interdependence exists between the two (e.g., a co-worker or relative).

While high self-esteem has generally been regarded as desirable and adaptive, concern has been expressed regarding the ability of those with enhanced self-esteem to make accurate self-assessments (Block & Colvin, 1994). In a study by Baumeister, Heatherton and Tice (1993), it was found "that as long as people refrain from allowing egotism to influence their decision, people with high self-esteem have an impressive capacity to invest themselves in appropriate goals . . . Under ego threat, however, they cease to base their goal setting on rational, appropriate self-prediction and instead become concerned with saving face and making a good, self-enhancing impression." (p. 152)

Given these findings, which indicate a tendency for individuals to engage in self-enhancement, how is this reflected in a person's reporting of coping behavior in general, or in response to a specific incident? In a discussion concerning the measurement of coping styles compared to coping process, Lazarus (1982) raises an important point. He has stated that extensive research has been carried out in which the subject was asked to respond to the coping measures in terms of how they "usually" cope in order to gain insight into a person's general coping patterns. Lazarus has suggested the following:

Subjects may be giving nothing more than a vague impression about how they would prefer to cope, perhaps influenced by what they believe is socially desirable or ideal, rather than what they actually have thought or done. (p. 242)

Considering the research on social comparison, especially that done by Taylor on the tendency, or desire, for individuals to have an enhanced view of

themselves, it seems likely that a self-enhancing bias could potentially confound any research that uses a self-report approach of measuring a general coping style especially where there is a possibility of ego threat. The examination of specific events, and how individuals utilize various coping strategies over the course of these stressful events, appears to be a preferred approach to studying coping and adaptation. The question remains, however, to what extent these measures are reliable when the participant reports retrospectively on the coping behaviors that were enacted.

The Role of Positive Illusions

Taylor (1983) contends that the cognitions upon which meaning, mastery, and self-enhancement depend are in large part founded on illusions. Illusions, according to Taylor, pervade normal cognitive functioning and reflect the tendency for individuals to distort known facts in such a way that they yield a more positive picture for the person or even to hold beliefs that have no factual basis of support. She reflects on her research and has suggested the following:

The themes of meaning, mastery, and self-enhancement could be observed in nearly every patient as a consequence of the threat she was experiencing, and yet the form through which the theme was expressed differed from patient to patient . . . these findings imply that the specific form of the cognitions patients hold about their illness may matter less than the functions those cognitions serve [and that] they may be functionally overlapping rather than functionally distinct, and they may satisfy several functions simultaneously. (p. 1167)

In a paper in which Taylor and Brown (1988) discuss positive illusions, they propose that: (a) positive illusions are responsive to the utility of information, rather than increasing in response to threat as defensive reactions do, and (b) that the mind processes negative information differently, depending on the meaning and impact that negative information has for the self. In such ways, people are able to preserve positive self-conceptions while simultaneously making adaptive use of negative feedback. According to Taylor (1983), "The

effective individual in the face of threat, then, seems to be one who permits the development of illusions, nurtures those illusions, and is ultimately restored by those illusions." (p. 1168)

One argument that has been made against the adaptive nature of illusions is the phenomenon of disconfirmation (Taylor, 1983). According to this theory, if adaptation rests on the formation of illusions, their disconfirmation must surely affect that adjustment process significantly. For example, research has suggested that when efforts at control are exerted in an environment where no control exists, controlling efforts will lead to poorer rather than more successful adjustment (Seligman, 1975; Wortman & Brehm, 1975, as cited in Taylor, 1983). However, Taylor contends that these studies are not accurate, in that, "the potential responses to loss of control [in the general environment] are far greater than the range made available in typical studies of learned helplessness (Abramson, Seligman, & Teasdale, 1978; Seligman, 1975) and reactance (Brehm, 1966; Brehm & Brehm, 1981)" (p. 1169). Instead, Taylor supports a more fluid nature regarding cognitive illusions, believing instead in a "cheerful ineptitude" sometimes referred to by others as "learned haplessness" or "proactance" (see p. 1169). In essence then, when a cognition is disconfirmed, an alternative cognition is soon substituted that accomplishes the same goal or achieves the same value. In addition, Taylor (1986) has observed in her work that individuals often held multiple or serial theories and that having one or more theories disconfirmed did not seem particularly bothersome to these individuals.

Disconfirmation of efforts at control did not produce the emotional upset or inactivity that one might predict from reactance or learned helplessness theory. Rather there are many things that can potentially be controlled, and if one's need to control a situation is great, one will control what one can and give up attempting to control what one cannot. (p. 1170)

Taylor challenges conventional theories of mental health with their presumed prerequisite of reality-based cognitions and proposes instead the pervasive and adaptive nature of illusions. In supporting the adaptiveness of

illusions, Taylor and Brown have gone as far as suggesting that the inability to mobilize these illusions may contribute to a depressive state or mindset.

As the literature on depression and on the self makes clear, normal cognitive processing and behavior may depend on a substantial degree of illusion, whereas the ability to see things clearly can be associated with depression and inactivity. Thus, far from impeding adjustment, illusion may be essential for adequate coping. (p. 1171)

This statement, and others like it, have created a strong debate regarding the role of positive illusions and their adaptiveness (see Colvin & Block, 1994).

Positive Illusions and Adaptation

In defending its adaptiveness, Taylor (1989) has made a clear distinction between positive illusions and responses such as denial or repression. In the latter case, responses increase, along with anxiety, as the situation becomes more threatening. Positive illusions on the other hand incorporate negative information and assists the individual in facing a deteriorating situation with relative accuracy. Taylor and Armor (1996) have stated:

Positive illusions represent people's beliefs about their own personal qualities, their degree of personal control, and the nature of their personal future, whereas wish fulfillment and denial are more focused on how one wants external circumstances to be when they are not. (p. 882)

According to Taylor and Brown (1988), positive illusions play an important role in meeting the criteria commonly associated with mental health, namely the ability to hold positive attitudes toward the self, to care for and about others, to be creative and productive in ones work, and to grow, develop, and self-actualize especially in response to stressful events.

Taylor's theory has been strongly criticized by Colvin and Block (1994) who have concluded that "[Taylor and Brown's] formulation has a meager

empirical foundation and a shaky conceptual structure" (p. 17). While Colvin and Block acknowledge that "positive illusions may assist in the regulation of mood and may sometimes provide temporary and even prolonged relief for individuals experiencing negative affect" (p. 17), they take issue with a number of Taylor's propositions. They object to the notion that positive illusions act as a short or long-term coping stratagem in avoiding personally threatening self-recognitions; that positive illusions are "pervasive, enduring, and systematic" (Taylor and Brown, 1988, p. 194); and that depressed individuals are more accurate in their appraisal of reality than non-depressed individuals. Their particular concern appears to be the suggestion that positive illusions promote positive and healthy adaptation over time and they emphasize that adaptive functioning requires an accurate awareness of "antecedent-consequent relations." Colvin and Block (1994) stated that "If individuals distort reality and thereby misjudge consequential, law-reflecting relations . . . such individuals must necessarily emit suboptimal, if not maladaptive, behavioral patterns over the long run of a life" (p. 17).

In a recent study, Colvin and Block (1995) examined one aspect of Taylor and Brown's (1988) theory, namely that individuals who have overly positive self-evaluations, or who self-enhance their abilities, are more psychologically well adjusted. In order to support their criticism of Taylor and Brown's use of studies in which individuals compared themselves to "others in general", Colvin and Block (1995) conducted a series of studies which compared individual's self-assessments with valid external criteria. Using observer evaluations (e.g., those of clinical or personality psychologists, doctoral students, and friends), they found that individuals who had a tendency towards self-enhancement were in fact perceived negatively by others, that overly positive self-evaluations correlated with an absence of resiliency as measured by the California Adult Q-set (CAQ) and that self-enhancers evoke distancing interpersonal reactions from individuals they encounter in day-to-day interactions. In the conclusion of their study, Colvin and Block (1995) defined self-enhancement as "an extremely favorable perception of self that is inconsistent with the social reality about the self" (p. 1159).

Colvin and Block (1994) have provided some interesting and thought-provoking criticisms of Taylor and Brown's formulation. Taylor and Brown's statements that positive illusions promote rather than undermine good mental health not only disturb Colvin and Block, but in addition the authors discuss how Taylor's formulations directly challenge the beliefs of renowned authors and in their article they cite the following work as examples: Allport (1943) Erikson (1950), Menninger (1930), Fromm (1955), Maslow (1950) and Jahoda (1958) who collectively propose that the existence of mental health rests on a person's ability to accurately perceive and respond to his or her environment without distortion. According to Jahoda (1958) one's "perception of reality is called mentally healthy when what the individual sees corresponds to what is actually there (p. 6) [and that] mentally healthy perception means a process of viewing the world so that one is able to take in matters one wishes were different without distorting them to fit these wishes" (as cited in Colvin & Block, 1994, p. 349).

However, in supporting her assertion regarding the prevalence of illusion and distortion in normal human thought, Taylor (1989) draws on the work of social psychologists who have suggested that human inference processes inherently contain inferential errors and biases (Kahneman, Slovic, & Tversky, 1982; Nisbett & Ross, 1980; Turk & Salovey, 1988, as cited in Taylor, 1989). According to Fiske and Taylor (1984) human inference is the process of collecting and combining information, and then making a judgment, and that inferences are needed in completing the simplest to the most complex of tasks. As such, Fiske and Taylor suggested that it is reasonable to expect that such an information-processing system would contain both accurate and inaccurate judgments. Related to this, Heppner and Frazier (1992) suggested that two cognitive factors play an important role in human inference: (a) cognitive structures referred to as schemas, and (b) cognitive processes such as information sampling and heuristics. Both factors, taken together or alone, have important effects on how one makes sense of stressful events. In line with this reasoning, Taylor (1989) has stated that "any theory of mental health must speak not only to the qualities that characterize the mentally healthy person generally, but also to their dynamic role in meeting the challenges of the environment" (p. 75). These

challenges may involve situations which the individual perceives as being stressful and in maintaining or achieving mental health the individual must find ways to tolerate and master the environment.

Positive Illusions and Mindset

Perhaps some plausible explanation and reasonable middle ground to the opposing perspectives of Taylor (1983; Taylor & Brown, 1988) and Colvin and Block (1994) might be found in the work of Gollwitzer and his colleagues (Gollwitzer, Heckhausen & Steller, 1990; Gollwitzer & Kinney, 1989; Taylor & Gollwitzer, 1995). Gollwitzer and Kinney (1989) first proposed that sound decision making rests on the individual's ability to adopt a "realistic, accurate view of action-outcome contingencies" (p. 531), whereas effective goal striving requires that the individual focus on implementation, and that this implementation is often characterized by an "illusionary, optimistic perspective" (p. 531). In this proposition, Gollwitzer and Kinney (1989) have given support to both the perspectives of Colvin and Block, and of Taylor.

Based on the Rubicon model of action proposed by Heckhausen (1986), Gollwitzer and Kinney (1989) differentiate between a "predecisional phase" and the "postdecisional phase" in decision-making. An individual's decision whether or not to act in a specific situation comprises the tasks of the predecisional phase, whereas, the "obligation" and motivation to accomplish the chosen goal occurs in the postdecisional phases. It has been suggested that each of these phases has its own distinct "mind-set" (Gollwitzer & Heckhausen, 1987). A "deliberative" mind-set occurs in the predecisional phase when individuals must realistically choose between goal options, and must to the best of their ability weigh the positive and negative outcomes of their potential decisions. An "implemental" mind-set comes into play once the decision has been made and the goal identified, so that issues such as "when, where and how to act" must be addressed in goal attainment. The emergence of a tendency to emphasize the positive aspects of a chosen goal has been supported in other studies (Frey, 1986; Jones & Gerard, 1967; Wicklund & Brehm, 1976, as cited in Gollwitzer & Heckhausen, 1987).

In a study that looked at the effects of deliberative and implemental mind-sets on the illusion of control, Gollwitzer and Kinney (1989) concluded that

"people who are faced with making a decision develop a different mind-set than people who are requested to implement a chosen goal [and that] the deliberative mind-set generally leads to rather accurate control inferences, whereas an implemental mind-set promotes an illusion of control" (p. 540-541). In an attempt to explain the phenomenon of depressive realism described by Alloy and Abramson (1979, 1982, 1988), Gollwitzer and Kinney in their conclusions have suggested that depressive individuals "simply fail to commit themselves to the goal of achieving the target outcome and, as a consequence, remain unsusceptible to feelings of illusionary optimism" (p. 541). This explanation supports the findings of Taylor (1983; Taylor & Brown, 1988) that positive illusions were present in the coping repertoire of mentally healthy people (i.e., not depressed).

In another study, Gollwitzer, Heckhausen and Steller (1990) proposed that mindsets are determined by the tasks to be solved in each phase and that "the different mindsets tailor a person's cognitive apparatus to meet phase-typical task demands, thus creating a special preparedness for solving these tasks" (p. 1119). Furthermore, they suggested that "This preparedness should extend to a person's thought production, to the encoding and retrieval of information, and to the inferences drawn on the basis of this information" (p. 1119). Their findings suggested that goal setting (deliberative) and goal striving (implemental) differ in nature and that in fact the "Individuals deliberating action goals were tuned toward thoughts and information that were different from those of individuals planning the implementation of a chosen goal" (p. 1126).

A third study by Taylor and Gollwitzer (1995) looked specifically at the effects of mindset on positive illusions. Given the concerns raised by others regarding the adaptiveness of positive illusions (Colvin & Block, 1994; Colvin, Block & Funder, 1995) and propositions suggested by Taylor and Brown (1988) that positive illusions actually foster the criteria of mental health (e.g., positive self-regard, the ability to care for and about other people, the capacity for creative and productive work, and the ability to effectively manage stress), further investigation was warranted.

The question that Taylor and Gollwitzer (1995) attempted to answer was what role do positive illusions play in the processing of information from the

environment, and to what extent can an individual, whose perceptions are characterized by a positive bias, make use of important negative information? While Taylor and Gollwitzer support Gollwitzer's earlier studies regarding deliberative and implemental mindsets, and the role of positive illusions in the postdecisional phase of decision-making (Gollwitzer, Heckhausen & Steller, 1990; Gollwitzer & Kinney, 1989), they question the generalizability of the results from the more artificially constructed laboratory setting to real life events (i.e., illusion of control paradigm). They also raise the question of whether mindset affects the perceived controllability of outcomes that are under personal control, as earlier studies by Gollwitzer and Kinney addressed only uncontrollable outcomes. A final question was whether it is possible that mindset affects mood, which in turn affects positive illusions.

In an effort to examine these questions, Taylor and Gollwitzer designed several studies to explore whether or not mindset would influence self-perceptions and perception of invulnerability to risk, unrealistic optimism, as well as the illusion of control. They predicted that during the deliberative mindset phase, positive illusions would be suspended, while the implemental mindset phase would see a re-emergence of the positive illusions in order to meet goal attainment. They also explored whether mood acted as a mediator of the effects of mindset on positive illusions.

In the first part of their study, Taylor and Gollwitzer (1995) found that participants in the deliberative mindset reported a poorer mood, significantly lower self-esteem, and significantly lower perceived invulnerability to risk than those in the implemental mindset. In the implemental mindset the researchers found a significantly greater invulnerability to risk compared to the control or deliberative mindset, however the implemental group did not differ significantly from the control group in regards to self-esteem or mood.

The second part of the study attempted to remediate some of the confounding factors of the first part, namely the decline of effect over the four measures used, which were not randomized, and a distinction between controllable events versus uncontrollable events. Results again supported the proposition that the presence of positive illusions "fades" when an individual is in a deliberative mindset and returns to those in the control and implemental

mindset. Again, mood did not appear to play a mediational role; however, those in the deliberative mindset did report a significantly poorer mood. They also found clear gender differences in self-perception, with women holding significantly poorer self-perceptions especially in the deliberative mindset.

An important question remained after these two studies: do individuals deal "evenhandedly" with unresolved personal problems in ways demonstrated in these studies? More specifically, do the tasks involved in the deliberative mindset "disappear" once the individual has made a decision and moved to the implemental phase? In the third part of the study, Taylor and Gollwitzer hypothesized that instructions that trigger spontaneous evenhanded deliberation with predecisional individuals would fail to do so with postdecisional people. This was suggested as it was felt that postdecisional people would primarily focus on issues related to the implementation of the chosen goal, and also that individuals would emphasize the positive consequences and downplay the negative consequences for the chosen goal. Results strongly suggested that individuals deliberate in an evenhanded manner and that their spontaneous deliberations provided for a window of realism. Once, however, the intended goal is chosen, evenhandedness ceases. The authors report a reluctance to engage in further deliberation as demonstrated by fewer meta-deliberative thoughts, the presence of irrelevant thoughts, and a clear preference for considering pros over cons. In addition, the postdecisional participants produced more motivational thoughts to successfully implement their goal. This characteristic pattern was evident in both postdecisional groups, that is, those waiting to implement their goal and those who have already started.

Positive Illusions and Disposition

Referring to the work by Erikson (1950) on life stages, Freud (1890/1950) on childhood conflicts, and Fromm (1941) on people's universal confrontation with issues of freedom and control, Taylor and Armor (1996) have emphatically outlined their thinking about positive illusions as falling within the "state", rather than "trait" explanation of behavior. Taylor believes that positive illusions are highly influenced by situational factors, as studies have apparently demonstrated that one can greatly influence the expression of positive illusions

with situational manipulations (Taylor & Gollwitzer, 1995). Taylor and Armor have stated that "situational factors can explain 100% of the variance in the degree to which people demonstrate positive illusions" (p. 890). This position, however, has been challenged by others (Coyne & Gottlieb, 1996; Suls & David, 1996; Watson & Hubbard, 1996).

Interestingly, Taylor's reluctance to consider positive illusions in terms of an individual difference model appears to stem from her concern that accepting a dispositional explanation would entail adopting a "more is better" approach. The lack of fit, she feels, is that "more" positive illusions have been shown not to be better (Colvin & Block, 1994; Colvin, Block, & Funder, 1995; Shedler, Mayman, & Manis, 1993). She offers, however, that there are certain individual differences that would "increase the likelihood that a person might develop positive illusions frequently or in response to a wide array of situations, but not necessarily to a greater degree than others" (p. 891-892). One individual difference identified by Taylor are people with high self-esteem, although she also admits that a person high in negative affect would be less likely to demonstrate positive illusions.

Taylor's desire to avoid the direction of labeling positive illusions as dispositional stems from a desire to have illusions recognized as a relatively universal phenomenon, and she bases this primarily on the relative flexibility of illusions that has been demonstrated in some of her work (Taylor & Armor, 1996). An interesting point, however, is that positive illusions have apparently not been demonstrated as strongly in several cross-cultural studies (Heine & Lehman, 1995; Markus & Kitayama, 1991). But as Taylor and Armor point out, there is a need to identify within each cultural context the focal beliefs of individuals, and then examine these beliefs for distortions, as cultural values may differ significantly, for example, the value of the individual versus the group.

The "flexibility and consistency" of coping responses described by Watson and Hubbard (1996) might be well demonstrated in an examination of dispositional affect and positive illusions. Taylor and Gollwitzer's (1995) studies have shown that positive illusions have the ability to be flexible under certain conditions may subsequently influence the choice of coping response best suited to the situation. At the same time, however, Taylor (1983, Taylor & Brown, 1988;

Brown & Dutton, 1997) maintains that positive illusions are "relatively enduring." One possible explanation for this contradiction in definition may be found in the literature on dispositional affect. Watson and Hubbard have recently discussed how personality traits are "ordered hierarchically at different levels of breadth or abstraction" and cite a number of authors who support this position (Goldberg, 1993; Hampson, John, & Goldberg, 1986; John, 1990; Watson, Clark, & Harkness, 1994). Traits can be either broad in scope, more specific, or extremely narrow. However, as suggested by Watson and Hubbard there are different levels of dispositions, and their flexibility can be explained by their position as a lower-ordered set of traits compared to some of the more commonly accepted higher-ordered set of traits (e.g., neuroticism). The possibility, therefore, that positive illusions might fall say, under the larger trait of positive affect, with certain elements providing consistency over time, while other elements remain flexible and responsive to situational demands, is something that warrants further consideration. Indeed, as it has been suggested that broad dimensions of personality are associated with preferred modes of coping, positive illusions may also be considered a dimension of personality that increases the likelihood that particular sets of strategies are utilized by the individual (Watson & Hubbard, 1996).

Dispositional Affect

McCrae (1982) has stated that traits are abstract and global dispositions that summarize the tendencies, styles, and preferences of individuals. High correlations between self-reports and ratings of others demonstrate the existence of stable characteristics attributed to that person. However, it has been suggested that certain traits may bias symptom reporting of which many correlational studies are based. For example, Costa and McCrae (1987) found that a neuroticism-related style of perceiving and reporting physiological experiences did not correlate with objective measures of health. Neuroticism, first identified by Eysenck (1968), has been subsequently correlated with measures of negative affect (as cited in Watson and Hubbard, 1996).

Watson and Hubbard have proposed that general personality traits are significantly correlated with coping styles. In support of this position, research has demonstrated a significant relationship between neuroticism and coping responses such as "wishful thinking, self-blame, escape or avoidance, and emotion-focused coping; and to a lesser extent, with the decreased use of problem-focused coping, positive appraisal, and support seeking" (Bolger, 1990, as cited in Watson & Hubbard, 1996). Others have also demonstrated that neuroticism is "positively correlated with behavioral disengagement, mental disengagement, denial, and venting of emotion" (Carver et al, 1989, as cited in Watson & Hubbard, 1996). McCrae and Costa (1986) have identified a dimension called "neurotic coping" in which respondents rated the extent to which various coping mechanisms had been helpful in solving their problem and reducing their level of distress. They found that those scoring high in neuroticism used the "least effective coping mechanisms" which they described as hostile reactions, indecisiveness, wishful thinking, self-blame, and passivity.

According to Watson and Tellegen (1985) an individual's pervasive personality traits predispose that person to experience varying levels of mood or affect. Extensive investigations of self-reported transient mood have consistently identified two independent factors considered to be important dimensions of subjective emotional experience: positive and negative affect (Bradburn, 1969; Costa & McCrae, 1980; Watson, Clark & Tellegen, 1984; Watson & Tellegen, 1984; Zevon and Tellegen, 1982). On the basis of a review and reanalysis of nine self-report mood factor analyses from eight studies, two higher-order factors were identified (Burke, 1989). These factors, referred to as positive affect (PA) and negative affect (NA), have been shown to be separate dimensions uncorrelated with one another and are often referred to as "the two biggies" (Wiggins, 1996). Together they make up for approximately one-half to three-quarters of the common variance (Watson & Tellegen, 1985) in self-reported mood measures. The factors PA and NA should not be confused as being at opposite ends of a continuum. Zevon and Tellegen (1982) have stated that these two factors are "descriptively bipolar but affectively unipolar dimensions" (p. 112).

Negative Affect

In regards to negative affect, Watson and Clark (1984) did a wide ranging analysis of numerous personality scales measuring dimensions such as trait anxiety, neuroticism, ego strength, general maladjustment, and social desirability, and they discovered that all were in fact measuring the same stable and pervasive trait. They confirmed some of the findings of Tellegen (1982), calling this construct "negative affectivity." Similar to the construct of "neuroticism" developed by Eysenck and Eysenck (1968), they view negative affectivity as a mood-dispositional dimension. Individuals demonstrating high NA show pervasive tendencies towards being upset and distressed, generally view themselves negatively and often report subjective feelings of nervousness, tension, and worry. The authors propose that "NA represents a more general negative condition [including] such affective states as anger, scorn, revulsion, guilt, self-dissatisfaction, a sense of rejection, and, to some extent, sadness" (p. 465). This is not to say that an individual high in NA cannot experience positive mood or respond favorably to situational factors but rather that "those high in NA will tend to report more negative affect across time and regardless of the situation" (p. 466).

Supported by the work of a number of others, Watson and Clark have stated that they view NA as "a very pervasive disposition that manifests itself even in the absence of any overt stress" (p. 466). In their research findings they suggested that:

high-NA subjects are particularly sensitive to the minor failures, frustrations, and irritations of daily life, as evidenced by the likelihood, magnitude, and duration of their reactions . . . that NA centers on conscious, subjective experience rather than on an objective condition; that is, it emphasizes how people feel about themselves and their world rather than how effectively they may handle themselves in the world. (p. 466)

In the conclusions of a study by Watson and Pennebaker (1989), they expand their definition of NA and have stated, "rather than solely a disposition of negative emotionality, NA is a more general trait of somatopsychic distress

... self-reported distress represents a single pervasive trait that is expressed through a broad range of negative affective states and somatic complaints" (p. 248). As a result, they underline their belief that NA acts as a strong nuisance factor in health research "one that taps psychologically important but organically spurious variance in physical symptom measures" (p. 249). This conclusion was the result of findings in which health complaints did not correlate significantly with actual or long-term health status.

Positive Affect

Characteristically different from negative affect, positive affect appears to predispose the individual to experience positive mood and the adaptational consequences that accompany that feeling, e.g., social support, high motivation. According to Watson and Tellegen (1989) positive affect, reflects a "generalized sense of well-being, an appraisal of oneself as pleasurably and effectively engaged interpersonally and through achievement, as active and generally self-efficacious . . . presents herself or himself as perceiving, thinking, and acting in ways that would be conducive to positive emotional experiences (Tellegen, 1985, p. 695).

In regards to positive mood and cognition, it has been demonstrated that individuals who are in a good mood recall information more easily and quickly compared to when they are in a bad mood (Bower & Mayer, 1989). In their article, Taylor and Brown summarize many of the findings of Isen and her colleagues regarding mood and cites the following work: that a good mood increases the likelihood that a person will use efficient and rapid problem-solving strategies (Isen, Shalke, Clark, & Karp, 1978; Isen & Means, 1983; Isen & Daubman, 1984; Isen, Daubman, & Nowicki, 1987; Isen, Johnson, Mertz, & Robinson, 1985); that people in a good mood are better able to quickly pick the most effective strategy for solving a problem compared to those in a negative mood (Isen, Daubman, & Nowicki, 1987; Isen, Johnson, Mertz, & Robinson, 1985); and that positive mood leads to more unusual and diverse perceptions of relations among ideas, an important condition for creative thought (Isen et. al., 1978; Isen & Means, 1983; Isen & Daubman, 1984; Isen et al., 1987; Isen et al., 1985). Positive mood has also been associated with a person's ability to delay

gratification and to tolerate frustration better (Berkowitz, 1972; Mischel, Ebbesen, & Zeiss, 1976; Seeman & Schwarz, 1974; Schwarz & Pollack, 1977, as cited in Taylor & Brown, 1988) enabling them to better commit themselves to a longer term task that may involve sacrifices and delayed rewards along the way. Positive illusions, according to Taylor and Brown (1988), are correlated with positive mood.

In a review of mood effects on attitude judgements, Bless, Mackie and Schwartz (1992) point out that a positive affective state is more highly associated with the tendency to simplify processing tasks to both strong or weak arguments (which suggests the use of heuristic cues) rather than engaging in "systematic" or "central route" processing. They point out, however, that allowing for more elaboration of the message negates any difference between positive, negative, and neutral mood states. In their research, they also found that participants in a good mood were more likely to base their reported attitudes on global evaluations, compared to participants in a negative mood. The following elaborates the potential consequences of this pattern:

Reliance on global evaluations might produce judgments that are more extreme than those based on careful processing of details of the message. Evidence for this assumption is provided by findings suggesting that judgments are more likely to be extreme if they are based on simple knowledge structures and schemata rather than on more complex knowledge structures. . . . (p. 590)

A component of the construct of negative and positive affect, is the state of low positive affect (Watson & Tellegen, 1985). A score indicating a low PA suggests "a weak sense of well-being, an appraisal of oneself as not pleurably engaged, as not self-efficacious . . . a person who does not function in ways that facilitate positive emotional experiences and whose outlook may have a depressive quality" (p. 696). These factors are uncorrelated with measures of NA. It has been strongly suggested that the low positive affect condition, in addition to the NA component of emotionality, must also be considered when evaluating an individual's experience of stress. Tellegen (1985) has demonstrated that while

NA tends to reflect a measure of a person's anxiety, low PA reflects a measure of depression with features of sadness and fatigue. Tellegen has suggested using NA/PA measures rather than some of the more popular anxiety and depression scales e.g., MAACL Anxiety Scale, Beck's Depression Scale, as these measures tend to overlap and correlate with one another, whereas measures of NA and PA are uncorrelated.

To what extent then, assuming that this construct is viable, do the personality variables of PA and NA influence a person's experience, appraisal of, and coping responses to stressful events, especially with regards to work-related stress?

Occupational Stress in Relation to Negative and Positive Affect

A number of studies have looked at affectivity and its relation to work-related behaviors and attitudes. Brief, Burke, George, Robinson, and Webster (1988) offer provocative evidence that a person's disposition toward negative affectivity may inflate reports of stress. Studies by Watson and Pennebaker (1989) support this, showing that while NA is correlated with health complaint scales, it is not strongly or consistently related to actual, long-term health status. They go on to say that self-report measures of stress and health both contain a significant NA component, therefore, correlations will likely overestimate the true association between stress and health. Chen and Spector (1991) found that NA accounted for a large proportion of shared variance between stressors and physical strains (as indicated by absence, doctor visits, and physical symptoms).

Brief et al. agree that self-report measures of job stress and job strain, and the observed relationship between these stress and strain measures, are considerably inflated by NA. The authors have stated that NA is a methodological nuisance and a substantive cause of stressful work events and the measure of NA must be considered in the study of job stress. Depue and Monroe (1986) stated:

in view of the fact that most scales of psychological disorder in the life stress literature assess general negative affect, life dissatisfaction, and a

lack of positive well-being, and that many scales of physical disorder comprise stress-reactive somatic complaints, it is very likely that a substantial portion of the high-scoring group on nonspecific scales of both psychological and hysterical disorders will consist of individuals who are high on the personality dimension of NA. (p. 39)

In a more recent study by Decker and Borgen (1993), the authors looked at the influence of negative affectivity on the perception and reporting of occupational stress and strain, and job satisfaction. They found that higher stress predicted higher strain and lower job satisfaction, while higher coping resources predicted lower strain and higher job satisfaction. The study also demonstrated that while negative affectivity had a variable impact on strain, it had little influence on job satisfaction.

George (1989) found that PA and NA as personality traits had significant effects on the extent to which workers experienced positive mood and negative moods, respectively. In the same study, George found that positive mood at work was significantly and negatively associated with absenteeism. Related to this, Buunk (1989) has noted that employees concerned with maintaining an image of competence may be reluctant to affiliate with others when they experience negative emotions, particularly when these emotions might be interpreted as signs of weakness or incompetence.

In another study, George (1991) looked at the effects of positive mood on prosocial behaviors at work. George found that individuals who are dispositionally prone to positive emotions tend to experience more positive moods at work, which in turn enhances prosocial behavior. In addition, she found that consistent negative affect within groups (i.e., the negative affective tone of the group) was associated with lower levels of prosocial behavior being performed by the group as a whole.

Staw and Ross (1985) have stated that "rarely are job attitudes formulated as having an endogenous source of variance, one that is reflective of the ongoing state of the person as opposed to being a product of the situation" (p. 469). Some research, however, has implicated that job satisfaction remains relatively stable over time, ranging from 16 months to five years (Schneider, Dachler, 1978; Staw

& Ross, 1985). Staw, Bell and Clausen (1986) did a longitudinal study which identified an affective dimension which correlated with job satisfaction. They found that individuals high in positive affect were more satisfied with their jobs vis-a-vis those assessed with more negative affect.

According to Levin and Stokes (1989), high levels of negative affect are associated with "a type of cognitive bias through which people approach and interpret their life experience . . . this affective tendency toward cognitive style may influence how people experience and influence their job" (p. 753). This is supported by Staw (1984) who stated that "most jobs have both positive and negative attributes and some people may be prone to attend more to one set of aspects than the other or to distort job-related information to be consistent with their affective experience" (p. 753). Levin and Stokes found that individuals with high negative affect perceive their tasks or jobs as containing lower amounts of desirable characteristics than do low negative affect individuals. They also found that low negative affect individuals focus more on positive attributes or attend more equally to both favorable and unfavorable job attributes. This has important implications for organizations as situational changes may not affect individuals as they are intended and may even be doomed to failure as they "contend with attitudinal consistency or a tendency for individual to revert back to their basic dispositions" (Staw & Ross, 1985, p. 478).

In conclusion, negative and positive affect have been demonstrated to be important factors in stress and strain self-reports and how individuals cope with stressful events. As such, they must both be considered as possible confounding factors in any research conducted on this topic.

Summary

In considering a particular type of work stress episode, personality factors consistent with Taylor's construct of "enduring and pervasive" positive illusions (e.g., self-esteem, optimism) may be very important factors. For example, these particular personality factors may be important components in the formation of positive self-schemas which may have contributed to individuals having dealt successfully with particular types of stressful events in the past. Coping strategies which were effective are then re-enacted in subsequent stressful events

which have similar characteristics. In addition, the resulting self-schema may be one in which they view themselves generally as effective "copers", and it is these particular self-schemas which may be automatically activated when individuals are faced with an actual, or anticipated, stressful event. How individuals respond to situations is often a product of how they have constructed meaning regarding the event. Consequently, attribution theory has relevance for this study.

Attribution Theory

Attribution theory generally concerns itself with the cause and effect judgments individuals make in trying to explain the events that occur within and outside themselves. After conducting a series of experiments exploring the heuristics of the attributional search, Wong and Weiner (1981) concluded the following: people do ask "why" questions even when they are not specifically asked to do so; that frustration, unexpected outcomes, stressful events, novel events, and events of personal importance promote an attributional search; and that the orientation of the search focus is dependent on the outcome.

According to Olson and Ross (1985) attribution research can be grouped into two main areas: the "basic processes" of attribution and the "consequences" of attribution. The area of basic processes focuses on "how people combine information to make causal judgments, when attributional processing will occur, and whether judgmental biases can distort causal conclusions" (p. 287). The second area focuses on the consequences of attributions for the perceivers' thoughts, emotions, and behaviors. While examining the consequences of attribution is an important area, especially in regards to behaviors and outcome, it is the first area of "process" with which this study is most concerned.

According to Olson and Ross, Heider (1944, 1958) is commonly identified as the one who exerted tremendous influence on the original field, as most of the common origins are traced back to him. Heider introduced the notion of causal attribution as a fundamental process underlying much of social perception and action. This was based on the notion that people do not simply observe the events around them, but in addition strive to understand the causes of these events. Two important ideas proposed by Heider were: (a) that individuals have

a tendency to attribute actions of another individual to stable or enduring causes (e.g., personality traits) rather than to transitory or variable causes (e.g., moods), and (b) the more the person is perceived as causing the action, the less influence the environment is seen to exert.

During the mid-'60s, Jones and Davis (1965) put forward the theory of correspondent inferences, which was an expansion of Heider's ideas (as cited in Olson & Ross, 1985). They proposed that observers attribute only intentional behavior to personal dispositions, and that non-normative behaviors are more informative about personal dispositions than normative behaviors are. Other contributors identified by Olson and Ross who were influential around this time, were Schachter and Singer (1962) who explored how individuals could be induced to attribute arousal to salient features in the environment; Bem (1965) who suggested a nonmotivational account of cognitive dissonance; and Nisbett and Schachter (1966) whose work identified the process of misattribution.

In the latter part of that decade, the work of Kelley (1967) emerged. Kelley suggested that people are prone to making causal explanations about events in order to create order and predictability in their life. In his theory of attribution, Kelley focused on how individuals seek to validate their own, or another's observation. In order to achieve this, observers seek out three kinds of information, namely, consensus information, distinctiveness information, and consistency information. According to Olson and Ross (1985), the most important aspect of Kelley's work "was his insistence that self-perception as well as social perception is a proper domain for attribution theory . . . and [that he] developed a general theory of attribution in which the roles governing self-perception were essentially identical to those governing social perception" (p. 285).

Dispositional and Contextual Inferences

Causal attribution has generally been described in terms of the dispositional and contextual inferences a person makes. An inference has been defined as "any judgment that goes beyond the information given or that we have at our disposal" (Dumont & Lecomte, 1987). A dispositional inference is a relational attribution whereby an individual's character traits, real or fictive, are given as the explanatory basis for the attribution. A contextual inference, on the

other hand, is one in which situational or environmental events or stressors are viewed as having generated the problem. While dispositional and contextual attributions are viewed as not mutually exclusive, and both are considered active in influencing behavior, it is felt that in any situation one can be seen as having predominance over the other (Burger, 1986).

It has been demonstrated in several studies that the type of attribution made regarding an event or behavior actually shifts over time in regards to the contextual-dispositional explanations given (Burger, 1985, 1986; Burger & Huntzinger, 1985; Funder & Van Ness, 1983; Miller & Porter, 1980; Moore, Sherrod, Liu, & Underwood, 1979)). In one study (Moore et al., 1979), the respondents who explained their behavior immediately after an event primarily in contextual terms, later recalled their behavior in dispositional terms. The authors have suggested that this shift from situational to dispositional explanations for the event comes from alterations of self-perception in memory. In a series of studies, Burger and Huntzinger (1985) found that over time dispositional attributions were made more by those individuals who had felt successful at the initial time of the event, whereas situational attributions occurred more often in those individuals who had felt less successful initially. In two related studies, they found that attributions regarding success and failure tended to be dispositional in explaining others' performance, yet when given for one's own performance, it became dispositional for explaining successful behavior, and situational for explaining failure.

Contrary to these results, other studies have found that situational attributions actually increased over time. One study suggested that situational attributions developed with the passage of time, possibly as a result of the individual placing less importance on the need to control the situation (Miller & Porter, 1980). Another study found that if individuals were asked for their attributions immediately following an event (which the authors have stated were more accurate than the attributions made after three weeks) the emphasis was placed more on situational factors and less on dispositional factors as time passed (Funder & Van Ness, 1983).

Inferential Errors

Nisbett and Ross (1980) have described people as intuitive scientists who are gifted and who are generally successful in their causal explanations, but whose attempts to understand, predict, and control events in the social sphere are seriously compromised by specific inferential shortcomings. While it has been demonstrated that we value accuracy in our judgments about people and events around us, in fact, our causal inferences have the potential to demonstrate significant error and bias, especially as the ambiguous nature of the event increases.

Ross (1977) described the tendency of people as observers to overestimate dispositional factors in understanding another's behavior, and to underestimate the role of situational factors, and calls this tendency the "fundamental attribution error." Nisbett and Ross (1980) compares two "general theories" that contribute to this error: "dispositionalist" and "situationalist." In the case of the first, the authors attribute this in part to the "so-called Protestant ethic that one's virtues and successes ultimately reflect one's worthiness and, conversely, that one's vices and failings reflect one's unworthiness" (p. 31). The situationalist position, on the other hand, "maintains that behavior is understood best in terms of states and intentions that are themselves the product of those situational stimuli pertinent to the individual at the moment of action" (p. 32). The situationalist perspective is supported by two occurrences: (a) the difficulty in demonstrating "cross-situational consistency in behavior demanded by the dispositionalist view" (p. 32), and (b) "the many studies that demonstrate that seemingly insubstantial manipulation of situational factors can control behavior dramatically and can greatly restrict individual differences" (p. 32).

The fundamental attribution error has been described by Nisbett and Ross as a "metatheory" and while they acknowledge the strong support for the "situationalist" position in social psychology (e.g., Taylor's theory regarding positive illusions), and acknowledge the evidence that supports the power of events to influence behavior, they still emphasize the "pronounced influence of people's judgments on the causes and meanings of behavior" (p. 32).

Discounting Principle

There are, however, circumstances that have been shown to override the fundamental error. According to Kelley's discounting principle (1972, as cited in Reed, 1985), an observer will discount an implied disposition when situational demands appear to have facilitated the actor's behavior. For example, an observer may attribute attitudes, e.g., bigoted, towards an individual who has written an essay on segregation, but may lessen the degree of his attribution if he knows that the "pro" position on the essay was assigned to him (Jones & Harris, 1967). Reeder has stated, however, that even if an observer gives more weight to a contextual cause, there is still a tendency of the observer to make some dispositional inference.

Reeder has proposed a model of discounting that stresses the content of dispositional attributions. According to Reeder, early attribution models assumed that a causal analysis preceded the attribution of specific dispositional qualities whereby observers would consider situational (external) causes and dispositional (internal) causes, allocate some assumption of causality, and then assign a specific dispositional level. Reeder has disagreed with this, however, stating that causal attribution does not mediate dispositional attributions (Harvey & Role, 1978; Reeder & Spores, 1983b; Reeder & Fulks, 1980). Instead, it is suggested that dispositions summarize observed regularities in behavior, such that even if situational explanations are clearly evident, observers will still assign some level of dispositional attribute. Reeder has stated that two classes of implicit assumptions govern the relationship between dispositions and behavior. One class is the reinforcement assumptions in which observers are aware that actors may vary their behavior to meet situational demands. The second class is the schematic assumptions which are concerned with the range of behaviors a given disposition implies (e.g., central tendency, social desirability, and ability), and which act to set limits on the extent of discounting. Together, these assumptions explain dispositional discounting.

Self-Attributions

Much of the attribution research focuses on the observers' attributions regarding actors, while less research addresses the attributions made by actors

towards themselves. In regards to self-descriptions of our own dispositions, Nisbett and Ross (1980) have suggested that they reflect a heavy reliance on self-theories, or self-schemas. In addition, these descriptions of ourselves have been shown to persist, even in the face of contradictory evidence. They have stated that:

People's causal accounts explaining their own behavior have been shown in a wide variety of settings to be: (a) often empirically wrong, (b) little different from the accounts of observers working from impoverished information and without benefit of the introspective clues available to the actor, and (c) based more heavily on causal theories than on the observation of mental events. (p. 227)

Reeder (1985), in reference to the discounting principle, discusses further the differences between the dispositional attributions of actors compared to observers. The discrepancy between self- and social perception is reflected in observers' tendencies to ascribe dispositional attributes to others for discrepant (non-normative) behavior (i.e., the fundamental attribution error), yet when actors are considering their own discrepant behavior they are more likely to attribute the cause to situational factors. The reason offered for this reversal comes from the work of Jones and Nisbett (1972, as cited in Reeder, 1985) who have stated that observers compare the actions of actors to other actors, whereas observers assesses their own behavior by comparing it to their own previous actions. This suggests, therefore, that actors and observers base their inferences on different data.

Schemas

Self-schemas have been defined as "cognitive generalizations about the self, derived from past experience, that organize and guide the processing of the self-related information contained in an individual's social experience" (Markus, 1977, p. 63). Markus has suggested that self-schemas serve a number of important functions such as the facilitation of information processing about the self, allowing behavioral evidence to be readily retrieved, contributing to

confident self-predictions of behavior based on schema-related dimensions, and enabling individuals to be more resistant to counter-schematic information. Segal (1988) has emphasized that self-schemas "form a relatively cohesive and persistent body of knowledge capable of guiding subsequent perception and appraisals" (p. 147). Lewicki (1984) has stated that self-schemas help individuals protect fragile self-images by allowing them to view their good characteristics as important and their shortcomings as less important. She points out that shortcomings are not denied but rather the interpretation of their general meaning is altered.

Brown and Dutton (1995) have stated that not all information seeking represents a search for accurate feedback and that it is often more a search for confirmatory feedback. Dunning (1995) has described how an individual's search for relevant information about the self involves the processes of self-enhancement and self-assessment. While the process of self-enhancement involves searching for information that is favorable, the process of self-assessment involves obtaining information that is accurate, regardless of its favorability. According to Dunning, little research has apparently addressed the circumstances that would prompt individuals to fulfill one over the other. Dunning found that when participants were told a particular skill (in this case, integrative orientation) was a stable entity, self-enhancement increased as the level of importance regarding the skill increased. This self-enhancement tendency, however, was not exhibited in conditions in which the skill was presented as not important. Furthermore, when the skill was presented as modifiable, participants were more motivated to engage in self-assessment over self-enhancement in important versus unimportant conditions.

Chaiken, Giner-Sorolla, and Chen (1996) have defined defensive motivation as an orientation toward reinforcing important self-related beliefs. Chaiken et al. distinguish between defensive motivation and other forms of cognitive bias in the following excerpt:

The defense-motivated person's main goal, consciously or unconsciously, is not to have an accurate representation of the world, but to preserve the self-concept and associated world views Defensive motivation leads

to a directional bias that is consistently in line with existing self-beliefs, whereas a bias arising only from cognitive sources can either favor or contradict existing self-beliefs. (p. 557)

Attention to individuals' cognitive structures and processes has steadily gained importance within the literature concerning psychotherapeutic approaches. Mahoney (1993) has described a number of major themes in the theoretical development of the cognitive psychotherapies, one of which is the increasing focus on the self-organizing and self-protective processes of the individual's personality development over the life span. As a strong proponent of constructivist theory, Mahoney has emphasized the proactive, or anticipatory, nature of knowing, the importance of "feedforward" mechanisms in addition to "feedback" mechanisms of information processing, and also the importance of acknowledging tacit ordering processes. Mahoney (1988, 1993, 1994) along with others (Guidano, 1987, 1991; Guidano & Liotti, 1983; Kelly, 1955; Neimeyer, 1993) have emphasized the importance of a developmental, process-focused approach to knowing.

In trying to make sense of events, it has been proposed that individuals use knowledge structures (e.g., "event-schemas," "person-schemas") and it is within these structures that theories and beliefs rest (Nisbett & Ross, 1980). In the case of a self-schema, the beliefs about oneself (for example in the areas of self-esteem, control, and self-efficacy) can be powerful determinants in shaping one's behavior, despite situational deterrents. Guidano and Liotti (1983) have explored constructivist theory in relation to various emotional disorders, including depression, anxiety disorders, and obsessive-compulsive disorder. Dysfunctional core identity structures, or schemas, have been proposed as a central component to these disorders. This self-structure is perhaps best summarized by Guidano and Liotti (1983):

Thus the attitude toward oneself is more and more characterized as a defined relationship, capable of providing us with a stable and structured self image, which in turn allows for a continuous and coherent self-perception and self-evaluation in the face of temporal becoming and

mutable reality. For this reason the maintenance of our own perceived personal identity becomes almost as important to us as life itself; without it, we would be incapable of proper functioning. (p. 86)

Schema-based information processing has also been described as a crucial element in depression (Beck, 1976, 1987; Ingram, 1984; Teasdale, 1988). According to Beck et al. (1979) schemas represent "relatively stable cognitive patterns [which] form the basis for the regularity of interpretations of a particular set of situations" (p. 12). Beck (1967, 1976) proposed that when an individual is exposed to a situation, particular schemas are activated in order to mold the data into cognitions. Beck has long applied the study of schemas in his work with depression. He maintains that in a mild depression a person is able to view negative thoughts with some objectivity; however, severe depressions lead to distortions in reality and systematic errors in thinking. In the latter case, Beck suggests that the "depressive cognitive organization may become so independent of external stimulation that the individual is unresponsive to changes in his immediate environment" (1976, p. 13).

Another example of the use of a schema-focused approach to therapy is found in the treatment of patients with obsessive-compulsive disorder (Sookman & Pinard, 1995). Sookman and Pinard place primary importance on the cognitive schemas that they believe are central to the development and maintenance of psychological difficulties, and they try to tap into these cognitions in their Obsessive-Compulsive Cognitive Schemata Scale (CSS). Cognitive schemas are believed to govern a person's cross-situational view of response to themselves and the environment, and arise from basic, core beliefs. Core beliefs are thought to develop from early attachment experiences, and are manifested as dysfunctional informational processing, emotional distress, and symptom-related cognitive processes. An important component of treatment with the multidimensional approach is the accessing of "tacit" levels of knowing which involve "beliefs, thought processes, and emotional memories which may be central to the etiology and maintenance of symptoms [yet] may not be accessible to awareness" (p. 177). Personal knowledge at the tacit level may be organized as dysfunctional schemata which perpetuate negative automatic thoughts and

anxiety. According to Sookman and Pinard (1994) treatment of obsessive-compulsive disorder must address both explicit and implicit knowledge structures which include automatic thoughts and core beliefs, or schemas. However, according to the authors, one of the difficulties with measuring these schemas through self-report is that these important core beliefs are often not readily accessible for measurement. As a result, initial treatment has tended to rely on data generated at the level of awareness that the patient is able to consciously report. Sookman and Pinard have developed, and are currently examining, how priming techniques may be useful in improving access to core schemas.

Taylor and Crocker (1981) have discussed three ways in which a schema can provide an illusory data base. The first is the "default function" in which a particular attribute missing in the original stimulus configuration is "filled in" with a best guess. When an event is recalled, the "best guess" is often remembered as having actually occurred in the original configuration, thereby adding to its overall validity. The second way, is where inferences are stored as data independent of the initial stimulus configuration and subsequently applied in judgments about events other than the original. The final way in which schemas can provide an illusory data base is the indiscriminate application of schemas to "configurations when the match is less than perfect" (p. 118). In their summary, they stated the following:

Thus, in a number of ways, schematic conceptions that people have about persons and events do not merely restructure, order, and select the information the perceiver makes use of in the stimulus configuration; they actually contribute to the data base, providing information that later becomes indistinguishable from the original data. (p. 118)

Self-Report

The concerns around self-report measures have been extensively reviewed, particularly regarding subjective access to tacit cognitive processes (Brief, Burke, George, Robinson, & Webster, 1988; McCrae, 1982; Stone, 1999,

2000; Watson & Pennebaker, 1989). Construct validity, item reliability, patient's test-taking behaviors, expectations, and motivations are just some of the few obstacles that have been identified. However, there is now a growing body of literature exploring the different ways to improve the reliability and validity of self-report measures, and this has focused on increasing the respondent's ability to be subjectively accurate.

One area of research on self-focus and self-knowledge has supported the view that enhanced self-attention prompts a more thorough search of relevant memories and that the result is a more accurate self-report (Carver & Scheier, 1981; Eysenck, 1994). Nasby (1985) argues that attending to the self over a long period of time promotes better articulation of self-knowledge. According to Eysenck "self-reports of very self-conscious people are more valid than those of less self-conscious people That is, having spent so much time thinking about themselves, people high in self-consciousness have well developed and highly articulated schematic representations of themselves" (p. 319).

Wilson (as cited in Harvey & Weary, 1985) has suggested that individuals possess two independent cognitive systems: one which is mainly unconscious, whose function is to mediate behavior while the second, which is mainly conscious, functions to verbalize and explain behavior. While Wilson maintains that in general we do have direct access to most of our mental states, there are times when our access is imperfect. As a result, individuals can make erroneous reports about themselves, even when they are trying to be accurate. This is further supported by Olsen and Ross (1985) who have stated:

It is logically impossible to observe causal processes per se. We can merely observe correlations between events. All causal judgments are just that- judgments based on causal theories and empirical observations. If the true causal determinants conflict with our preconceptions or are nonsalient, we may well make an error in judgment. (p. 288).

Wilson has offered some thoughts on conditions that foster imperfect access to mental states. These are: (a) instances of self-deception as in the case of a person who uses denial because his or her self-esteem is threatened by an anxiety-

producing event, (b) self-analysis effects which in some studies have been shown to lower the correspondence between reported feelings and behavior, (c) incorrect adoption of feeling rules whereby participants answer the way in which they "should", and (d) the amount of processing preceding judgments about self-attitudes, if excessive, may interfere with accurately assessing mental states and ultimately be poor predictors of behavior.

While Wilson has stated that virtually all mental states have behavioral indicants that can be observed, others have challenged the notion that behavioral indicants are themselves accurate indices on which to judge the accuracy of mental states. However, Wilson presents a substantial review of the literature showing mixed results in studies that compared both self-report and behavioral measures, and while conceding that it is possible that methodological problems, measurement error, or hypothesis testing may account for the inconsistencies, he believes that these inconsistencies are more the result of inadequate access to one's mental state. As a result of several studies in which priming was used to help participants gain better access to their mental states, Wilson concluded that when respondents reflected on reasons for their behavior they reported internal state changes that were consistent with their behavior.

Another factor that may explain the difficulty in gaining accurate access to mental states may be actual methodological problems with the self-report measures. With specific reference to the Ways of Coping Questionnaire (Folkman & Lazarus, 1988b), a study by Stone, Greenberg, Kennedy-Moore, and Newman (1991) revealed that many of the items were not applicable to certain kinds of stressful events. In particular, three specific issues are addressed regarding the WCQ: (a) that items may be more relevant to some stressful events (e.g., those concerning stressful interactions with other people) than to others (e.g., illnesses); (b) that the time period of coping is not specified, and (c) different interpretations of the response key (e.g., "does not apply or not used," "used a great deal") by the respondents.

The difficulties inherent in measurement by self-report have been well documented. Lazarus (1985) has also acknowledged the problem of method variance in self-report, yet he maintains that it is still the preferred method for accessing what people are capable of saying about their emotions. He has

suggested that research regarding emotions must rely on self-report to understand people's construals, and refers to a study by Shrauger and Osberg (1981, as cited in Lazarus, 1985) in which self-report was found to be as predictive as other methods to which it was compared. Lazarus's suggestion for this dilemma is to persist with a single method, and to use self-report with care and tenacity.

Retrospective Recall of Coping

A study by Ptacek, Smith, Espe, and Raffety (1994) revealed poor correspondence between daily coping reports and retrospective coping recall with a sample of college students. Concerned with the reliability of using retrospective accounts of coping, the authors found that after only five days the daily reports obtained during the stressful period shared only 34% of common variance with the retrospective reports. Despite testing a number of hypotheses to account for this low correspondence (e.g., participants recalling the most frequently used coping strategy, recalling the strategy used during the highest period of stress, or recalling coping strategies used first or last) no explanation could be found. In their discussion, they suggested that their results occurred because of implicit theories participants held of their general coping styles, or possibly because of episodic memory decay. The authors suggested that perhaps testing a discrete event, rather than an event which occurred over time, might improve correspondence.

Numerous studies have suggested that individuals systematically bias their recall in order to maintain positive self-views. For example, Dunning (1999) has maintained that motivational processes shape social judgments and that individuals strive to retain flattering self-images. Brown's (1993) work supports this position, but he also proposes that individuals simultaneously strive for self-consistency. He has demonstrated that individuals with high self-esteem have little difficulty in achieving this; however, those with low self-esteem experience conflict between the motivation to self-enhance and the tendency to hold negative self-views.

Previous research has demonstrated that the recall of personal histories involves an active, reconstructive process, and that this reconstruction is theory

driven (Conway & Ross, 1984; Olson & Cal, 1984; Ross, McFarland, Conway, & Zanna, 1983; Ross, McFarland, & Fletcher, 1981). Matlin and Stang (1978) reviewed 52 studies and found a persistent recall advantage of positive events over negative events, a phenomenon referred to as the "Pollyanna Principle." In addition, positive material was most often recalled faster than negative material. According to Taylor (1991), negative events appear to be less accessible in memory relative to positive events. In reviewing the literature on autobiographical memory, Taylor has stated that positive events are recalled more than negative events and proposes that this occurs because negative events are less common than positive events leading to a decreased opportunity for the negative memory to be "replayed." In addition, Taylor also proposes that there is also a tendency for negative events to be interpreted as a neutral or positive event, again reducing the domain of events that the single negative event can be associated with. Further, Taylor has stated that positive information is processed more efficiently and accurately than negative information, and that there is a general resistance to making associations to negatively-toned material (Isen, 1984). The research regarding mood-dependent recall is mixed, with some researchers supporting the theory that recall is enhanced when the subjects mood is congruent with the memory (Bower & Mayer, 1989; see Dumont, 1993, for a review) while others have found evidence that does not support the theory (Johnson & Klinger, 1988).

Priming

The term "priming" refers to a technique developed to study how context influences performance (Eysenck, 1990). Using an experimentally introduced primer and measuring its effect, or function, on a secondary stimulus has been the subject of numerous studies. For example, the use of certain mood-induction techniques have been shown to be effective in inducing certain emotions such as elation and depressed mood (Dykman, 1997; Persons & Miranda, 1992; Roberts & Monroe, 1992; Segal & Ingram, 1994). Priming has also been used to examine memory and recall (Amir, McNally, & Wiegartz, 1996; McNally, Litz, Prassas, Shin, 1994), and in a few instances, self-report (Drake, 1988; Matthews & Harley, 1993; Moss & Lawrence, 1997).

A number of procedures for the induction of mood states using a priming methodology have been tested and include the use of stories, music, self-statements, and imagery (see Gerrards-Hesse, Spies, & Hesse, 1994 for a review). In a study by Miranda and Persons (1988) it was demonstrated that a mood-induction procedure which produced reliable changes in the subject's mood subsequently produced dysfunctional attitudes on measurement scales. Miranda and Persons found that with the use of a Velten mood induction procedure, which consisted of a relaxation sequence followed by mood-inducing statements, they could achieve significant differences in pre- and post-measures of mood and dysfunctional thinking. They concluded that "dysfunctional attitudes are stable vulnerability factors for depression [and] that an individual's ability to access and report these attitudes is mood-state dependent" (p. 76).

Only one study has been found in the literature that is similar to this present study in regards to the priming manipulation. Moss and Lawrence (1997) recently examined the effects of priming on self-reports of experienced stressors and strains. Participants were assigned to one of two treatment conditions: one in which the participant engaged in an informal discussion with the researcher regarding the types of stress usually experienced by working MBA students, while the other condition received no prior informal discussion. Results indicated that the primed group reported higher levels of stress and strain, as compared to the control group. Final results indicated a significant priming effect on measures of tension and irritability, while the effects on job satisfaction, burnout, and anxiety were in the predicted direction but not statistically significant.

Organizational Change and Downsizing

Canada is currently in the midst of an economic health care crisis. As a result of federal budget cuts, funding to the provinces has been reduced by billions of dollars over the past five years. The public has become very aware of reductions in hospital services and there is fear that further cuts will negatively affect the quality of health care received. It is predicted that, in the future, attempts to cope with these massive cuts will result in provinces seeing the

removal of certain services from public medicare, the growth of private insurance, fewer public hospital beds, smaller numbers of nurses and doctors, contracting out of health-care management to local groups, and possibly the relocation of the latest high technology to private facilities.

Consequently, over the last few years, major structural and financial changes in the health sector have resulted in the extensive reorganization of hospital personnel. This process of downsizing, common in the corporate world for well over the past decade, has now made its way into the public sector as federal and provincial governments attempt to reduce spending and streamline services. This reorganization has required, and will continue to require, thousands of health care employees to adjust to numerous changes in their working environment. In many instances, employees will be required to assume new positions, often with new responsibilities and job descriptions, in order to maintain job security. A definition given for downsizing is "the planned elimination of positions or jobs" (Kets de Vries and Balazs, 1997), and has been shown to have both benefits and costs to an organization. Presently in the literature, there are numerous management research articles and surveys concerning downsizing, in particular, its effects on the companies involved. According to Kets de Vries and Balazs downsizing can be beneficial in "lower overhead costs, decreased bureaucracy, faster decision making, smoother communication, greater 'intrapreneurial behavior,' increased productivity, and better earnings" (p. 12). The costs, however, can be dramatic resulting in problems with morale, trust, and productivity (Henkoff, 1990; Kets de Vries & Balazs, 1997). In studies done by Cameron and his colleagues (Cameron, 1994; Cameron, Freeman, & Mishra, 1991, 1993; Freeman & Cameron, 1993) a significant and disturbing finding was a negative correlation between organizational effectiveness and downsizing through layoffs. Kets de Vries and Balazs have stated:

All too often employees, in the typical approach to downsizing--whether in corporate offices or the research arena--are still treated in an abstract fashion. In this human engineering approach to downsizing, people are seen more as liabilities than as assets. The emotional experience of the

individual in the process seems to have gotten short shrift. It is exactly this changing nature of the relationship between individual and organization, however, that warrants further attention. It is difficult to be successful as an organization with a group of demotivated employees. (p. 18)

How employees actually cope with organizational downsizing at different points in time, and what psychological mechanisms, or coping processes, assist them in adjusting has been poorly addressed. Kets de Vries and Balazs have further stated that:

Some management scholars . . . have realized the importance of the psychological dimension. Although a number of their studies have provided new insight, most of them have not gone into sufficient depth to deconstruct the psychological dynamics that are set in motion by the process of downsizing. In short, the question of how downsizing affects the various stakeholders has not been adequately explored, despite the fact that the psychological state of the various parties involved in the process has a decisive influence on the outcome of that process. Thus, it is our belief that the existing literature in this field could be enhanced if more attention were given to the mindset of the different "actors" in this all-too-realistic psychodrama and to the roles that the various parties play in the process. Furthermore, a better understanding of emerging coping patterns would be useful in designing intervention techniques. (p. 16-17)

After downsizing has occurred within an organization, research has demonstrated that the individuals remaining are ultimately affected by the process. Often referred to as "survivors," it is believed that these employees struggle with a breach in the "psychological contract", first described by Harry Levinson (1962, as cited in Kets de Vries and Balazs, 1997). According to Levinson, this contract occurs as a result of an individual's unconscious expectation that the company would respond to "their psychological needs and support their psychological defenses in exchange for meeting the organization's unstated needs" (as cited in Kets de Vries & Balazs, 1997, p. 18). When

organizational change, downsizing and layoffs occur these employees experience a strong sense of betrayal as the implicit contract is broken, that is, "lifetime employment in return for hard work and loyalty" (Kets de Vries & Balazs, 1997, p. 18).

It appears that little is known empirically about the abilities of these "survivors" to effectively cope with, and adapt to change within the organization after exercising contractual procedures aimed at maintaining their job security. Current research in the management field has clearly pointed to the dramatic effects that organizational change and job loss can have on the "victims" and "survivors" in the corporate world (Appelbaum, Simpson, & Shapiro, 1987; Cameron, Freeman, & Mishra, 1991; Greenberg, 1990; Isabella, 1989). However, the majority of this research has focused on areas such as productivity (Karasek & Theorell, 1990; Matteson & Ivancevich, 1987), absenteeism (Blau, 1986; Hackett & Guion, 1985; Ivancevitch, 1985), and turnover (Barber, 1986; DeCotiis & Sumers, 1987). While a few studies have addressed employee response and attitudes towards the downsizing process (Appelbaum et al., 1987; Kets de Vries & Balazs, 1997) few have adequately addressed the process of adjustment that employees experience during organizational change (Greenberg, 1990). Given the widespread reorganization of the health care system, there are surprisingly few published studies that explore hospital employees' ability to cope with numerous position and departmental closures and mergers (Armstrong-Stassen, 1993; Godfrey, 1994; Golembiewski, Boudreau, Sun & Luo, 1998; Smeltzer, 1994).

Proposed Hypotheses

A number of hypotheses that flow from the review of the literature will be tested within this study. A generic hypothesis will be given, followed by a specific hypothesis or hypotheses that better define the variables in question and the direction of the proposed relationship. While there is some evidence in the literature to support stating the following hypotheses in an alternative form rather than a non-directional form, some of these hypotheses (i.e., the level of positive illusion will not change as the result of context of change, stage of change, age, total years of nursing experience, and years of relevant work

experience) are, however, considered exploratory in nature. The reason for this is that positive illusions have not been previously explored within a work context, nor have several factors which may, or may not, influence the expression of positive illusions (e.g., context of change, stage of change, age).

The term "positive illusions" used in some of the hypotheses will be operationally defined for the purpose of this study by way of four components: (a) dispositional optimism, (b) internal locus of control, (c) perceived invulnerability to negative events, and (d) enhanced self-perception. Perceived invulnerability to negative events and enhanced self-perception have been clearly identified by Taylor (1983; Taylor & Brown, 1988) as central to the construct of positive illusions. Dispositional optimism and internal locus of control have also been identified by Taylor as important factors in coping with stressful events, although not "illusionary" per se. However, for each hypothesis concerning "positive illusions" in Phase I of this study, these components will be examined both separately and together as a set, in order to better understand the construct of positive illusions and its association with other variables of interest. In Phase II, the main objective will be to explore the effects of "high" positive illusions and "low" positive illusions under different conditions (i.e., using a priming manipulation) on the frequency and type of self-statements and contextual inferences after taking into account potential confounding variables, that is, temporal distance and level of perceived stress.

Definitions of the remaining terms used in the hypotheses can be found in Appendix A (Glossary).

Phase I Hypotheses

Hypothesis 1. The level of positive illusion is correlated with one's perceptions of the self, the work environment, and personal efficacy in coping with a stressful event. More specifically, it is hypothesized that: (1.1) there is a positive correlation between the level of positive illusion and primary appraisals of challenge and benefit, (1.2) there is a negative correlation between the level of positive illusion and primary appraisals of threat and harm, (1.3) there is a positive correlation between the level of positive illusion and level of perceived

self-efficacy, (1.4) there is a positive correlation between the level of positive illusion and the reported use of the coping strategies of planful problem-solving, confrontive coping, positive reappraisal, accepting responsibility, and seeking social support, (1.5) there is a negative correlation between the level of positive illusion and the reported use of the coping strategies of distancing, escape-avoidance, and self-controlling, (1.6) there is a positive correlation between the level of positive illusion and the level of intrinsic job satisfaction, (1.7) there is a positive correlation between the level of positive illusion and the level of extrinsic job satisfaction, (1.8) there is a positive correlation between the level of positive illusions and the perceptions of problem-solving considered to be challenging, (1.9) there is a positive correlation between the level of positive illusions and the perceptions of supportive communication, (1.10) there is a positive correlation between the level of positive illusions and the perceptions of problem-solving considered to be controlling, and (1.11) there is a negative correlation between the level of positive illusions and the perceptions of conflictual communication.

Hypothesis 2. The level of positive illusion is correlated with dispositional affect. More specifically, it is hypothesized that: (2.1) there is a positive correlation between the level of positive illusion and the level of positive affect, and (2.2) there is a negative correlation between the level of positive illusion and the level of negative affect.

Hypothesis 3. The level of positive illusion does not vary as a function of the situational variables of stage of change and context of change. More specifically, it is hypothesized that: (3.1) that the level of positive illusions does not vary as a function of stage of change (i.e., anticipation, impact and post-impact), and (3.2) the level of positive illusions does not vary as a function of context of change (i.e., group versus individual).

Hypothesis 4. The level of positive illusion does not vary as a function of the personological variables of age, years of nursing experience, and years of relevant work experience. More specifically, it is hypothesized that: (4.1) the level

of positive illusions does not vary as a function of age, (4.2) the level of positive illusions does not vary as a function of years spent in present position, and (4.3) the level of positive illusions does not vary as a function of years of total nursing experience.

Phase II Hypotheses

Hypothesis 5. A longer, more detailed prime of a previously experienced stressful event results in better retrospective recall of the coping strategies used compared to a shorter, less detailed prime. More specifically, it is hypothesized that: (5.1) after controlling for temporal distance, a long-prime manipulation will result in more accurate recall of the coping strategies reportedly used to deal with a previously experienced stressful event during Phase I while a short-prime manipulation will result in a less accurate recall of the coping strategies reportedly used.

Hypothesis 6. There is an interaction that occurs between temporal distance and priming on the proportion of self-statements and contextual inferences. More specifically, it is hypothesized that: (6.1) in the short-prime group, as the temporal distance of the stressful event increases, the proportion of self-statements will increase relative to the proportion of contextual inferences, (6.2) in the long-prime group, the effect of temporal distance on the proportion of self and contextual inferences will be attenuated.

Hypothesis 7. The frequency and type of inference vary as a function of level of perceived stress. More specifically, it is hypothesized that: (7.1) there is a positive correlation between level of perceived stress and the frequency of negative contextual inferences, and (7.2) there is a negative correlation between level of perceived stress and the frequency of positive self-statements.

Hypothesis 8. The effectiveness of the priming manipulation in Phase II will vary as a function of the level of stress reported during Phase I. More specifically, it is hypothesized that the accuracy of retrospective recall of coping

strategies will vary as a function of level of stress reported during Phase I and the priming manipulation (i.e., higher levels of stress and long-prime manipulation will result in better recall compared to lower levels of stress and short-prime manipulation).

Hypothesis 9. After accounting for the effects of temporal distance, priming, and level of perceived stress, the frequency and type of inferences vary as a function of positive illusions. More specifically it is hypothesized that: (9.1) there is a positive correlation between the level of positive illusions and the frequency of positive self-statements, and (9.2) there is a positive correlation between the level of positive illusions and the frequency of positive contextual inferences.

Hypothesis 10. The tendency for an individual to utilize positive illusions remains relatively stable over time. More specifically, it is hypothesized that the level of positive illusion reported in Phase I (namely, self-perception, perceived vulnerability, dispositional optimism, and internal locus of control) will not differ from the level of positive illusion reported in Phase II.

CHAPTER III

Methodology

This chapter describes the methodology employed in the study including a description of the design, participants, measures, procedure, data coding, and data analysis.

Design

This study consisted of two phases: Phase I and Phase II. Phase I was a cross-sectional, non-experimental, survey design. The purpose of choosing this particular design was to enable a large data collection from a sample in order to make some generalizations to the general population about the variables under investigation. Phase I also provided a pool from which to draw the participants for Phase II.

Phase II was a quasi-experimental design which used a think-aloud methodology (Ericsson & Simon, 1975). Participants were selected and assigned to one of two treatment groups of equal size. Depending on the assigned treatment group, each participant was exposed to a different priming manipulation prior to participating in the think-aloud procedure where they responded to 16 coping items taken from the WCQ-Revised (Folkman & Lazarus, 1988b).

Participants

The participants selected for the study were full-time and part-time nurses drawn from three English-speaking, downtown hospitals. In the first hospital, an initial sample of 460 full-time registered nurses were identified through the Human Resource Department. These nurses then received a questionnaire package for the study through the hospital mail. In the other two hospitals, the researcher arranged with nurse managers to meet with their staff nurses in the different medical areas, on all three shifts. In these meetings the researcher

provided a general description of the study, answered questions, and solicited support for the study. Approximately 150 staff nurses expressed an interest in participating and were given a packet. In total, approximately 600 questionnaires were distributed for three hospitals.

Nurses, rather than employees in general, were selected in order to minimize individual differences (e.g., sex, educational level, job duties and responsibilities, and different collective agreements). The packet contained an invitation to participate in the study, instructions, consent form, information/demographic forms, and the necessary measures for the study. The demographic sheet identified the specific characteristics of the sample (e.g., sex, education level, positions held, number of years of experience, marital status, number of children, etc.). The stage of change and context of change were also identified from the information sheet (see Appendix B to view the questionnaire packet).

Phase I data analyses involved approximately twenty dependent variables which were analyzed in separate canonical correlations. Tabachnick and Fidell (1989) have stated that 10 cases are needed for every variable in this type of analysis while Stevens (1996) has suggested a more conservative ratio of 20:1. A minimum sample size of 200 was required for the statistical analysis and this number was ultimately achieved ($N = 209$). However, in analyses in which comparisons were made regarding the PI construct, only those nurses who completed all the relevant measures were included. For example, all the canonical correlations concerning PI, appraisals, coping, and the work variables, were all done with a sample size of $N = 185$.

The analyses in Phase II involved comparisons between two groups (high-positive illusions and low positive illusions which will be further defined) under two treatment conditions (long prime and short prime). The purpose of the analyses in Phase II was to see if there was a large effect caused by positive illusions (namely dispositional optimism, internal locus of control, perceived invulnerability to negative events, and self-perception) on the types of inferences made in response to selected coping items. An initial power analysis determined that in order to get a main effect size of approximately .66, an interaction effect of .46, and a power coefficient of .80, Phase II would require a sample of 36, given an $\alpha = .05$.

Instruments

The following instruments were used in collecting the data required for the study. Written and verbal permission was obtained from the authors and publishers of the measures and scales used in this study. The complete questionnaire can be found in Appendix B.

Self-Perception Questionnaire

This is a questionnaire designed by Taylor (Taylor & Gollwitzer, 1995) in one of her studies to determine how participants rate themselves on 21 qualities and skills (e.g., academic ability, leadership ability, creativity) compared to others of their age and gender. For the purposes of this study, "college student" was replaced with "nurse" on the questionnaire. Nurses rated themselves on a 7-point Likert scale which has a range of 1 (much worse than the average nurse of my age and gender) to 7 (much better than the average nurse of my age and gender). A measure of self-perception is calculated by summing the self-rating to yield a total score. Those nurses who saw themselves as equally capable and talented as the average nurse their age and gender, obtained a total score of 84. Those who self-enhance obtained a score higher than 84. The questionnaire has good face validity. It is not expected to have good test-retest reliability as the measure is expected to vary depending on the situation (e.g. a deliberative or implemental mindset).

Perceived Risk

The second questionnaire used by Taylor and Gollwitzer (1995) in their study examining positive illusions and mindset was derived from a measure of relative perceived risk by Perloff and Fetzer (1986). This questionnaire asks nurses to indicate how likely it is that they would encounter each of eight misfortunes during their lifetime and elsewhere the likelihood of those same misfortunes befalling an average college student the same age and gender. In this study "college student" was replaced with "nurse."

The risks cited in this measure are four somewhat controllable risks (i.e., mugging, addiction to prescription drugs, financial problems, divorce) and four

largely uncontrollable risks (i.e., heart disease, losing a partner to early death, diabetes, and losing a limb). Nurses rate themselves on a 7-point scale ranging from 1 (not at all likely) to 7 (very likely). Scores for vulnerability are determined by subtracting how nurses rate themselves from how they rate others across the two sets of four risks. A negative score indicates a greater perceived invulnerability to risk whereas a positive score indicates a greater perceived vulnerability to risk. The scale is believed to have good face validity. The authors have proposed that the measure is more reliable if the target "other" is more specific (e.g., a "close friend", or "nurse", rather than "people in general").

Locus of Control Scale

The scale for measuring internal locus of control was H. Levenson's (1972) Locus of Control Scale (LCS). The LCS has three subscales measuring internal locus of control (I), powerful others (P), and chance (C). There are 24 Likert-scale items, eight items per subscale. Item analyses have indicated that all items significantly distinguish between high and low scorers for each of the three scales. Internal consistency estimates are moderately high. Kuder-Richardson reliabilities (coefficient alpha) yielded $r = .64$ for the I scale, $.77$ for the P scale, and $.78$ for the C scale. Split-half reliabilities (Spearman-Brown) were: $r = .62$ (I scale), $.66$ (P scale), and $.64$ (C scale). Test-retest reliabilities for a one-week period were: $r = .64$, $.74$ and $.78$. Examples of items are "Whether or not I get to be a leader depends mostly on my ability" (I scale); "Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power" (P scale); "It's chiefly a matter of fate whether or not I have a few friends or many friends" (C scale).

Life Orientation Test

Dispositional optimism was measured using a variation of the Life Orientation Test (Scheier & Carver, 1985). The original LOT consists of 12 items: eight target items and four filler items on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items include statements such as "If something can go wrong for me, it will" and "I'm always optimistic about my future." Optimism items are worded in a positive format and in a negative format

requiring that the negatively worded items be reversed prior to calculating a total optimism score. Reliability is high (.83). The test-retest correlation is .79 suggesting that the LOT possesses reasonable stability across time.

Since the original scale, however, there have been increasing criticisms aimed at the LOT charging that "effects attributed to optimism are indistinguishable from those of unmeasured third variables, most notably, neuroticism" (p. 1063; Scheier, Carver, & Bridges, 1994) and that the scale is measuring a bipolar rather than a unipolar dimension. A recent meta-analytic review of the original LOT concludes that "Although optimism is highly significantly associated with measures of coping, symptom reporting and negative affect, it is concluded that the most reliable association is between optimism and negative affect" (Andersson, 1996, p. 719). This is supported by the work of Marshall, Wortman, Kusulas, Hervig, and Vickers, (1992) who found that the positively-worded LOT items were associated with extraversion and positive affect while the negatively-worded LOT items were associated with neuroticism and negative affect.

These criticisms have prompted the authors (Scheier, et. al., 1994) to revise the scale, and to drop two of the original items ("I always look on the bright side of things" and "I'm a believer in the idea that "every cloud has a silver lining") and to add one new positively worded sentence. However, in order to avoid any confounding effects of negative affect in this present study, it was decided that only the four positively worded items from the original LOT would be used to measure optimism in this study which is supported by the findings of Marshall et al. (1992).

PANAS-X

Positive and negative affect was measured using the Positive Affect/Negative Affect Scale--Revised (PANAS-X) by Watson, Clark, and Tellegen (1988). The original PANAS-X is a 60-item scale that takes approximately 10 minutes to complete. In addition to the two higher-order scales (negative and positive affect), the PANAS-X also measures 11 specific affects: Fear, Sadness, Guilt, Hostility, Shyness, Fatigue, Surprise, Joviality, Self-

Assurance, Attentiveness, and Serenity. The scales can be adapted for different time frames from "right now" to "in general, or on average."

For the purposes of this study, only the two higher-order scales were used (positive affect [PA] and negative affect [NA]), which reduced the number of items to 20 (PANAS-X Shortened Version; Watson & Tellegen, 1988). The ten items for NA are afraid, scared, nervous, jittery, irritable, hostile, guilty, ashamed, upset, distressed. The 10 items for PA are active, alert, attentive, determined, enthusiastic, excited, inspired, interested. The time frame that was used was "in general, or on average" in order to obtain a dispositional rating.

The reliability of the PANAS-X (Shortened Version) is very good, with alpha reliabilities ranging from .83 to .90 for PA, and .85 to .90 for NA. Reliabilities have been relatively unaffected by different time frames used. Correlation between the PA and NA scales is generally low, typically ranging from -.05 to -.35. Convergent correlations are .35 to .48 for PA and .21 to .36 for NA. No significant gender differences have been demonstrated. It has been found that mean scores tend to increase as the rated time frame lengthens. Test-retest data over intervals of 56 to 99 months demonstrated moderate stability over time with retest correlations of .43 and .39 for NA and PA respectively.

Several cross-cultural studies have revealed the robustness of these two factors, NA and PA. Russell and his colleagues (1989) tested a circumplex model of affect with Estonians, Greeks, Polish and Chinese, and found it to be consistent with English populations. Watson, Clark and Tellegen (1984) demonstrated the emergence of NA and PA as the major affect dimensions in a Japanese sample.

Priming Narrative

Nurses were asked to write a personal narrative in Phase I concerning a stressful event which had occurred as the result of organizational change. They were encouraged to write about the current stressful event in detail (e.g., what the stressful event was, how they were involved in it, and how they felt about it). This narrative was used as the prime in Phase II; either as a long prime which required the nurse to reread the original narrative, or as a short prime in which they read a one-sentence reminder written by the researcher which summarized the original narrative.

Primary Appraisal

A method used by Folkman and Lazarus (1985) to determine primary appraisal was utilized in this study. The nurses were asked to indicate on a 5-point Likert scale ranging from 1 (not at all) to 5 (a great deal), the extent to which they experienced specific emotions in regards to the stressful event identified in the narrative. The emotions shown here are grouped according to appraisal categories, however, they were presented to the nurse in a randomized order on the questionnaire: (a) threat emotions were worried, fearful, and anxious, (b) harm emotions were angry, sad, disappointed, guilty, and disgusted, (c) challenge emotions were confident, hopeful, and eager, (d) benefit emotions were exhilarated, pleased, happy, and relieved.

Scales are scored by summing the ratings for each item. In their study the reliabilities calculated for each scale were as follows: the mean alpha for the threat emotions scale was .80; the harm emotions scale was .84; the challenge emotions scale was .59; and the benefit emotions scale was .78. Caution was advised in interpreting the challenge emotions scale due to its relatively low reliability.

Self-Efficacy

Self-efficacy was measured by using a single item similar to that used by Chwalisz, Altmaier, and Russell (1992) in their study concerning causal attributions, self-efficacy, and coping with stress. For the purposes of this study, nurses were asked to focus on the stressful event they identified in the narrative. They were then asked to judge their ability to deal with this event and to reply to a question regarding their level of confidence (i.e., "How confident do you feel about your ability to deal with this stressful event?"). They indicated their response on a 5-point Likert scale, from 0 (not at all confident) to 4 (very confident). The question is expected to have good face validity.

Ways of Coping Questionnaire-Revised

The Ways of Coping Questionnaire-Revised (WCQ; Folkman & Lazarus, 1988b) was "designed to identify the thoughts and actions an individual has used to cope with a specific stressful encounter" (p. 5). It does not measure coping

dispositions or styles, but rather an individual's coping processes. It is a 66-item, 4-point Likert scale in which respondents indicate the frequency with which they used each coping strategy listed (e.g., "I hoped for a miracle", "I made a plan of action and followed it", "Criticized or lectured myself").

Originally, the WCQ contained two broad categories of coping: problem-focused and emotion-focused coping. The revision of the original WCQ was necessary due to the fact that many of the coping items fell into both the problem-focused and emotion-focused coping scales depending on their perceived function (e.g., seeking advice could be viewed as problem-focused if information was being sought in order to better understand a situation, or emotion-focused if its function was to obtain emotional support). Confrontive coping, planful problem-solving, and seeking social support have been identified as including virtually all of the problem-focused strategies (Folkman, Lazarus, Gruen, & DeLongis, 1986). It was also suggested that positive reappraisal was most influenced by personality with an autocorrelation of .47. As a result of findings that revealed that certain items could fall under either problem-focused or emotion-focused coping (e.g., seeking advice), this division into problem-focused and emotion-focused coping is no longer encouraged.

Following extensive factor-analyses, the revised WCQ contains eight scales: confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem solving, and positive reappraisal. The revised WCQ has a 4-point Likert scale, indicating the frequency with which each strategy is used: 0 (does not apply and/or not used), 1 (used somewhat), 2 (used quite a bit), and 3 (used a great deal). The eight coping scales of the WCQ have moderate to high alpha coefficients ranging from 0.61 to 0.79. Test-retest reliabilities for the WCQ are not reported in the manual as the authors have claimed that it is difficult to apply this to the WCQ as "coping" is a process.

Minnesota Satisfaction Questionnaire

Job satisfaction was measured using the Minnesota Satisfaction Questionnaire (MSQ; Weiss, Dawis, England, & Lofquist, 1967). The MSQ is a questionnaire designed to obtain information about how satisfied people feel in

their present job. Responses are made on a 5-point Likert-scale ranging from 1 (very dissatisfied) to 5 (very satisfied).

The MSQ has a long and short format. The short format was used in this study and consists of 20 statements which assess the subject's satisfaction with the reinforcers of his job (e.g., "the freedom to use my own judgment). The form contains three subscales: intrinsic satisfaction (which is related to the job itself and the individual's sense of accomplishment), extrinsic satisfaction (which is associated with pay, the organization, level of supervision, and status), and general satisfaction (which is a sum of intrinsic and extrinsic scores). The alpha reliabilities for the intrinsic satisfaction and the extrinsic satisfaction subscales are .86 and .81 respectively.

In general the reliability coefficients for the MSQ-Short Form are high. The reliability coefficients for the intrinsic satisfaction scale range from .84 to .91 and on extrinsic satisfaction from .77 to .82. Validity for the short-form has been inferred from the long-form. Data collected have supported the validity of the MSQ scales as measures of satisfaction.

Perceived Organizational Climate

The Organizational Climate Scale (OCS) was developed to assess the problem solving and communication patterns of individuals in the workplace that are sensitive to organizational change (Thompson & McCubbin, 1987). It is a 30-item Likert scale ranging from 0 (False) to 3 (Mostly True). The scale measures two problem-solving dimensions (challenge and control) and two communication dimensions (conflictual and supportive). The challenge dimension assesses the respondent's perception of the organization's emphasis on working together to solve problems, planning, and defining difficulties as challenges (e.g., "We work together to solve problems"). The control dimension focuses on internal locus of control and the perception that problem solving is within the employees' and the organization's control, and not shaped by outside factors over which the organization exercises little or no influence (e.g., "Our work situation is determined by factors over which we have little influence"). The conflictual communication dimension assesses to what degree the employee perceives the organization as emphasizing confrontation and embarrassment,

and of making matters more volatile (e.g., "We are not open and honest with one another"). Supportive communication, on the other hand, reflects the perception that the organization acts with respect, sensitivity, and affirmation, is open to listening to concerns, and seeks positive conclusions in its approach to managing change and tensions (e.g., "We take the time to hear what each other has to say or feel").

The OCS appears to have good construct validity with strong correlations with the Work Environment subscales of Work Pressure and Supervisor Support (McCubbin et al., 1992; Moos, 1974). The overall internal reliability (Cronbach's alpha) for the challenge, control, conflictual, and supportive subscales are .82, .83, .87, and .89 respectively. Test-retest over a three-year period, once per year, obtained coefficients ranging from .49 to .68, all significant at the $p < .05$ level.

Temporal Distance

In order to establish the nurse's score for temporal distance, the difference in number of days was calculated between the date the nurse signed the consent form in Phase I and the date of the think-aloud procedure done with the researcher in Phase II.

Perceived Stress

The nurses were asked to rate to what extent they perceived the identified stressful event as "stressful." This single question contained a 10-point Likert-type scale with descriptors that allowed the respondent a good range of choice points. The scale was developed by the researcher and appears to have good face validity.

Research Variables

This study assumed that hospital downsizing and reorganization is a dynamic process (considered in terms of stages) which requires individuals to respond to the demands or tasks required by the stage in which they are engaged. As such, it holds the opportunity to be appraised differently by individuals depending on how they see themselves being affected by the event

itself. As the decision to downsize or close positions is an administrative one, the event was viewed as an external change event. The focus was, therefore, on how individuals appraised the event at various stages, and mobilized their personal resources in order to cope with it. The change stages in this study were operationalized as grouping variables previously used by Folkman and Lazarus (1984): anticipation, impact, and post-impact (p. 147). Definitions of the other variables can be found in Appendix A (Glossary).

Phase I, Data Set 1

Positive illusions were treated as a set of independent variables in the analyses: dispositional optimism, internal locus of control, perceived invulnerability, and self-perception. Variables related to positive illusions were treated as continuous variables in all of the analyses in Phase I. The dependent variables investigated were dispositional affect, primary appraisal, self-efficacy, coping strategies, job satisfaction and perceived occupational climate. Dispositional affect was delineated as positive or negative affect. Primary appraisal was delineated as perceptions of threat, harm, challenge, and benefit. The coping strategies were delineated as distancing, self-controlling, escape-avoidance, positive reappraisal, confrontive coping, accepting responsibility, planful problem-solving, and seeking social support. Job satisfaction was delineated as intrinsic satisfaction and extrinsic satisfaction. Perceived organizational climate was delineated as challenge problem-solving, control problem-solving, supportive communication, and confrontive communication.

Phase I, Data Set 2

In this data set, positive illusions became the dependent variable and were again delineated as dispositional optimism, internal locus of control, perceived invulnerability, and self-perception. The independent variables investigated in this set were stage of change and context of change. Stage of change and context of change are discrete variables and were treated as grouping variables. All variables related to positive illusions were treated as continuous variables in the analyses. Stage of change was a categorical variable and was delineated as anticipation, impact, and post-impact. The context of change was also a

categorical variable and was delineated as group and individual. Age, years of relevant working experience, and total years in nursing were three personological continuous variables examined in terms of their relationship to the positive illusion variables.

Phase II

In selecting the nurses for Phase II, positive illusions were treated as a categorical variable (high and low) based on the nurse's scores of dispositional optimism, internal locus of control, perceived invulnerability to negative events, and self-perception (TotPI). The high positive illusion group contained 18 nurses who had the highest summed scores on all four measures¹. The low positive illusion group contained 18 nurses who had the lowest summed scores on all four PI measures. Temporal distance (TD) was calculated by determining the number of days between signing the consent form for Phase I and participating in the think-aloud procedure in Phase II. Temporal distance and level of perceived stress (LPS) were treated as a continuous variables where appropriate.

High and low illusion nurses were assigned to one of two treatment conditions. The two conditions were: (a) a long-prime manipulation, and (b) a short-prime manipulation. The long-prime condition referred to the procedure in which a person's full narrative written in Phase I was used as the prime. The short-prime condition referred to a one-sentence reminder of the stressful event identified in Phase I, constructed by the researcher to be as neutral as possible. Nine high-illusion nurses were selected for the long-prime manipulation and nine high-illusion nurses were selected for the short-prime manipulation by alternating the assignment while moving down the list of total positive illusion scores. The same procedure was done for the low illusion nurses. Within, and between these two groups, three independent variables were examined. They were: (a) positive illusions (bearing on self-perception, perceived invulnerability,

¹ Increasing positive scores on three of the positive illusion measures (with the exception of perceived invulnerability) indicate a higher level of positive illusion. An increasing positive score for perceived invulnerability, however, indicates a higher level of vulnerability. In order to calculate a total positive illusion score, the obtained score for perceived invulnerability was first reversed and then added to the remaining three scores.

dispositional optimism, and internal locus of control), (b) temporal distance, and (c) level of perceived stress.

One of the dependent variables examined in Phase II was attribution type and this was examined at multiple levels. First, attribution type was delineated as self-statements and contextual inferences. Contextual inferences were further delineated as "other" and "situation." Each category of self-statements and other/situation inferences were then delineated as disposition, emotion, behavior, and attitude/value. Finally, each self-statement and contextual inference was delineated as either negative or positive (Refer to Data Coding Manual in Appendix F for a complete description of these variables).

Procedure

Phase I

Approximately 600 full-time and part-time registered nurses were solicited to participate in Phase I of the study. They either received a questionnaire packet through the hospital mail or obtained one directly from the researcher. This packet contained a letter explaining the purpose of the study, instruction sheet, consent form, information/demographic sheet and measures for the study (see Appendix B). The letter and consent form were in both English and French. The consent form outlined the researcher's responsibilities to the nurse and how the data would be treated. The researcher's phone number was indicated in the letter so that potential respondents could receive further information if they wished. On the back of the demographic sheet a second enclosed letter stated that a small number of nurses would be required for Phase II and asked the nurses if they might be interested. The letter made it very clear that their participation in Phase I in no way obliged them to participate in Phase II. Two self-addressed envelopes were included so that the nurse could return the demographic sheet and signed consent form to the researcher separate from the measures in order to maintain confidentiality. All measures were coded so that the identity of the respondent was known only to the researcher. Two reminders were sent throughout the hospitals at three weeks and six weeks.

The demographic data sheet allowed the researcher to describe the sample population. An important section helped to identify to which of the three organizational change stages the respondent belonged. The delineation of a maximum six-month time period in the change stages was done in order to best capture the subject's recollections of the event within a more recent time period (e.g., an employee who assumed a new position more than six months ago would now be classified as pre-event stage).

Phase II

The sample consisted of 36 nurses who were paid twenty dollars for their participation. In order to have qualified for Phase II, nurses had to have: (a) completed and returned the measures from Phase I, (b) indicated in Phase I that they were interested in participating in Phase II, (c) been experiencing the stressful event at the time of the first questionnaire, and (d) filled out the narrative section in Phase I describing the stressful event according to the criteria outlined at that time (i.e., what the situation was, how they were involved, what their response was to it). The selection of the sample for Phase II was based on the nurse's separate scores of the four measures of positive illusions added together to give a total score. Rank-ordered from highest total score to lowest total score, the highest scoring 18 nurses and the lowest scoring 18 nurses were contacted to participate in Phase II. The 18 nurses in each subset were then assigned to either the long-prime or short-prime manipulation.

Nurses were contacted by phone and the Phase II procedure was explained. If they agreed, an interview of approximately one hour was arranged. These interviews were conducted at a place selected by the nurse (e.g., their home, the researcher's office, or at the hospital). At the beginning of the interview, the general purpose of the study and procedure was explained to the nurse and the consent form for Phase II was signed (Appendix C). The nurse was informed that the entire think-aloud (TA) procedure would be audiotaped and was assured of the researcher's intent and procedures to ensure the nurse's confidentiality.

After signing the consent, more detailed instructions were given (Appendix C). Nurses were informed that a think-aloud procedure would be

used and that they would have a chance to practice prior to the main task. The practice tasks allowed the nurses to become familiar with the think-aloud procedure, the experimental situation, and the tape recorder. The warm-up procedure also assisted the nurses in learning how to verbalize self-generated thought while performing a task. The researcher was free at this time to interrupt, explain, clarify, and monitor the nurse's processing of material. Following the initial practice, final instructions were given (Appendix C). Those nurses in the long-prime manipulation were asked to read aloud their narrative from Phase I. Those nurses in the short-prime manipulation were given a one-sentence reminder of the their original stressful event described in Phase I (e.g., "the event you described as being stressful when you originally participated in the study had to do with losing your position on the surgical floor, and having to bump into another employee's position"). At this point, the tape recorder was turned on. Nurses were then presented with 16 coping items taken from the WCQ and asked to rate each item again in relation to the past stressful event. The coping items were presented on cards one at a time. The rating scale (i.e., 0 = "not used" to 3 = "used a great deal") was written on the bottom of each card. The nurse was asked to "think-aloud" reasons for the rating that was given. The items chosen for this procedure were the two highest loading items on the factor analysis for each coping set according to Folkman and Lazarus (1988b).

During this time, the researcher took every precaution not to interfere with the nurse's deliberations. However, in order to ensure that the subject continued to think aloud and encode non-verbal thoughts into verbal form (Ericsson & Simon, 1984) the experimenter referred to a list of prompts when necessary (Appendix C). The list of prompts were strictly adhered to and used only when a subject lapsed into silence for more than 3-4 seconds or when task-relevant information was no longer being accessed.

Following the think-aloud procedure, the nurse then repeated the measures for positive illusions (i.e., dispositional optimism, internal locus of control, perceived invulnerability, and self-perception) used in Phase I (Appendix D). This was done after the TA procedure so as not to confound the priming manipulation.

Data Coding

Data Preparation

Audiotaped think-aloud data were transcribed and then segmented for purposes of coding. A segment is defined as the smallest number of words containing a self-statement, contextual inference, or degree marker bearing on the explanations given by the nurse as to why a coping item was rated a particular way. A general inference is defined as any judgment that goes beyond the information given or that we have at our disposal in memory. A self-statement is any inference made about the self. A contextual inference is any inference made about other people or the environment which relates to the context of the stressful event. A degree marker is an elaboration of a self-statement or contextual inference which does not contain any further statements/ inferences unrelated to the original statement/ inference. Each segment must contain enough information to be classified as either a self-statement, contextual inference (other or situation), or a degree marker (refer to the Coding Manual in Appendix F for a more complete description of the segmentation and coding procedure, and definition of terms; an actual example of coding a transcript can be found in Appendix F.2 in the Coding Manual).

Training and Coding Process

An experienced rater in protocol analysis was enlisted in the study in order to code the transcripts of the nurses, thus providing a reliability check of the researcher's ratings. The rater was trained by the researcher with the help of the Coding Manual developed by the researcher (Appendix F). The rater was trained on practice transcripts until an inter-rater reliability of at least .85 was obtained. After that training period, the experienced rater was given randomly selected transcripts from each of the four treatment groups which she coded independently. Ratings were then compared with those obtained by the researcher. Response segments which were not rated the same were reviewed together to see if a consensus could be reached. If a consensus could not be reached due to the segment's ambiguous nature, then the segment was classified

as unratable and excluded from the analyses. Ninety-eight percent agreement between the researcher and expert rater was obtained.

Data Analysis

The construct of positive illusions has been represented as a variable in two ways during Phase I and Phase II: (a) as four separate measures (CompPI²), and (b) as an additive or total score of four separate measures (TotPI³). The analyses in Phase I were performed using the CompPI. The objective in doing this was to explore the construct of positive illusions in relation to the four dimensions identified: dispositional optimism, internal locus of control, perceived invulnerability, and self-perception. Taylor has often referred to positive illusions as "high" or "low" (1983, 1989; Taylor & Brown, 1988; Taylor & Gollwitzer, 1994) yet it has not been clear how these definitions have been formulated. While the TotPI score was used in Phase II in order to obtain the two categorical variables of "high" and "low" PI, the CompPI continued to be used for most of the analyses.

Phase I

The data from Phase I were analyzed using simple Pearson correlations, canonical correlation analyses in order to better understand the PI construct, and multiple regression techniques to investigate the multiple correlations between the positive illusion variables and various situational and personological variables. The Pearson and canonical correlations were used to examine the relationships between the positive illusion variables (dispositional optimism, internal locus of control, perceived invulnerability, and self-perception) and variables that describe the nurses' view of their general work environment and their perceptions related to an identified stressful work event (i.e., primary appraisals, self-efficacy, perceived level of stress, coping strategies).

In order to explore the construct of positive illusions and its relationship with other variables related to appraisal, coping, and work, it was necessary to

² Component Positive Illusion Score

use a technique of analysis that could examine the association between, and within, two sets of variables. Canonical correlation is a type of analysis that could accomplish this. Stevens (1996) has described canonical correlation analyses as "appropriate if the wish is to parsimoniously describe the number and nature of mutually independent relationships existing between the two sets" (p. 408). According to Stevens, this technique first finds two linear combinations (in this case, one from the positive illusion measures and one from the appraisal measures) which have the maximum possible Pearson correlation. These two sets are then correlated with one another and the result is the first canonical correlation, which is the largest correlation possible between the two. After this is completed, "the procedure searches for a second pair of linear combinations, uncorrelated with the first pair, such that the Pearson correlation between this pair is the next largest possible [meaning that] (1) the canonical variates *within* each set are uncorrelated, i.e., $r_{u1u2} = r_{v1v2} = 0$ and (2) the canonical variates are uncorrelated *across* sets, i.e., $r_{u1v2} = r_{v1u2} = 0$." (p. 410). The maximum number of possible canonical correlations is equal to the number of variables in the smallest set. A residual test procedure is used in order to determine how many canonical correlations are statistically significant. Once the significance of the first canonical correlation is determined, it is removed and the residual is tested for significance. This continues for all possible sets. Only the significant canonical correlations are considered.

Interpreting the results of the canonical correlations is done by examining the standardized coefficients and the canonical variate-variable correlations. According to Stevens, the standardized coefficient "is obtained by multiplying the raw coefficient for each variable by the standard deviation for that variable" (p. 264). The canonical variate-variable correlations refer to the "correlations between each discriminant function and each of the original variables" (p. 264). Variability in the directions of the coefficients and correlations has lead to different opinions as to which method should be used in order to interpret results. Stevens cites the work of Meredith (1964), Porebski (1966), and Darlington, Weinberg, and Walberg (1973) who collectively recommend that the

³ Total Positive Illusion Score

canonical variate-variable correlations be used due to "assumed greater stability of the correlations in small- or medium-sized samples, especially when there are high or fairly high intercorrelations among the variables" and also because "the correlations give a direct indication of which variables are most closely aligned with the unobserved trait which the canonical variate (discriminant function) represents" (p. 264). The correlations, therefore, are used for substantive interpretation in order to "name the underlying construct which the discriminant function represents" (p. 270). Stevens also points out that this method is "parallel to what is done in factor analysis, where factor-variable correlations (the so called factor loadings) are used to interpret the factors" (p. 264). On the other hand, Stevens discusses the support given for the use of the standardized coefficients in the interpretation of results whereby they "are partial coefficients, with the effects of the other variables removed" (p. 264). The pattern of the coefficients with the correlations can also be used to detect the presence of suppressor variables. Suppressor variables are defined as "variables that enhance importance of other IVs by virtue of suppression of irrelevant variance in other IVs or in the DV" (Tabachnick & Fidell, 1989; p. 161). Stevens concludes his discussion of the two methods with the following:

use the correlations for substantive interpretation of the discriminant functions, but use the coefficients to determine which of the variables are redundant given that others are in the set.
(p. 265)

In reference to this study, the correlations will be used to describe the structure of the sets (e.g., the construct of positive illusions), while the coefficients will be used to identify suppressor variables and to understand how the canonical correlation was calculated.

Sample size for performing reliable canonical correlations must be considered carefully and is discussed in some detail by Stevens (1996). An exploration of this technique performed by Mendoza, Markos, and Gonter (1978; as cited in Stevens, 1996) found that strong population canonical correlations (i.e., .9, .8 and .7) required a sample size as small as 50 to detect these over 90% of

the time, while weak population canonical correlations (i.e., .3) required a sample size of 200 to be detected about 60% of the time (as cited in Stevens, 1996). However, in reviewing Barcikowski and Stevens (1975), Stevens points out that while a ratio of 20:1 is sufficient to reliably interpret the first canonical correlation, caution should be exercised in interpreting the second canonical correlation as the contribution of important variables may be missed.

Tabachnick and Fidell (1989) on the other hand, suggest a ratio of 10:1 for canonical correlation "For variables in the social sciences where reliability is often around .80" (p. 195). Several of the measures used in this study (e.g., WCQ, appraisals, self-efficacy) do not have good test-retest reliability. However, as pointed out by Aldwin (1994), "These instruments are meant to tap variability and change, making them almost by definition unreliable" (p. 115). The assumption then, is that the responses are the participants' perceptions at the time of reporting and are, therefore, reliable. However, as this study questions the reliability of such measures, the conservative ratio of 20:1 suggested by Stevens (1996) will be applied whenever possible.

Whether or not positive illusions change as a result of some specific situational variables was explored using MANOVAs. The first analysis examined if positive illusions changed as a function of stage of change. Another analysis used a 2 x 2 MANOVA to see if positive illusions changed as a function of two sets of variables: (a) two levels of stage of change (impact and post-impact) and (b) two levels of context of change (individual and group). The last set of analyses employed simple Pearson and multiple regression techniques to examine the relationships between positive illusions (CompPI) and the personological variables of age, years of nursing, and relevant work experience.

Phase II

The data collected during Phase II were analyzed using a series of multivariate analysis of variance or covariance models. All data were tested for assumptions of parallelism prior to the final analyses being performed. For both Phase I and Phase II, partial sums of squares (i.e., type II in regression and type III in GLM) and least square mean estimates were used whenever dealing with unequal n 's or analyses of covariance to control for any possible bias in

estimating. A repeated measures MANOVA was used to examine the consistency of reporting one's coping with an identified stressful event and of the level of positive illusions over time. Multivariate analyses of variance and covariance were used to examine the differences in the type and frequency of self-statements and contextual inferences (others and situational) as they may be affected by the level of priming condition (short and long), temporal distance, and level of perceived stress. Finally, the relationship between the frequency and type of self-statements and contextual inferences, and the individual's level of positive illusions was explored.

Hypotheses in Phase II bearing on frequency, type, and proportions of self-statements and contextual inferences were explored in different ways. The self-statements and contextual inferences (others and situational) were subjected to four levels of analyses as: (a) total frequencies (i.e., total self-statements and total contextual inferences, the latter being further categorized into total other inferences and total situational inferences), (b) self-statements and contextual inferences further subcategorized at three levels: emotional, behavioral, and attitude/ value, (c) proportional totals in which the raw scores were classified as described in (b) and then adjusted for the differences in frequency of self-statement categories compared to contextual categories (eight vs. ten), and (d) the difference between the number of self-statements and contextual inferences (SCDiff⁴) which yields a proportional value. These different levels of analyses will be described in further detail later in the next chapter and a complete description of all categories can be found in Appendix F.

⁴ Self-Contextual Difference

CHAPTER IV:

Results

The data were compiled from self-report questionnaires completed and returned during Phase I by volunteer participants who were nurses, and from think-aloud protocols and completed self-report questionnaires from a smaller sample of these same nurses during Phase II.

Overview of the Study

Phase I

The main objective of Phase I was to explore the construct of positive illusions (PI) as described by Taylor (1983; Taylor & Brown, 1988) in relation to a number of other variables of interest to this study: appraisals, self-efficacy, coping strategies, job satisfaction, perceptions of occupational climate, and dispositional affect. A person high in positive illusion has been described as one who exhibits unrealistic optimism, exaggerated perceptions of control or mastery, and unrealistically positive self-evaluations. In their work, Taylor and her associates have used a variety of measures in order to measure coping and levels of illusion. Phase I and II utilizes some of those same measures to understand the nature of this construct, and explores to what degree the four PI variables are related to the construct of positive illusions (i.e., dispositional optimism, internal locus of control, perceived invulnerability to negative events, and enhanced self-perception) and contribute to individuals' perception of coping with a stressful situation.

A second objective in Phase I was to explore Taylor's statements that positive illusions should be viewed as a situational phenomenon rather than as a dispositional set of characteristics or tendencies, that is, "statelike" versus "traitlike" (Taylor & Armor, 1996). In examining this proposition of Taylor's, several situational variables and measures of dispositional affect were explored in relation to the four components identified for the construct of positive illusions.

Phase II

The main objective of Phase II was to explore the process of inference-making that occurs while an individual ranks selected items from a coping inventory. This phase of the study is primarily concerned with how factors such as temporal distance, level of stress, a priming manipulation, and levels of positive illusion affect the frequency and type of inferences made during item response. Specifically, the hypotheses propose that when the effects of temporal distance, level of stress, and the priming condition are controlled for, higher levels of illusion would correlate more with positive inference-making in regards to the self and the environment, and less with negative inference-making. These analyses will be useful in discussing the potential constraints of self-report measures when they are used retrospectively. In addition, Phase II continues the examination of the stability of positive illusions over time using a repeated measures analysis.

In the following section, the treatment of the data will be discussed for both Phase I and Phase II. Next, the descriptive data pertaining to the nurses who participated in the study will be presented. Following this, the results of the analyses will be discussed in the order of the hypotheses presented in Chapter 3. The hypotheses have been grouped together under section names that identify the main theme of the questions posed. Phase I hypotheses have been subgrouped as: (a) appraisals and self-efficacy, (b) coping strategies, (c) appraisals, self-efficacy, and coping (d) work, (e) dispositional affect, and (f) situational and personological variables. Phase II hypotheses have been subgrouped as: (a) priming manipulation, (b) level of stress, and (c) positive illusions. Tables and graphs will appear where appropriate to assist in the presentation of the data. Each set of hypotheses will conclude with a summary of the results from the analyses. Once all the results addressing the hypotheses have been presented, Chapter V will then discuss the results within a theoretical framework in order to answer the questions of this study.

Treatment of the Data

Phase I

The data for Phase I were drawn from self-report questionnaires completed and returned by the nurses in the study. These questionnaires were scored by the researcher. The questionnaire was divided into two parts (see Appendix B). The first part of the questionnaire contained a series of measures examining the nurse's perceptions of self (i.e., dispositional optimism, locus of control, perceived invulnerability, self-perception, dispositional affect, work satisfaction and perceived occupational climate). The second part required the nurse to identify and write about a stressful work event (the narrative), and then to complete measures related to that event (i.e., level of perceived stress, primary appraisals, self-efficacy, and coping strategies used to deal with the event).

A total of 209 questionnaires were returned with the first part of the questionnaire completed; however, only 185 questionnaires were complete for both parts. While incomplete questionnaires excluded those nurses from Phase II of the study, the completed data were used wherever possible. As a result, data used for the descriptive analyses had varying numbers of responses. Information on the demographic forms that was not given by the nurse was entered as incomplete, and not considered in the analyses. However, despite incomplete questionnaires and demographics, the total sample size was sufficient for the analyses to have good power ($N = 185-209$). Nurses had to have completed all four measures pertaining to positive illusions (dispositional optimism, internal locus of control, perceived invulnerability, and self-perception) in order to be included in both phases of the study: Phase I and Phase II.

The analyses pertaining to the construct of positive illusions were conducted using a canonical correlation technique. The positive illusion (PI) construct was examined by way of four separate measures: dispositional optimism, internal locus of control, invulnerability, and self-perception. Taylor (1983; Taylor & Brown, 1988; Taylor & Gollwitzer, 1995) have identified the latter two components (i.e., enhanced self-perception and perceived invulnerability to negative events) as being most representative of the construct of positive illusions. However, as dispositional optimism and internal locus of control are

measures that are often related to coping, and because they are also capable of demonstrating extreme positions (possibly reflective of illusions) they have been included along with the other two PI components. By examining the relationship of the four PI components as a set with the other variables under consideration (i.e., appraisals, self-efficacy, coping strategies, dispositional affect, perceptions of occupational climate, job satisfaction) and by using canonical correlation analyses, the construct of positive illusions was more carefully examined in order to determine: (a) the number of dimensions of association that could be obtained with other groups of variables, and (b) the nature in which the four components contribute to any significant results obtained.

Phase II

In Phase II, think-aloud protocols were collected in order to further examine the ways in which nurses thought about the coping items presented in a coping inventory, and how they assigned ratings for these items. Following the think-aloud procedure, the nurse repeated the Phase I positive illusion measures of dispositional optimism, internal locus of control, perceived invulnerability, and self-perception. The data used for the analyses concerning inference-making were extracted from subject-generated protocols which had been subjected to an extensive coding procedure used to identify 18 target self-statements and contextual inferences (see Table 1). Inferences were coded in two domains: (a) self-statements, and (b) contextual inferences. The category of contextual inferences was subdivided into (a) inferences about others, and (b) situational inferences. In reference to self-statements and contextual inferences about others, the categories were further subdivided as: (a) disposition/ trait, (b) emotion, (c) behavior, and (d) attitude/ value. All statements/ inferences were then assigned either a positive or negative value (Appendix F contains the complete coding manual developed for the rating of these items which includes all definitions and procedures for this phase of the study). The written transcripts of the nurse's think-aloud protocol were examined and scored for the presence of these 18 coding categories only, as they are the focus of the Phase II analyses.

Several hypotheses in Phase II concerned the frequency, type, and proportion of inferences, and how inferences might be affected by a priming

manipulation, level of stress, and level of positive illusion. The analyses were done in two ways: (a) as total frequency scores, and (b) as item frequency scores. In the first approach to the data, total frequency scores for self-statements and contextual inferences were examined and added together across all 16 coping items. Self-statements were considered within one grouping: total self-statements (TotSelfS). Contextual inferences were considered first as a total of all inferences made about the "situation" and "others" (TotConI), and then as two separate totals: total "other" inferences (TotOthI), and total "situational" inferences (TotSitI)

Table 1

Summary of Coding Categories for Self-Statements and Inferences

General Type	Specific Type
1. <u>Self-Statements</u>	Positive Disposition Statement/ Self Negative Disposition Statement/ Self Positive Emotion Statement/ Self Negative Emotion Statement/ Self Positive Behavior Statement/ Self Negative Behavior Statement/ Self Positive Attitude/ Value Statement/ Self Negative Attitude/ Value Statement/ Self
2. <u>Contextual Inferences</u>	
(i) Others	Positive Disposition Inference/ Other Negative Disposition Inference/ Other Positive Emotion Inference/ Other Negative Emotion Inference/ Other Positive Behavior Inference/ Other Negative Behavior Inference/ Other Positive Attitude/ Value Inference/ Other Negative Attitude/ Value Inference/ Other
(ii) Situation	Positive Situation Inference Negative Situation Inference

The second approach to analyzing the Phase II data was to look at the patterns of response for the 16 separate coping items. An initial analysis examined total self-statements and total contextual inferences posited for each individual coping item (i.e., 16 items). However, it was felt that due to the generally low ratio of nurses to items there would be insufficient power in order to generate meaningful results. Therefore, in order to allow for a meaningful investigation of the pattern of the self-statements and contextual inferences across the 16 items, they were grouped into three general sets in which the items shared a common theme: emotion, behavior, and attitude/ value. For example the coping item "stood my ground and fought for what I wanted" was classified as behavior; "tried to keep my feelings to myself" was classified as emotional; "came out of the experience better than when I went in" was classified as attitude/ value, and so on. These three sets form the basis of all analyses concerning type, frequency, and proportion of self-statements and contextual inferences. Table 2 outlines the items considered within each of these three groups. These groupings are also consistent with the default codes used in the coding procedures and are outlined in the Coding Manual (see Coding Manual found in Appendix F).

Table 2

Coping Item Grouping Variables for Self-Statements and Contextual Inferences

New Grouping Variable	Coping Items
Behavior	1, 4, 7, 9, 12, 15
Emotional	2, 3, 6, 10, 11, 14
Attitude/ Value	5, 8, 13, 16

Hypothesis 6.0 required a comparison of the total self-statements to total contextual inferences (SCDiff) generated by the nurse between the two priming groups. As there are more categories of contextual inferences compared to self-statements in the classification scheme (ten compared to eight) frequencies had to be transformed in order to make this comparison. Table 3 outlines the calculations performed for obtaining proportions.

Table 3
Transformation Equations for Changing Self-Statements and Contextual Inferences into Proportions

Variable	Mathematical Operation
1. Total Self	# self-statements/8
Total Contextual	# inferences/10
Total Other	# inferences/8
Total Situational	# inferences/2
2. Total Positive	# positive inferences and statements/9
Total Negative	# negative inferences and statements/9
3. Total Positive Self	# positive self-statements/4
Total Negative Self	# negative self-statements/4
Total Positive Contextual	# positive inferences/5
Total Negative Contextual	# negative inferences/5
Total Positive Others	# positive inferences/4
Total Negative Others	# negative inferences/4
Total Positive Situation	# positive inferences/1
Total Negative Situation	# negative inferences/1

The 36 nurses in Phase II repeated the measures for positive illusions (i.e., dispositional optimism, internal locus of control, perceived invulnerability, and self-perception) in order to obtain two sets of positive illusion scores at Time 1 (T1) and Time 2 (T2). The second rating of the 16 coping items was obtained at T2 by recording the nurse's verbal rating during the think-aloud procedure. Through the use of a repeated measures MANOVA, these T2 ratings were compared to the ratings given for measures at T1 to examine both the stability of PI and the stability of responses to coping items to the same event over time.

As one of the primary objectives in Phase II was to examine to what extent the level of positive illusions held by an individual influences the way in which

coping strategies used in dealing with a past stressful event are recalled and described, it was necessary to understand the individual effects of the other variables under consideration on the dependent variables of self-statements and contextual inferences. Analyses, therefore, aimed at examining the effects of a priming condition (i.e., short and long), temporal distance (from the time of writing the first narrative), and perceived level of stress regarding the event (as recorded by the nurse in Phase I) on these particular variables.

Descriptive Statistics for the Sample

Of the 600 questionnaires distributed among three hospitals, 209 questionnaires were returned, a response rate of 35%. Of these returned questionnaires 11.5% were missing values on some of the measures. The statistical program employed (Statistical Analysis System [SAS], 1985) used the completed variables whenever possible in order to perform the desired analyses. However, for the canonical correlation analyses, only the 185 questionnaires that were complete on all necessary measures were used. This allowed for comparisons to be made between the canonical correlations in terms of the PI construct and the associated variables.

Table 4 and Table 5 present frequency statistics for the sample that describe the nurses. A large majority of the nurses are female (94%), work full-time (80.6%), and identify themselves as English-speaking (63.2%). Almost half of the nurses live with a partner (44.9% married, 4.6% common-law), half the nurses do not have children (49.2%), and a majority identify themselves as the primary wage earner (63.3%).

Over 70% of the sample is between the ages of 31 and 50, with over 80% reporting that they have been nursing 0-15 years. Approximately 55% of the sample have been in their present position for 6 to 20 years. The largest group of nurses who participated were from the Montreal General Hospital, with just over half of the total number of nurses reporting that they held university degrees at the BSN level or higher. Over half the nurses have been part of a departmental

Table 4

Work Status, Age, Gender, First Language, Marital Status, Number of Children,
Primary Wage Earner

	<u>n</u>	<u>Frequency</u>	<u>Percent</u>
Status:	201		
Full-time (1.0)		162	80.6
Part-time (.9)		2	1.0
Part-time (.8)		15	7.5
Casual		22	10.9
Age:	199		
23-30		20	10
31-40		65	32.6
41-50		78	39.1
51-60		31	15.6
61-67		5	2.5
Gender:	201		
Female		189	94.0
Male		12	6.0
First Language:	201		
English		127	63.2
French		58	28.9
Other		16	8.0
Marital Status:	196		
Married		88	44.9
Single		73	37.2
Divorced		26	13.3
Common-Law		9	4.6
Number of Children:	199		
None		98	49.2
1 child		29	14.6
2 children		53	26.6
3 or more children		19	9.5
Primary Wage Earner:	199		
They are primary wage earner		126	63.3
They are not primary wage earner		73	36.7

Table 5

Nursing Education, Experiences with Past Reorganizations, Stressful Work Experiences, Years of Nursing Experience, Years in Present Position

	<u>n</u>	<u>Frequency</u>	<u>Percent</u>
Nursing Education:	201		
Certification in Nursing/ CEGEP		151	75.1
BSN, Masters or higher		105	52.2
Presently taking courses		34	17.2
Hospital Presently Employed By:	207		
Royal Victoria Hospital		76	36.7
Montreal General Hospital		99	47.8
St. Mary's Hospital		32	15.5
Affected by Past Reorganization:	201		
Part of a departmental merger		101	50.5
Has been bumped from position		38	18.9
Has bumped someone else from position		35	17.4
Reorganization in Past 6 Months:	201		
Aware but not affected		146	72.6
Part of a departmental merger		25	12.4
Bumped from position, working in new pos.		2	1.0
Received notice of departmental merger		21	10.4
Received notice that position will close		4	2.0
Received notice that will be bumped		2	1.0
Received notice department will move		1	.5
Stressful Work Experience:	184		
Wrote about past stressful experience		47	25.5
Wrote about present stressful experience		129	70.1
Wrote about future stressful event		8	4.3
Total Years of Nursing Experience:	199		
0-5		73	37.1
6-10		49	24.8
11-15		41	20.8
16-20		21	10.6
21-25		7	3.5
26-30		5	2.5
31-35		1	.5
Years in Present Position:	199		
0-5		10	.5
6-10		41	20.6
11-15		26	13.0
16-20		44	22.1
21-25		29	14.5
26-30		24	12.0
31-35		15	7.5
36-40		8	4.0
40-45		2	1.0

merger during their time working as a nurse, with almost 20% having been involved in a bumping procedure. However, during the last six months, the majority of the nurses (72.6%) have not been involved in any departmental or individual change process.

After the initial scoring of positive illusion measures, the four component scores of PI (dispositional optimism, internal locus of control, perceived invulnerability, and self-perception) were coded according to whether they fell into the upper or lower 40% range of possible scores. For example, if a measure had a potential range of scores from 0 to 100, scores falling between 60 and 100 would be rated as "high", while scores falling between 0 and 40 would be rated as "low." This was done in order to avoid the problem of assigning nurses to high and low PI categories (which was initially thought necessary for Phase II) when their scores fell close to the median. Table 6 describes the percentage of the sample who fell into these different categories.

Table 6

Initial Rating of Scores Obtained for Positive Illusion Components

Code	Description	% of Sample
HHHH	High on all four component measures PI	46.4
LHHH	Low on dispositional optimism	6.3
HLHH	Low on locus of control	1.9
HHLH	Low on invulnerability	1.9
HHHL	Low on self-perception	1.0
HHB*H	Between high and low for invulnerability	42.0

Note: H = High (upper 40%); L = Low (lower 40%); B* = Between High and Low (Middle 20%)

From these statistics, one can see that almost half the nurses scored high on all four component PI measures. Interestingly, 42% of the nurses fell into the category where dispositional optimism, locus of control and self-perception scores were in the high range, but the perceived invulnerability scores were

between the high and low range of scores (i.e., the scores fell within 10% on either side of the median [0] of possible scores for perceived invulnerability). Unfortunately, the sample has not yielded the desired number of nurses in the LLLL range of scores and, in fact, no nurse obtained that rating. Therefore, the scores of nurses considered for Phase II range from "low-high" positive illusions to "high-high" positive illusions. Those nurses in the true "low" categories (those Taylor might describe as "depressed") are not represented in this study.

Approximately 63% of the nurses who took part in Phase I volunteered to participate in Phase II. The necessary criteria for taking part in Phase II of the study were met by just over half of the nurses in Phase I (i.e., a narrative about a then current stressful event, of sufficient length and detail, containing statements of how they felt in the situation; English as their first language). Surprisingly, almost 90% of the sample reported these stressful events as being "slightly stressful" to "moderately stressful" (a rating of between 3 and 5) during Phase I. As a result, only a small percentage of the sample reported their stressful events as being "very stressful" to "extremely stressful."

After applying the necessary criteria, 66 nurses were eligible for Phase II. After summing the scores on the four PI measures (TotPI), 36 nurses were chosen (the highest and lowest-scoring 18 nurses) and all those approached consented to participate. Unfortunately, one nurse from the high illusion group had to be replaced due to a faulty tape recorder at the time of the think-aloud procedure. The replacement nurse was the 19th highest PI score for the Phase II sample.

Table 7 presents an overview of sample means and standard deviations for all of the variables under consideration in Phase I. If this sample is indeed representative of the general population, then Taylor's assertion that people for the most part exhibit positive illusions is supported. The nurses on average fall within the upper range of scores for the positive illusion components. In a study by Hjelle, Belongia, and Nesser (1996) concerning dispositional optimism a mean score of 9.11 ($SD = 2.85$) for dispositional optimism was obtained from a sample of 342 women when only the positively worded items were analyzed. For this sample, the nurses' mean score was slightly higher at 10.58 ($SD = 2.63$). Another pattern that emerges from the scores is the relatively low scores on the eight coping strategies, in particular the strategy of "accepting responsibility." This is

Table 7

Overview of Sample Means, Standard Deviations, and Range of Scores

Variable	N	Mean	Std Dev	Minimum	Maximum	Scale Range	
						Lowest	Highest
<u>Positive Illusions:</u>							
DISPOSITIONAL OPTIMISM	208	10.5817	2.6399	4.0000	16.0000	0	16
INTERNAL LOCUS OF CONTROL	209	11.9856	6.3530	-11.0000	23.0000	(-24)	24
PERCEIVED INVULNERABILITY	208	5.9519	6.0439	-28.0000	22.0000	(-48)	48
SELF-PERCEPTION	209	104.1148	14.2635	76.0000	142.0000	21	147
POSITIVE ILLUSION TOTAL	208	132.9082	18.3530	93.0000	192.0000	(-51)	235
<u>Dispositional Affect:</u>							
POSITIVE AFFECT	207	36.6184	5.8893	10.0000	48.0000	10	50
NEGATIVE AFFECT	207	17.4058	6.4462	10.0000	48.0000	10	50
<u>Coping Appraisals:</u>							
THREAT APPRAISALS	185	7.6216	2.9038	3.0000	15.0000	3	15
HARM APPRAISALS	185	12.3297	5.0957	1.0000	24.0000	5	25
CHALLENGE APPRAISALS	185	6.3621	2.7114	3.0000	15.0000	3	15
BENEFIT APPRAISALS	185	5.7675	2.9516	3.0000	18.0000	4	20
<u>Self-Efficacy:</u>	185	2.4594	0.9439	0	4.0000	0	4
<u>Level of Stress</u>	188	4.0160	1.8016	1	9.0000	1	9
<u>Coping Strategies:</u>							
POSITIVE REAPPRAISAL	185	7.4757	4.6870	0	18.0000	0	18
PLANFUL PROBLEM-SOLVING	185	8.0595	3.9771	0	18.0000	0	18
ESCAPE-AVOIDANCE	185	4.0486	3.8678	0	22.0000	0	24
ACCEPTING RESPONSIBILITY	185	1.7405	2.0504	0	8.0000	0	15
SEEKING SOCIAL SUPPORT	185	8.3568	3.7362	1	18.0000	0	18
SELF-CONTROLLING	185	8.0702	3.5601	0	19.0000	0	21
DISTANCING	185	4.6810	2.7028	0	13.0000	0	18
CONFRONTIVE	185	5.0918	3.1080	0	15.0000	0	18
<u>Occupational Climate:</u>							
CHALLENGE PROBLEM-SOLVING	209	19.1722	4.4256	3	28.0000	0	30
CONTROLLING PROBLEM-SOLVING	209	18.4593	4.2618	6	30.0000	0	30
CONFLICTUAL COMMUNICATION	209	6.2249	2.7929	0	15.0000	0	15
SUPPORTIVE COMMUNICATION	209	9.3780	2.7007	0	15.0000	0	15
<u>Job Satisfaction:</u>							
INTERNAL JOB SATISFACTION	209	24.4833	6.7789	12.0000	55.0000	12	60
EXTERNAL JOB SATISFACTION	209	17.9761	4.9821	6.0000	30.0000	6	30

in contrast to the scores for perceived occupational climate, which tend to be in the upper range with the exception of conflictual communication.

The following sections now review each of the hypotheses of this study. The results for each individual hypothesis will be described and then summarized with regards to the specific hypotheses at the end (see p. 79 for an overview of the hypotheses of the study). A description of the results will focus first on the Phase I hypotheses, followed by the Phase II hypotheses.

Tests of Phase I Hypotheses

For each of the hypotheses in Phase I, simple Pearson correlations were performed between the PI component scores and the other variables of interest (appraisals, coping strategies, work variables). This was done not only to understand the construct of PI at this basic level, but also because many previous studies which have looked at these variables have involved these types of pairwise correlations. It is important, therefore, to include these data in order to allow a point of comparison. However, considering that the present analyses are primarily concerned with the most meaningful associations that occur between the PI set and the other sets of variables, the canonical correlations are of primary interest here. Therefore, the pairwise Pearson correlations can be found in Appendix E (Tables E1, E2, E3, and E4), and will be referred to only when their contribution assists in understanding the canonical correlations or any other analysis in which their contribution may be relevant.

The hypotheses of Phase I will be grouped under six general themes concerning: (a) appraisal variables, (b) coping variables (c) work variables, (d) appraisal, coping, and work variables (e) dispositional affect variables, and (f) situational and personological variables. For each of the six themes, the positive illusion components have been examined using canonical correlation or multiple regression analyses depending on the variables under examination.

The initial hypotheses (1.1 to 1.5) examine the relationship between positive illusions and the variables concerned with the nurse's emotional response to the stressful situation identified, their personal efficacy in coping with this stressful event, and the coping strategies used to deal with the event.

The last set of specific hypotheses under Hypothesis 1.0 (hypotheses 1.6 to 1.11) look at the variables concerning job satisfaction and perceptions of occupational climate, and these will be addressed under the theme of "work variables."

Phase I Hypotheses: Positive Illusions, Appraisals, and Self-Efficacy

In the first set of analyses, hypotheses 1.1 to 1.5 look at the relationship between positive illusions and the appraisal variables (i.e., challenge, benefit, threat, harm, and self-efficacy). The appraisal and self-efficacy variables have been grouped together as they relate in some way to the nurses' stressful events: the appraisal measures reveal how nurses feel about the event and the self-efficacy measure indicates how successful nurses feel they will be in dealing with the event. These variables represent the primary appraisals (harm-loss and challenge-benefit) and secondary appraisals (self-efficacy) described by Folkman and Lazarus (1985, 1988a). The reader is reminded that the score obtained from nurses for self-efficacy reflects their perceived ability to deal only with the stressful situation that they identified in their narrative. It is, therefore, a measure of perceived self-efficacy for a specific situation rather than a measure of self-efficacy for handling difficult events in general.

The first canonical correlation analysis looks at the relationship between the variables of positive illusions (i.e., dispositional optimism, internal locus of control, perceived invulnerability to negative life events, and self-perception) and those variables representing the types of cognitive appraisals reported by the nurse in response to their stressful event (i.e., threat, harm, challenge, benefit, and self-efficacy). A total of nine variables were analyzed with a sample size of $N = 185$, which meets the recommended ratio discussed by Stevens (1996) of 20:1 (i.e., twenty subjects for each variable considered). The correlations between the positive illusion and appraisal variables are low, the largest being $r = 0.29$ between self-perception and self-efficacy. There are larger within-set correlations for the appraisal variables: $r = .62$ between challenge and benefit, and $r = .52$ between harm and threat (see Appendix E, Table E1, E2, and E3, for all pairwise Pearson correlations).

In examining the results of the canonical correlation analysis, one significant canonical correlation emerges $F_{(20,584.6758)} = 1.9208$, $p = .009$. Therefore,

the hypothesis that no relationship exists is rejected. The remaining canonical correlations are not significant. The canonical correlation is $R = .38$ which exceeds all of the between set correlations. Total percent of variance indicates that the first pair of canonical variates are only minimally related (14% of common variance).

Data on the first canonical analysis appear in Table 8. Shown in the table are the canonical variate-variable correlations, standardized canonical variate coefficients, within-set variance accounted for by the canonical variates (percent of variance), redundancy indices, total common variance accounted for, and the canonical correlation (the canonical correlation technique is described fully in the Methodology chapter and can be found on p. 100).

The first canonical variate for the positive illusion variables is a weighted difference of self-perception (.73), dispositional optimism (.37), internal locus of control (-.36), and perceived invulnerability (-.31), with more emphasis on self-perception. While the coefficients are useful in showing how the variables were weighted in order to arrive at the canonical correlation and for the identification of suppressor variables (see p. 102 for an explanation), it is the canonical variate-variable correlations that are used to understand the structure of the variates. Using a .3 cutoff for considering the correlational relationships, the correlations between self-perception ($r = .82$) and disposition optimism ($r = .53$) and the first canonical variate are both positive, while the correlation between internal locus of control ($r = -.44$) and the first canonical variate is negative.

The first canonical variate for the appraisal set also shows a mixture of coefficient signs, subtracting appraisals of threat (-.20) and benefit (-.09) from self-efficacy (.83), harm appraisals (.24), and challenge appraisals (.44), with the most weight on self-efficacy. The correlations between self-efficacy ($r = .90$) and challenge ($r = .53$) and the first canonical variate are positive, while the correlation between threat ($r = -.33$) and the first canonical variate is negative. As the simple correlations and beta weights are in opposite directions for the harm and benefit appraisal variables, this indicates that harm and benefit appraisals are acting as suppressor variables: variables that enhance the importance of the other appraisal variables by virtue of suppression of irrelevant variance in the appraisal or the PI variables.

Table 8

Canonical Structure for the Sample: Correlations of Positive Illusions, Appraisals, and Self-Efficacy with Canonical Variates

	<u>First Canonical Variate</u>	
	<u>Correlation</u>	<u>Coefficient</u>
<u>Positive Illusion Set:</u>		
Dispositional Optimism	.53	.37
Internal Locus of Control	-.44	-.36
Perceived Invulnerability	-.17	-.31
Self-Perception	.82	.73
Percent of Variance	.29	
Redundancy	.04	
<u>Appraisal/Self-Efficacy Set:</u>		
Threat	-.33	-.20
Harm	-.11	.24
Challenge	.53	.44
Benefit	.25	-.09
Self-Efficacy	.90	.83
Percent of Variance	.26	
Redundancy	.04	
Canonical Correlation	.38	
Total Common Variance	.14	

Thus, the significant linkage between the two sets of variables reflects a pattern of high self-perception, high dispositional optimism, and low internal locus of control, with high self-efficacy, high appraisals of challenge, and low appraisals of threat. Conversely, the opposite pattern is that of low self-perception, low dispositional optimism, high internal locus of control with low self-efficacy, low challenge appraisals, and high threat appraisals. The first

canonical variate pair extracts 29% of the variance from the positive illusion variables and 26% of the variance from the appraisal variables.

Summary of hypothesis 1.1 to 1.3. It was predicted in hypotheses 1.1 to 1.3 that there would be a positive correlation between the level of positive illusion and appraisals of challenge, benefit, and self-efficacy, while low positive illusions would relate more to appraisals of harm and threat. It appears from the canonical analysis that it is the PI components of enhanced self-perception and high dispositional optimism that are most associated with high self-efficacy and high challenge appraisals. Internal locus of control is also related but in a negative direction. The PI component of perceived invulnerability to negative events, proposed by Taylor (1983; Taylor & Brown, 1988) as central to the PI construct, contributes little to the structure of the PI set and consequently to first canonical correlation. In a similar way, the appraisal of benefit contributes little to the structure of the appraisal set and to the first canonical correlation. Low positive illusion, represented in the first set by low self-perception, low optimism along with high internal locus of control is related through the first canonical correlation with the high appraisals of threat in the predicted direction. Harm contributes little to the first canonical variate.

Therefore, the general interpretation of the first canonical correlation is that nurses with enhanced self-perception, higher levels of dispositional optimism, and lower levels of internal locus of control report that they will be efficacious in resolving their identified stressful event, appraise the event as challenging and not threatening. As this association represents both ends of the equation, the opposite also holds true: nurses with low self-perception, lower levels of dispositional optimism, and higher levels of internal locus of control report that they will be less efficacious in resolving their identified stressful event, and appraise the situation as more threatening and less challenging. The canonical redundancy analysis shows, however, that neither of the first pair of canonical variables is a good overall predictor of the opposite set of variables, the proportions of variance explained being 0.04 and 0.04.

Phase I Hypotheses: Positive Illusions and Coping Strategies

The second canonical analysis now looks at the relationship between the positive illusion components (i.e., dispositional optimism, internal locus of control, invulnerability, and self-perception) and those variables concerning the types of strategies the nurses reported using in order to cope with their stressful event (i.e., confrontive, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem solving, and positive reappraisal). A total of 12 variables were analyzed with a sample size of $N = 185$, falls short of the recommended ratio of 20:1 discussed by Stevens (1996) but well within the recommended ratio suggested by Tabachnick and Fidell (1989) of 10:1 (see p. 102 for a discussion of recommended sample size for canonical correlations). The correlations between the positive illusion and coping variables are low, the largest being $r = .22$ between self-perception and positive reappraisal. There are larger within-set correlations for the positive illusion variables ($r = .28$ between self-perception and optimism) and for many of the coping variables, the highest occurring between confrontive coping and seeking social support ($r = .48$).

In examining the results of the canonical correlation analysis displayed in Table 9, one significant canonical correlation emerges $F_{(32,639.5877)} = 1.8235$, $p = .007$. The remaining canonical correlations are not significant. The canonical correlation is $R = .40$ which exceeds all of the between set correlations. Total percent of variance indicate that the first pair of canonical variates are only minimally related (16% of common variance).

The first canonical variable for the positive illusion variables is a weighted difference of self-perception (.65), dispositional optimism (.23), and internal locus of control (-.56), with more emphasis on self-perception. The correlations between self-perception ($r = .76$) and disposition optimism ($r = .46$) and the first canonical variate are both positive, while the correlation between internal locus of control ($r = -.61$) and the first canonical variate is negative. The first canonical variable for the coping set also shows a mixture of coefficient signs, subtracting escape-avoidance strategies (-.81) from positive reappraisal strategies (.80), and self-controlling strategies (.30), with the most weight on positive reappraisals. The correlations between positive reappraisal ($r = .70$),

Table 9

Canonical Structure for the Sample: Correlations of Positive Illusions and Coping Strategies with Canonical Variates

	<u>First Canonical Variate</u>	
	Correlation	Coefficient
<u>Positive Illusion Set:</u>		
Dispositional Optimism	.46	.23
Internal Locus of Control	-.61	-.56
Perceived Invulnerability	.27	.17
Self-Perception	.76	.65
Percent of Variance	.32	
Redundancy	.05	
<u>Coping Strategy Set:</u>		
Confrontive	.17	.30
Distancing	.10	.05
Self-controlling	.39	.39
Seeking Social Support	.19	-.09
Accepting Responsibility	.10	-.02
Escape-Avoidance	-.36	-.81
Planful Problem-Solving	.30	-.15
Positive Reappraisal	.70	.80
Percent of Variance	.12	
Redundancy	.02	
Canonical Correlation	.40	
Total Common Variance	.16	

self-controlling ($r = .39$) and planful problem-solving ($r = .30$) and the first canonical variate are all positive, while the correlation between escape-avoidance ($r = -.40$) and the first canonical variate is negative. As the simple

correlations and beta weights are in opposite directions for the coping variables of seeking social support, accepting responsibility, and planful problem-solving, this indicates that they are acting as suppressor variables. In addition, the variable of escape-avoidance also is behaving as a suppressor variable, as evidenced by the large difference between the correlation and the beta weight values.

Thus, the significant linkage between the two sets of variables reflects a pattern of high self-perception, high dispositional optimism, low internal locus of control with the use of positive reappraisal, self-controlling and planful coping strategies, and the use of something other than escape-avoidance strategies. The first canonical variate pair extracts 33% of the variance from the positive illusion variables and 12% of the variance from the coping variables.

Summary of hypotheses 1.4 to 1.5. It was predicted in hypothesis 1.4 that there would be a positive correlation between the level of positive illusion and the reported use of the following coping strategies: (a) planful problem-solving, (b) confrontive coping, (c) positive reappraisal, (d) accepting responsibility, and (e) seeking social support. Conversely, it was predicted in hypothesis 1.5 that there would be a negative correlation between the level of positive illusion and the reported use of the following coping strategies: (a) distancing, (b) escape-avoidance, and (c) self-controlling. When the PI construct was examined through a canonical correlation analysis, enhanced self-perception, high optimism, and low internal locus of control emerge as the three PI components most strongly associated in a positive direction with the coping strategy of positive reappraisal, and to a much lesser extent planful problem-solving (its variate-correlation of .30 is borderline). As in the first canonical correlation analysis which explored PI and appraisals, perceived invulnerability contributes little to the PI set. Interestingly, the association between internal locus of control with positive reappraisal and planful problem-solving is not in the predicted direction (i.e., high internal locus of control was expected to be positively associated with these coping strategies). Other active coping strategies such as confrontive coping, seeking social support, and accepting responsibility, are not related strongly to the coping set, and subsequently, not to the PI set.

Therefore, the general interpretation of the canonical correlation is that enhanced self-perception, high optimism, and lower levels of internal locus of control are associated with the use of positive reappraisal, self-controlling, and planful problem-solving coping strategies, and the nonuse of escape-avoidance coping strategies. The canonical redundancy analysis shows, however, that neither of the first pair of canonical variables is a good overall predictor of the opposite set of variables, the percentage of variance explained being 0.05 and 0.02.

Phase I Hypotheses: Positive Illusions, Appraisals, SE, and Coping Strategies

The third canonical correlation explores the relationship between positive illusions and a combined set of variables considered previously: appraisals and coping strategies. This is done for exploratory purposes, in order to understand the strongest association between PI and the combined responses by nurses in regards to their stressful event: how they appraised it and how they coped with it. A total of 17 variables were analyzed with a sample size of $N = 185$, which falls well beyond the recommended ratio of 20/1 discussed by Stevens (1996) but within the recommended ratio suggested by Tabachnick and Fidell (1989) of 10:1. The correlations between the positive illusion and appraisal/ coping variables are low, the largest being $r = .22$ between self-perception and positive reappraisal. There are larger within-set correlations for the appraisal/ coping variables, the strongest occurring between harm and threat appraisals ($r = .62$).

In examining the results of the canonical correlation analysis displayed in Table 10, one significant canonical correlation emerges $F_{(52,652.7721)} = 1.6585$, $p = .004$. The remaining canonical correlations are not significant. The first canonical correlation is $R = .47$ which exceeds all of the between set correlations. Total percent of variance indicate that the first pair of canonical variates are moderately related (22% of common variance).

Table 10

Canonical Structure for the Sample: Correlations of Positive Illusions and Appraisal/Coping Strategies with Canonical Variates

	<u>First Canonical Variate</u>	
	<u>Correlation</u>	<u>Coefficient</u>
<u>Positive Illusion Set:</u>		
Dispositional Optimism	.50	.30
Internal Locus of Control	-.52	-.45
Perceived Invulnerability	.05	-.07
Self-Perception	.84	.74
Percent of Variance	.31	
Redundancy	.07	
<u>Appraisal/Coping Strategy Set:</u>		
Threat	-.19	-.07
Harm	-.06	.13
Challenge	.40	.22
Benefit	.15	-.08
Self-Efficacy	.71	.55
Confrontive	.10	.13
Distancing	.04	-.15
Self-controlling	.31	.35
Seeking Social Support	.11	-.06
Accepting Responsibility	.006	-.04
Escape-Avoidance	-.30	-.40
Planful Problem-Solving	.26	-.16
Positive Reappraisal	.61	.55
Percent of Variance	.11	
Redundancy	.02	
Canonical Correlation	.47	
Total Common Variance	.22	

The first canonical variable for the positive illusion variables is a weighted difference of self-perception (.74), dispositional optimism (.30), and internal locus of control (-.45), with more emphasis on self-perception. The correlations between self-perception ($r = .84$) and disposition optimism ($r = .50$) and the first canonical variate are both positive, while the correlation between internal locus of control ($r = -.52$) and the first canonical variate is negative. The variable of vulnerability contributes virtually nothing to the relationship.

The first canonical variable for the appraisal/coping set also shows a mixture of coefficient signs, subtracting escape-avoidance strategies (-.40) from positive reappraisal strategies (.55), self-efficacy (.55) and self-controlling strategies (.35), with the most weight distributed almost equally on positive reappraisals and self-efficacy. The correlations between self-efficacy ($r = .71$), positive reappraisal ($r = .61$), challenge appraisals ($r = .40$), self-controlling ($r = .31$) and the first canonical variate are all positive, while the correlation between escape-avoidance ($r = -.30$) and the first canonical variate is negative. Using the variate-variable correlations to understand the structure of this first canonical correlation, this would suggest that the relationship between the sets is one of high self-perception, high optimism, and low internal locus of control with high self-efficacy, challenge appraisals, and positive reappraisal. Although the coping variables of self-controlling and escape-avoidance do contribute to the appraisal/coping set, their contribution is much less compared to self-efficacy and positive reappraisal. Many of the appraisals (i.e., threat, harm, and benefit) and active coping strategies (i.e., planful problem-solving, confrontive, seeking social support, and accepting responsibility) do not appear to contribute much to the appraisal/coping set. However, as the simple correlations and beta weights are in opposite directions for the many of the appraisal/coping variables (i.e., harm, benefit, distancing, seeking social support, accepting responsibility, and planful problem-solving) this indicates that they are acting as suppressor variables. Their contribution, therefore, is by way of enhancing the importance of the other variables in the sets.

Summary. Thus, there is one significant dimension of association between the two sets of variables (PI and appraisal/coping) which reflects a pattern of

high self-perception, low internal locus of control, and high optimism with appraisals of high self-efficacy and the use of positive reappraisal, high challenge appraisals, and to a lesser extent self-controlling coping strategies and the nonuse of escape-avoidance strategies. Conversely, low self-perception, high internal locus of control, and low optimism are related to low self-efficacy appraisals, low positive reappraisal, low challenge appraisals, the use of escape-avoidance coping strategies, and the nonuse of self-controlling coping strategies. The first canonical variate pair extracts 31% of the variance from the positive illusion variables and 11% of the variance from the coping variables.

When the appraisal variables and coping variables are combined for this last canonical correlation, the pattern for the PI set remains virtually the same for self-perception, internal locus of control, and optimism as they were through the first two canonical correlations (appraisals and coping strategies explored separately). The PI component of invulnerability is the only variable that demonstrates different directions (although it did not contribute to the PI set in any substantial way) between the three analyses, with its contribution to the third canonical correlation contributing virtually nothing to the PI set. Another notable difference between the first and third canonical correlations, is that most of the primary appraisal variables (i.e., threat, harm, benefit) did not contribute substantively to the third correlation when the appraisals and coping variables were combined. Only the secondary appraisal of self-efficacy and challenge appraisals were strongly related with the PI set along with positive reappraisal. However, as directed by Lazarus (1985) caution is advised in interpreting the challenge appraisals scale due to its relatively low reliability (.59).

Phase I Hypotheses: Positive Illusions and Work

The last set of hypotheses, 1.6 to 1.11, explores the relationship between positive illusions and a number of work-related variables. Two aspects of the work environment were investigated: (a) type and level of job satisfaction (i.e., intrinsic and extrinsic), and (b) the nurses' perceptions of the occupational climate at their work site (i.e., challenge problem-solving, control problem-solving, conflictual communication, and supportive communication).

Hypotheses have been proposed based on the assumption that higher levels of

positive illusions would correlate positively with (a) higher levels of job satisfaction, and (b) more positive perceptions of occupational climate (higher scores on challenge problem-solving, control problem-solving, and supportive communication, and lower scores on conflictual communication).

A total of ten variables were analyzed with a sample size of $N = 185$, which falls slightly short of the recommended ratio of 20:1 (Stevens, 1996) but well within the ratio of 10:1 suggested by Tabachnick and Fidell (1989). The correlations between the positive illusion and work variables are low, the largest being $r = .19$ between dispositional optimism and supportive communication. There are larger within-set correlations for the positive illusion variables ($r = .28$ between self-perception and optimism) and for many of the work variables, the highest occurring between conflictual communication and supportive communication ($r = -.62$).

In examining the results of the canonical correlation analysis, no significant canonical correlations emerge. The probability that all of the canonical correlations are 0 in the population is $F_{(24,611.7121)} = 1.4418$, $p = .08$. The canonical correlation is low at $R = .29$. The total percent of variance indicate that the first pair of canonical variates are only minimally related (9% of common variance). As none of the canonical correlations for the PI and work sets are significant, this indicates that there is no significant association between the PI construct and the work variable measures for the population studied.

Summary of hypotheses 1.6 to 1.11. It was predicted in hypothesis 1.6 through 1.11 that there would be a positive correlation between the level of positive illusion and the level of intrinsic and extrinsic job satisfaction, challenge and control problem-solving, and supportive communication. It was further predicted that there would be a negative correlation between the level of positive illusions and conflictual communication. From the results of the canonical correlation, there does not appear to be any significant relationships between PI and these specific work variables when they are considered as sets.

Phase I Hypotheses: Positive Illusions and Dispositional Affect

This next analysis examines to what extent the levels of positive illusions are correlated with dispositional affect. As discussed previously, the nature and stability of positive illusions has been widely debated. While Taylor and Armor (1996) have described the presence of positive illusions as being primarily influenced by situational factors, others (Watson & Hubbard, 1996) have attributed a dispositional propensity to utilize positive illusions in coping with stressful events. While Phase II examines the stability of positive illusion scores over time, the task here is to explore the relationship between positive illusions and a measure of dispositional affect.

A canonical correlation analysis was performed to consider all positive illusion variables as a set and how they correlate with the dispositional affect set (see Table 11). A total of 6 variables were analyzed with a sample size of $N = 185$, which supasses the recommended ratio of 20:1. The correlations between the positive illusion and dispositional affect variables are moderate, the largest being $r = .37$ between dispositional optimism and positive affect. However, this exceeds any of the within-set correlations for the positive illusion set (the highest is 0.28 between optimism and self-perception), although there is a larger within-set correlation for the dispositional affect variables ($r = -.51$) between positive and negative affect.

In examining the results of the canonical correlation analysis, one significant canonical correlation emerges $F_{(8,356)} = 5.0391$, $p = .0001$. The canonical correlation is $R = .44$ which exceeds all of the between set correlations (the largest is $r = .37$ between optimism and positive affect). Total percent of variance indicate that the first pair of canonical variates are only minimally related (19% of common variance).

The canonical variate for the positive illusion set shows a strong weight on the dispositional optimism variable (.76), followed by self-perception (.36), internal locus of control (-.32), and perceived vulnerability (-.19). Using a .3 cutoff for considering the correlational relationships, the correlations between disposition optimism ($r = .85$), self-perception ($r = .58$) and the canonical variate are positive, while the relationship between internal locus of control ($r = -.38$) and the canonical variate is negative.

The canonical variate for the dispositional affect set also shows a mixture of coefficient signs, subtracting negative affect ($-.08$) from positive affect ($.96$). The correlation between positive affect ($r = .99$) and the canonical variate is positive, while the correlation between negative affect ($r = -.56$) and the canonical variate is negative. Thus, the significant linkage between the two sets of variables relates to high dispositional optimism, enhanced self-perception and low internal locus of control to high positive affect and low negative affect. The first canonical variate pair extracts 30% of the variance from the positive illusion variables and 66% of the variance from the dispositional affect variables.

Table 11

Canonical Structure for the Sample: Correlations of Positive Illusions and Dispositional Affect with Canonical Variates

	<u>First Canonical Variate</u>	
	Correlation	Coefficient
<u>Positive Illusion Set:</u>		
Dispositional Optimism	.85	.76
Internal Locus of Control	-.38	-.32
Perceived Invulnerability	-.02	-.19
Self-Perception	.58	.36
Percent of Variance	.30	
Redundancy	.06	
<u>Affect Set:</u>		
Positive Affect	.99	.96
Negative Affect	-.56	-.08
Percent of Variance	.66	
Redundancy	.13	
Canonical Correlation	.44	
Total Common Variance	.19	

Summary of hypotheses 2.1 to 2.2. It was predicted in hypothesis 2.1 and 2.2 that there would be a positive correlation between the level of positive illusion and the level of positive affect, and a negative correlation between the level of positive illusion and negative affect. The general interpretation of the canonical correlation is that high dispositional optimism, enhanced self-perception, and a low internal locus of control is associated with high positive affect and low negative affect. Only dispositional optimism and enhanced self-perception are behaving as predicted within this correlation. Internal locus of control is strongly correlated but in the opposite direction. The PI variable of perceived invulnerability contributes little to the correlation. The canonical redundancy analysis shows, however, that neither of the first pair of canonical variables is a good overall predictor of the opposite set of variables, the percentage of variance explained being 0.06 and 0.14.

Phase I Hypotheses: Positive Illusions, Situational and Personological Variables

Hypothesis 3.0 and 4.0 continues to explore the nature of positive illusions in relation to some relevant situational factors for this sample (stage of change and context of change) and to certain personological factors (age, years of nursing experience, and years of relevant work experience). The intent was to explore how stable positive illusions are across different situations: whether PI vary in response to different situational factors or whether they remain relatively stable.

The first part of Hypothesis 3.0 explored the effects of stage of change, on the level of positive illusion. Stage of change was determined by the nurse's response on the demographic sheet regarding changes that they have experienced over the last six months: anticipation of change ($n = 138$), impact of change ($n = 27$), and post-impact of change ($n = 25$). Definitions for these variables can be found in the Glossary in Appendix A. A one-way MANOVA was carried out to explore if there were significant differences between the three stages of change (i.e., anticipation, impact and post-impact) on the levels of positive illusion. Results revealed no significant differences between the three groups ($F_{(8,388)} = .78, p = .62$).

The second part of Hypothesis 3.0 was designed to explore whether positive illusions vary as a result of the context of change (i.e., group and individual) and stage of change (i.e., impact and post-impact) by using a 2 x 2 MANOVA. The context of change of "anticipation" was not included in this analysis as the hypothesis addressed only those nurses who had actually experienced some type of job change or reorganization. Unfortunately, the number of nurses in each cell was too small in order for the results to be meaningful: impact/ group ($n = 21$); impact/ individual ($n = 6$); post-impact/ group ($n = 23$); post-impact/ individual ($n = 2$). As a result, the level of positive illusion as it relates to the context of change (whether the individual experienced the workplace change on his or her own as in the case of being bumped, or as a group as in the case of a merged department) and stage of change (within six months of experiencing the change or past six months of experiencing the change) could not be explored.

Hypothesis 4.0 explores to what extent levels of positive illusion vary as a function of the personological variables of (a) age, (b) years in present position, and (c) total years of nursing experience. The assumption is that positive illusions will remain stable across these personological variables.

A multiple regression analysis using type II sum of squares (independent) relating age to the four PI component scores as a set reveals a significant association ($R^2 = .72$). The PI component variables' independent contribution to the relationship as shown in Table 12 reveals that dispositional optimism and self-perception are the variables that are significantly related to age. This would suggest that as nurses get older they express higher levels of optimism and perceive their skills, abilities, and personal qualities to be better than their peers. The multiple correlation reveals that 72% of the variability of age is related to these four variables, principally dispositional optimism and self-perception.

A second multiple regression explores whether positive illusions as a set vary as a result of how long the nurse had worked in his or her present position. Results shown in Table 13 indicate a significant association between positive illusions and how long the nurse has been in their present position ($R^2 = .38$). Of the four positive illusion variables, the variables of dispositional optimism and invulnerability contribute the most to this significant result. This would suggest

that nurses who have been in their positions longer feel express higher levels of optimism yet feel more vulnerable to negative events. However, the multiple correlation is lower than that of age, indicating that only 38% of the variability of how long the nurse has been in his or her present position is related to the four positive illusion variables, principally dispositional optimism and vulnerability.

Table 12

Multiple Regression Comparing Positive Illusions and Age

	<u>df</u>	<u>F</u>	<u>t</u>
Model $R^2 = .72$	4, 192	122.56**	
Dispositional Optimism	1, 192		5.16**
Internal Locus of Control	1, 192		0.38
Perceived Invulnerability	1, 192		0.16
Self-Perception	1, 192		6.58**

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

Table 13

Multiple Regression Comparing Positive Illusions and How Long in Present Position

	<u>df</u>	<u>F</u>	<u>t</u>
Model $R^2 = .38$	4, 192	28.95**	
Dispositional Optimism	1, 192		2.03*
Internal Locus of Control	1, 192		0.79
Perceived Invulnerability	1, 192		6.03**
Self-Perception	1, 192		0.97

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

The last multiple regression explores whether the components of positive illusions as a set change as function of total years of nursing and the results are found in Table 14. The results indicate that there is a significant association

between the level of positive illusions and the total number of years the nurse has been working ($R^2 = .06$). Specifically the variables of perceived invulnerability and self-perception contributed most to this significant association. The results suggest that the greater the total number of years the nurse has been working, the more they perceive themselves to be invulnerable to negative events, and the more they compare themselves less favorably to other nurses their same age. However, as the multiple correlation is so small it is assumed that very little of the variability of total years in nursing is actually related to the four PI variables, principally invulnerability and self-perception.

Table 14

Multiple Regression Comparing Positive Illusions and Total Years of Nursing

	<u>df</u>	<u>F</u>	<u>t</u>
Model $R^2 = .06$	4, 192	3.08*	
Dispositional Optimism	1, 192		-0.02
Internal Locus of Control	1, 192		0.50
Perceived Invulnerability	1, 192		-3.06**
Self-Perception	1, 192		-2.70**

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

Summary of hypotheses 3.1 to 3.2. It was predicted in hypothesis 3.1 that the levels of positive illusions would not vary as a function of stage of change (i.e., anticipation, impact and post-impact). According to the results of the MANOVA, positive illusions do not vary significantly as a function of stage of change (i.e., anticipation, impact and post-impact) for these nurses.

It was predicted in hypothesis 3.2 that the levels of positive illusions would not vary as a function of context of change (i.e., group versus individual). Unfortunately, the uneven distribution and low numbers of nurses ($n = 44$ for group, $n = 8$ for individual) does not allow this hypothesis to be tested.

Summary of hypotheses 4.1-4.3. It was predicted in hypothesis 4.1 that the levels of positive illusions would not vary as a function of age. There was a significant association between the age of the nurse and their level of positive illusions as a set. Of the four positive illusion measures, dispositional optimism and self-perception contribute most to the result.

It was predicted in hypothesis 4.2 that the levels of positive illusions would not vary as a function of years spent in present position. There was a significant association between the years spent in the present position and the level of positive illusions. Of the four positive illusion variables, dispositional optimism and invulnerability contribute most to this significant result.

It was predicted in hypothesis 4.3 that the levels of positive illusions would not vary as a function of years of total nursing experience. There was a significant association between total years of nursing experience and the level of positive illusions although this relationship was substantively small ($R^2 = .06$). Of the four positive illusion variables, invulnerability and self-perception contribute most to this significant result.

Tests of Phase II Hypotheses

One of the concerns expressed in this study is whether coping measures were accurate accounts of how the nurses actually coped with a past situation, or whether the item responses are generated more from a construct or schema of coping (which may be biased in a particular way or direction), and as a result may be inaccurate. The primary goal of this phase of study was to explore what effects, if any, factors such as level of positive illusions, temporal distance, level of perceived stress, and a priming manipulation have on the frequency, type, and proportion of inferences that are generated by nurses while they decide on how to rate 16 coping items.

In order to organize the presentation of the results, the following descriptions will be organized into three sections: (a) priming manipulation, (b) level of perceived stress, and (c) positive illusions. The first set of hypotheses (hypotheses 5.0 and 6.0) explores the effects of a priming manipulation and temporal distance on: (a) the nurses' ratings of coping items from Phase I to

Phase II, and (b) the proportion of self-statements (SS) to contextual inferences (CI) generated by the nurse during his or her second rating of 16 selected coping items drawn from the Ways of Coping Questionnaire (Folkman & Lazarus, 1988).

The next set of analyses (hypotheses 7.0 and 8.0) looks at nurses' level of self-perceived stress (LPS), and its effect on the frequency and type of self-statements (SS) and contextual inferences (CI) generated by nurses. How LPS interacts with the priming manipulation is also explored.

Finally, the last set of analyses (hypothesis 9.0 and 10.0) explores whether individuals' constructs of themselves (i.e., as it is expressed through a position of high illusion or low illusion) potentially bias their responses to coping items in a systematic way. These analyses were carried out after the contributions of the previous variables (possibly confounding) were better understood. Hypothesis 9.0 investigates the effects of positive illusions (after controlling for temporal distance, level of perceived stress, and the priming manipulation) on the frequency, type, and proportion of self-statements (SS) and contextual inferences (CI) made by the nurse while rating the 16 coping items. To conclude the analyses of the study, hypothesis 10.0 returns to some of the central research questions posed: do positive illusions exhibit the stability of a trait measure (as a total score or as a component score); do they behave in the flexible and situationally-dependent fashion as described by Taylor (Taylor & Brown, 1983, 1988; Taylor & Armor, 1996); or do they represent relatively stable qualities in an individual that respond to situational variables as a function of the severity of impact?

Phase II Hypotheses: Priming Manipulation

Hypothesis 5.0 addresses the issue of whether or not differences under which an individual recalls a past stressful event (i.e., short vs. long prime) result in significant corresponding differences in the coping measure scores over time. The hypothesis predicts that after controlling for temporal distance, a longer, more detailed prime (full reading of the nurse's narrative) of a previously experienced stressful event results in more consistent, or accurate, retrospective recall over time of the coping strategies used during that event compared to a shorter, less detailed prime (one sentence reminder of the narrative). The

narrative refers to the nurse's description of the stressful event that the nurse wrote down in Phase I. All priming materials were removed prior to the think-aloud procedure.

The analyses used to explore this question involved doing a repeated measures MANCOVA with one between-subjects factor (prime) and one within-subjects factor (time). The nurses' rating scores (from 0 to 3) for the 16 coping items selected for Phase II were examined at Time 1 (Phase I) and Time 2 (Phase II). However, considering that nurses completed the two phases at different points in time, it was important to control for these variations as the range for temporal distance was 26 to 186 days. Thus temporal distance was used as a covariate. Assumptions of parallelism were met in that the covariate did not interact with any of the effects of interest.

As there were 16 coping items and 36 nurses in Phase II, it was necessary to reduce the number of variables under consideration in order to increase power. In order to do so, the coping items were subgrouped based on the general nature of the item into three separate categories: behavior, emotion, and attitude/ value (refer to "Treatment of Data" section and Table 2 for the grouping of items). Of the 16 coping items, six fall under the behavior grouping, six under the emotion grouping, and four under the attitude/ value grouping. This method of grouping variables is done in subsequent analyses relating to self-statements and contextual inferences. In order to obtain a value for each grouping, scores for each coping item within the particular grouping were summed, and then considered as a total score for the grouping.

Table 15 shows the first repeated measures MANCOVA results obtained for Hypothesis 5.0. The results demonstrate that after controlling for differences in temporal distance, there are no significant main effects for time or prime, nor was there a significant interaction effect for time (between T1 and T2) by prime, on the newly formed coping categories (i.e., behavior, emotion, attitude/ value).

Table 15

**Repeated Measures MANCOVA for Coping Strategies as a Function of Prime
Controlling for Temporal Distance**

	<u>df</u>	<u>F</u>
<u>Covariate: Temporal Distance</u>		
T1 Behavior	1, 31	.03
T1 Emotion	1, 32	.80
T1 Attitude/Value	1, 31	1.57
T2 Behavior	1, 31	.62
T2 Emotion	1, 31	.41
T2 Attitude/Value	1, 31	1.03
<u>Between Effect</u>		
Prime	3, 31	1.12
<u>Within Effect</u>		
Time	3, 31	.54
<u>Between/Within Effect</u>		
Prime x Time	3, 31	.86

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

To further this exploration, the level of positive illusion (high and low) was considered as a contributing factor and entered into the analysis (see Table 16). While there was no main effect for positive illusion, nor any two-way interactions between positive illusions and the other variables, there was a significant three-way interaction involving prime, positive illusion, and time. This indicates that after controlling for differences in temporal distance, the scores at T1 and T2 are significantly different as a result of the combined effects of a priming condition (short and long) and the level of positive illusions (high and low). Of the three categories of coping items, there were significant differences in the coping items in the behavior item grouping and in the attitude/value item grouping but not for the emotion item grouping.

Table 16

Repeated Measures MANCOVA for Coping Strategies as a Function of Prime and Positive Illusions Controlling for Temporal Distance.

Source	df	F
<u>Covariate: Temporal Distance</u>		
T1 Behavior	1, 31	.30
T1 Emotion	1, 31	.80
T1 Attitude/Value	1, 31	1.57
T2 Behavior	1, 31	.62
T2 Emotion	1, 31	.41
T2 Attitude/Value	1, 31	1.03
<u>Between Effects</u>		
Prime	3, 29	.70
PI	3, 29	.95
Prime x PI	3, 29	.53
<u>Within Effect</u>		
Time	3, 29	.21
<u>Between-Within Effect</u>		
Prime x Time	3, 29	.06
PI x Time	3, 29	.24
Prime x PI x Time	3, 29	4.39**
Behavior	1, 31	4.27*
Emotion	1, 31	.02
Attitude/Value	1, 31	4.23*

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

Table 17 which outlines the least square means adjusted for the effects of temporal distance, shows all scores increased over time in all three groups, although from the results of the MANCOVA, only the scores on the behavior and attitude/ value items changed significantly.

Table 17

Repeated Measures for Least Square (LS) Means of Behavior, Emotion, and Attitude/Value Coping Items as a Function of Prime and Positive Illusions

Prime	Coping Item	Time X Prime			
		Time 1		Time 2	
		Low PI	High PI	Low PI	High PI
Short	Behavior	8.62	8.70	9.80	12.69
	Emotion	-2.78	-2.78	-3.78	-4.00
	Attitude/Val	4.87	4.18	6.58	8.36
Long	Behavior	8.03	10.75	12.03	11.45
	Emotion	-3.44	-3.11	-4.89	-5.78
	Attitude/Val	4.39	3.87	7.70	5.68

Figures 1 and 2 clearly demonstrate how the scores in the two sets increased from Time 1 to Time 2.

Figure 1. Three-way interaction between time, prime, and level of positive illusion for behavior scores.

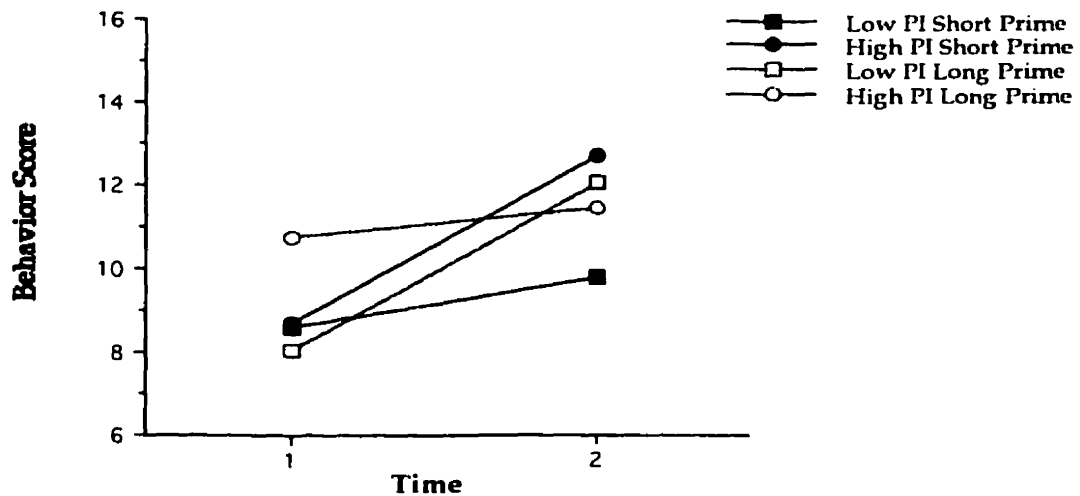
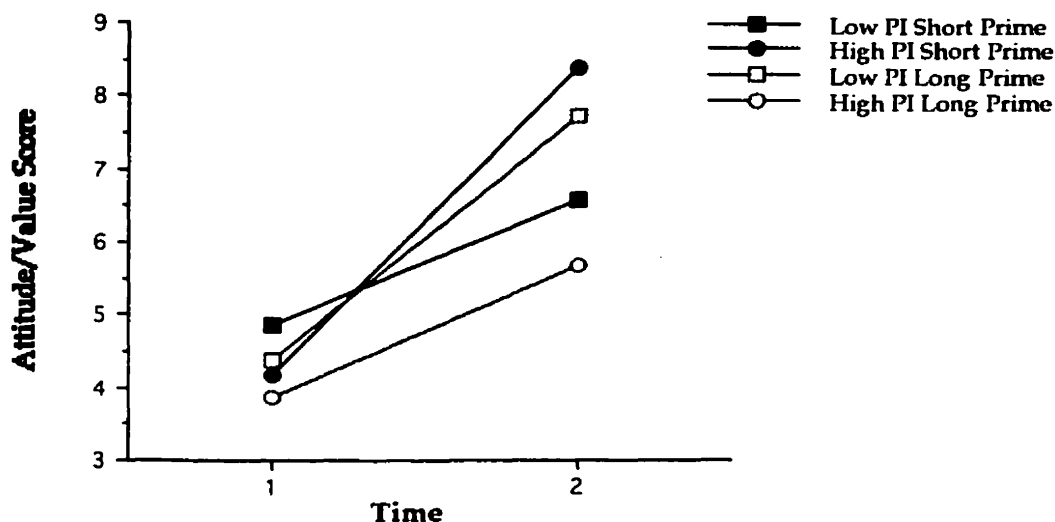


Figure 2. Three-way interaction between time, prime, and level of positive illusion for attitude/ value scores.



While all scores appear to increase from T1 to T2, the behavior item scores appear to increase less dramatically compared to the attitude/ value scores. It also appears that the high PI/ short prime and the low PI/ long prime are the two groups that demonstrate the most dramatic change in their T1 to T2 scores. While the emotion item LS mean scores also increased over time (see Table 16), the change is not significant, suggesting that nurses appear to have recalled emotion coping responses more accurately from T1 to T2 compared to the behavior and attitude/ value items.

Summary of Hypotheses 5.1. It was predicted in hypothesis 5.1 that after controlling for temporal distance, a long-prime manipulation would result in more accurate recall of the coping strategies used to deal with a previously experienced stressful event, compared to a short-prime manipulation. After controlling for temporal distance, a priming manipulation on its own does not appear to make a significant difference in recalling coping strategies. However, if level of positive illusion is considered in the analyses, a different pattern emerges where the level of positive illusion combined with a particular priming

manipulation does contribute to a significant three-way interaction effect. These effects appeared to be strongest for the high PI/ short prime group and the lowPI/long prime group for behavior items and attitude/ value items only.

Phase II Hypotheses: Priming Manipulation

This next set of analyses for Hypothesis 6.0 explores the effects of temporal distance and priming on the proportion of self-statements and contextual inferences made in response to the 16 coping items in Phase II (i.e., a temporal distance by prime interaction). The aim was to discover whether the way in which nurses were prompted to recall their stressful event might affect the pattern and direction of the differences between self-statements and contextual inferences. It was predicted that in the short-prime group, as temporal distance of the stressful event increased, the proportion of self-statements would increase relative to contextual inferences (SCDiff; self-contextual difference). In addition, it was predicted that in the long-prime group the effect of temporal distance would be attenuated in terms of the SCDiff.

The following analyses were performed to examine the effect of prime (short and long) on the proportion of self-statements and contextual inferences (SCDiff) used by the nurses. Temporal distance was treated as a continuous variable and the dependent variables of self-statements (SS) and contextual inferences (CI) were transformed mathematically to allow for a comparison in terms by way of proportions (refer to "Treatment of Data" section and Table 3).

The results from an ANCOVA reveal whether or not the nurses in the two prime groups differed in the degree to which they made proportionately more self-statements compared to contextual inferences (SCDiff). As it is possible that level of perceived stress (LPS) and positive illusion (PI) may have modulated the interaction between temporal distance and the priming manipulation, these two variables were also entered into the analysis to control their effects on prime (PI was treated as a continuous variable using the TotPI score i.e., four PI measures summed). Assumptions of parallelism were met in that the covariates (level of stress and positive illusion) did not interact with any of the effects of interest (temporal distance and prime). The results in Table 18 reveal a significant main effect of prime; a significant main effect of level of stress; a significant main effect

of temporal distance; and a significant interaction effect of temporal distance by prime.

Table 18

ANCOVA for the Effects of Prime (Long and Short) on SCDiff after Controlling for Level of Positive Illusions, Level of Perceived Stress, and Temporal Distance

Source	df	F
<u>Covariates:</u>		
Positive Illusions	1, 30	1.67
Level of Stress	1, 30	7.34*
Temporal Distance	1, 30	11.75**
<u>Effects of Interest:</u>		
Prime	1, 30	14.19**
Temporal Distance x Prime	1, 30	14.64**

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

Table 19 presents the LS means for SCDiff for the two prime groups after controlling for positive illusions, level of stress, and temporal distance. The table reveals that nurses in the long prime group made proportionately more self-statements compared to contextual inferences (SCDiff) than did the short prime group.

Table 19

LS Means for the SCDiff as a Function of Priming Manipulation After Controlling for Positive Illusions, Level of Stress, and Temporal Distance

Prime	SCDiff
Long Prime Group	4.62
Short Prime Group	4.37

In order to show which group is most affected by temporal distance, simple Pearson correlations were performed between temporal distance and SCDiff for the two prime groups. Also, as there is a significant effect of level of stress for two prime groups, this was also explored through Pearson correlation analyses.

Table 20

Correlation Matrix for SCDiff by Prime, Temporal Distance, and Level of Perceived Stress

<u>Level of Prime</u>	<u>SCDiff</u>	
	Long Prime	Short Prime
	<u>r</u>	<u>r</u>
<u>Temporal Distance</u>	-.17	.61**
<u>Level of Stress</u>	.50*	-.37

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

From the results in Table 20 it would appear that the interaction effect between temporal distance and prime (Table 18) is primarily the result of a strong positive correlation between SCDiff and temporal distance in the short prime group. This suggests that as temporal distance increased, nurses in the short-prime group tended to generate proportionately more self-statements compared to contextual inferences, whereas nurses in the long prime group were less affected by temporal distance. Within the long prime group, it appears that temporal distance did not have the same effect, supporting the possibility that the long prime condition attenuated the effects of temporal distance on SCDiff. In regards to level of stress, the level of stress reported in Phase II was positively correlated with SCDiff for the long-prime group, but not for the short-prime. This effect, however, did not appear strong enough to affect the relationship between temporal distance and prime on SCDiff in the long-prime group.

Table 21 displays the Pearson correlation coefficients between temporal distance and the specific type of self-statements and contextual inferences for the

Table 21

Correlation Matrix for Frequency of Self-Statements and Contextual Inferences and Temporal Distance for the Long and Short Prime Groups

<u>Level of Prime</u>	<u>Self-Statements</u>				<u>Contextual Inferences</u>			
	Long Prime		Short Prime		Long Prime		Short Prime	
	POSS	NGSS	POSS	NGSS	POCI	NGCI	POCI	NGCI
<u>Temporal Distance</u>	<u>I</u> -.21	<u>I</u> -.41	<u>I</u> .46*	<u>I</u> .82**	<u>I</u> -.44	<u>I</u> -.23	<u>I</u> .33	<u>I</u> -.05

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

Note. POSS = Positive Self-Statements

NGSS = Negative Self-Statements

POCI = Positive Contextual Inferences

NGCI = Negative Contextual Inferences

two prime groups. The results reveal that in the short prime group, temporal distance is strongly associated with an increase in both types of self-statements over time, in particular, negative self-statements.

Summary of hypotheses 6.1 to 6.2. It was predicted in hypothesis 6.1 that in the short-prime group as the temporal distance of the stressful event increased, the proportion of self-statements would increase relative to the proportion of contextual inferences. This hypothesis was supported by the results which showed that the proportion of self-statements to contextual inferences (SCDiff) did increase significantly with temporal distance in the short-prime group as compared to the long-prime group as predicted.

It was predicted in hypothesis 6.2 that in the long-prime group, the effect of temporal distance on the proportion of self and contextual inferences would be attenuated (i.e., that exposure to the full written narrative completed in Phase I would provide the nurses with details related to the event which would include initial self-statements and contextual inferences, and as a result the SCDiff would be more consistent across the differences in time). The results revealed that in the long-prime group, the SCDiff did not increase with temporal distance in a significant way, as predicted.

Phase II Hypotheses: Level of Stress

Hypothesis 7.0 predicted that the frequency and type of inference would vary as a function of level of perceived stress (LPS), while Hypothesis 8.0 predicted that the effectiveness of the priming manipulation in Phase II (i.e., consistency of recall with regards to the coping items) would vary as a function of the level of stress reported during Phase I. It was also felt that in order to ultimately examine the effects of positive illusion on recall it was necessary to understand LPS as a potentially confounding variable, and to control for it in the analyses where appropriate.

While this study was interested in studying the effects of level of stress on inference-making and recall, unfortunately LPS was not adequately distributed in either the Phase I or Phase II samples. The potential range of scores are from

1 to 9 ("not stressful at all" to "extremely stressful" respectively). In Phase II, the mean score for LPS was 4.02 ($SD = 1.29$) which was somewhere between slightly stressful to moderately stressful. This situation has both advantages and disadvantages for the study. The advantage is that the LPS remains fairly constant for the sample and, as a result, does not act as a serious confounding variable. The disadvantage, however, is that the limited variability of this measure results in the upper and lower levels of perceived stress not being well represented, and therefore, the effects of LPS cannot be properly explored.

For the data obtained, however, simple Pearson correlations were done between the level of perceived stress, type and frequency of self-statements and contextual inferences, and total inferences for the nurses as a group. No meaningful correlations emerged. However, when these different variables were examined as a function of the two prime groups, three significant correlations emerged (see Table 22).

Table 22

Pearson Correlation for Level of Perceived Stress, Positive Illusions, and Type of Self-Statements and Contextual Inferences

	<u>Level of Perceived Stress</u>	
	Short Prime	Long Prime
	Mean = 4.05 $SD = 1.30$	Mean = 4.00 $SD = 1.32$
<u>Total Self-Statements</u>		
Positive SS	-.07	.23
Negative SS	-.23	.44*
<u>Total Contextual Inferences</u>		
Positive CI	-.28	.22
Negative CI	.53*	-.27
<u>Total Inferences</u>	.67**	-.005

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

There is a strong positive correlation between LPS and negative contextual inferences and total inferences for the short prime group. It should be noted that the two prime groups are very similar in terms of the mean scores and standard deviations for LPS. These results suggest that for the short-prime group the more stressful the event was rated at T1, the greater the number of overall inferences made at T2, as well as the more negative contextual inferences generated.

As seen in the ANCOVA analysis for Hypothesis 6.0 (Table 18) there was a main effect of level of perceived stress on SCDiff for the two prime groups. These results suggest that the effect may be primarily the result of the positive correlation between LPS and SCDiff in the long prime group (Table 22). When differences in temporal distance are accounted for, however, the effect of LPS on the long-prime group is diminished. Due to the restricted range of scores for LPS, however, these results should be interpreted cautiously.

It was predicted in hypothesis 8.1 that the consistency of retrospective recall of coping strategies would vary as a function of level of stress reported during Phase I and the priming manipulation (i.e., higher levels of stress and a long-prime manipulation would result in better recall compared to lower levels of stress and a short-prime manipulation). A MANOVA was performed to test this hypothesis and no interaction effect of level of stress by prime on recall was found for the behavior items ($F_{(1,31)} = 0.13, p = .72$); emotion items ($F_{(1,31)} = .03, p = .85$); or the attitude/ value items ($F_{(1,31)} = .36, p = .55$). However, the restricted range of LPS scores may have contributed to these nonsignificant results for LPS and prime, and it is possible that with a more representative range of scores a significant effect may have been found.

Unfortunately, as a result of these restricted conditions, it was not possible to further explore the questions regarding LPS at this time. To the extent that LPS may have exerted some effect, however, it was controlled for when necessary in any related analyses.

Summary of hypotheses 7.1, 7.2, and 8.1. It was predicted in hypothesis 7.1 that there would be a positive correlation between level of perceived stress and the frequency of negative contextual inferences. In this sample, with a restricted range of LPS scores, there is a positive correlation between LPS and the

frequency of negative contextual inferences and total inferences for the short prime group only.

It was predicted in hypothesis 7.2 that there would be a negative correlation between level of perceived stress and the frequency of positive self-statements. In this sample, with a restricted range of LPS scores, there is no substantive correlation between LPS and the frequency of positive self-statements for the two prime groups, nor is there a substantive correlation when the two groups are combined.

It was predicted in hypothesis 8.1 that the consistency of retrospective recall of coping strategies would vary as a function of level of stress reported during Phase I and the priming manipulation. No significant interaction effect was found.

Phase II Hypotheses: Positive Illusions

After investigating the other variables in this study (i.e., temporal distance, priming, and level of perceived stress) the final set of hypotheses now address two of the central questions of the study: (a) how does the level of positive illusion affect the inferential processes (SS and CI) that emerge while responding to a coping questionnaire, and (b) has the level of positive illusion remained stable from Phase I to Phase II? Hypotheses 9.0 and 10.0 address these two questions. In order to explore this first question, the frequency of self-statements and contextual inferences were adjusted proportionately (see p. 108-109, Table 3 for the procedure used) to account for the differences in the number of categories (8 compared to 10 respectively).

Prior to performing a MANCOVA to explore the overall effects of prime and positive illusions on the type and frequency of self-statements and contextual inferences (controlling for the effects of temporal distance and level of stress) a test of the parallelism assumption was carried out. The assumption was met for negative self-statements, negative contextual inferences, and positive contextual inferences only. Positive self-statements could not be included in this first MANCOVA since there was a significant interaction between temporal distance and prime on positive self-statements. A separate analysis, therefore,

was carried out for the positive self-statements and will be discussed later in this section.

Table 23 presents the results of the MANCOVA for the effects of prime and positive illusions on the frequency of negative self-statements, negative contextual inferences and positive contextual inferences.

Table 23

MANCOVA for the Effects of Prime and PI on the Frequency of Negative Self-Statements, Negative Contextual Inferences, and Positive Contextual Inferences after Controlling for Level of Perceived Stress and Temporal Distance

<u>Source</u>	<u>df</u>	<u>F</u>
<u>Covariates:</u>		
Level of Perceived Stress		
Positive Contextual Inferences	1, 31	.01
Negative Self-Statements	1, 31	1.12
Negative Contextual Inferences	1, 31	.02
Temporal Distance		
Positive Contextual Inferences	1, 31	.85
Negative Self-Statements	1, 31	.20
Negative Contextual Inferences	1, 31	.51
<u>Between:</u>		
Positive Illusions	3, 28	.30
Prime	3, 28	.88
Positive Illusions x Prime	3, 28	3.33*
Positive Contextual Inferences	1, 30	7.21*
Negative Self-Statements	1, 30	.87
Negative Contextual Inferences	1, 30	5.52*

*p < .05, **p < .01

These results show that there is no overall main effect of positive illusions. There is, however, a significant two-way interaction between positive illusions and

prime, and this effect is for positive contextual inferences and negative contextual inferences only.

Table 24 shows the LS means for the four groups (positive illusions by prime). In examining the LS means one can see that the patterns for the high and low PI groups are very different. With regards to both the positive and negative CIs, low PI groups make more CIs in the short prime manipulation, and fewer CIs in the long prime manipulation. The pattern for the high PI group is the complete opposite. They make fewer CIs in the short prime manipulation and more in the long prime manipulation. These differences can be seen in Figures 3 and 4.

Table 24

LS Means for Type of Self-Statements and Contextual Inferences as a Function of Prime and Positive Illusions

	<u>Positive Illusion x Prime</u>			
	High/Long	Low/Long	High/Short	Low/Short
Pos Contextual Inf	1.20	.32	.43	1.11
Neg Contextual Inf	3.52	1.64	1.62	2.62
Neg Self-Statements	4.47	3.63	2.88	3.46

Note: High = High Positive Illusion,
 Low = Low Positive Illusions,
 Long = Long Prime,
 Short = Short Prime,
 Pos = Positive,
 Neg = Negative,
 Inf = Inference.

Figure 3. Change in LS means for positive contextual inferences as a function of prime and level of positive illusion.

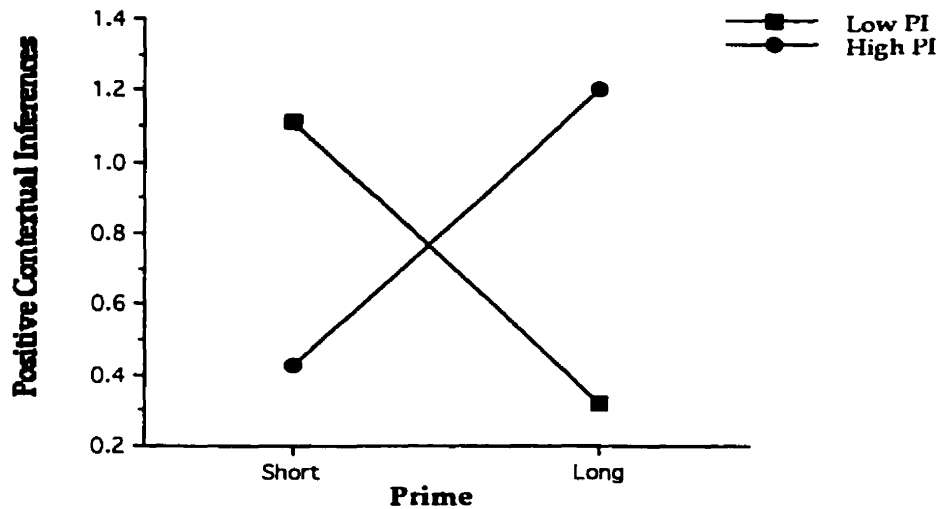
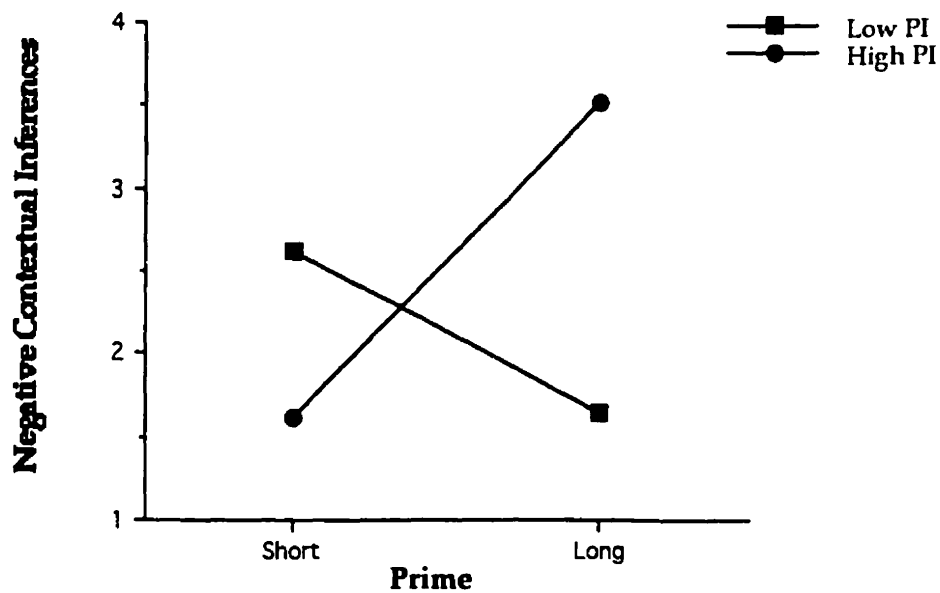


Figure 4. Change in LS means for negative contextual inferences as a function of prime and level of positive illusion.



The following discussion now addresses the effects of level of positive illusions and prime on the frequency of positive self-statements. As mentioned

previously, a test for the assumption of parallelism revealed that for the positive self-statements, temporal distance could not be controlled for in the previous MANCOVA analysis (Table 25) as there was a significant interaction between temporal distance and prime. Therefore, in order to investigate the effects of positive illusions and prime on positive self-statements, separate ANCOVAs were performed controlling for the effect of temporal distance for the two prime groups on positive self-statements.

The results shown in Table 25 indicate that for the long prime group there was a significant difference between the two positive illusion groups for the frequency of positive self-statements, while for the short prime group there was no significant difference between the two. Table 26 displays the LS means for the four groups and shows that the high PI/long prime group made significantly more positive self-statements compared to the low PI/long prime group.

Table 25

ANCOVAs for Differences in the Frequency of Positive Self-Statements Within the Long and Short Prime Groups as a Function of Level of Positive Illusions Controlling for Temporal Distance within Each Prime Group

	<u>df</u>	<u>F</u>
Covariates:		
Temporal Distance	1, 31	.35
Level of Stress	1, 31	.59
Long Prime		
(High vs. Low PI)	1,14	7.35*
Short Prime		
(High vs. Low PI)	1,14	.43

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

Note: High = High Positive Illusion; Low = Low Positive Illusion

Table 26

LS Means of Positive Self-Statements as a Function of Level of Positive Illusions and Priming Manipulation Controlling for Temporal Distance and Level of Stress

	Long Prime	Short Prime
High Positive Illusions	5.06	3.88
Low Positive Illusions	2.85	4.47

Table 27 describes the results of simple Pearson correlations between temporal distance and positive self-statements for the two prime groups. Results show a significant, positive correlation between temporal distance and positive self-statements in the short prime group but no significant correlation in the long prime group. This suggests that temporal distance could not be controlled for in the previous MANCOVA analysis (Table 23) because it affected the short prime group much differently than the long prime group in regards to positive self-statements. This is further supported by the findings for Hypothesis 6.0 with regards to the effects of temporal distance on SCDiff for the short-prime group only.

Table 27

Pearson Correlations Between Temporal Distance and Positive Self-Statements for the Two Prime Groups

	Short Prime/ POSS <u>r</u>	Long Prime/ POSS <u>r</u>
Temporal Distance	.46*	-.21

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

Summary of hypotheses 9.1 to 9.2. It was predicted in hypothesis 9.1 that there would be a positive correlation between the level of positive illusions and the frequency of positive self-statements. Pearson correlations looking at the two prime groups showed a positive correlation between temporal distance and

positive self-statements in the short prime group, but in the long prime there was no significant correlation. Separate ANCOVAs had to be performed for the long and short prime groups due to the fact that temporal distance interacted significantly with prime. This interaction meant that temporal distance could not be controlled for equally across the two prime groups. The ANCOVA results (Table 23) indicated that for the long prime group there was a significant difference between the two positive illusion groups in regards to the frequency of positive self-statements ($F_{(1,14)} = 7.35, p = .02$), while for the short prime group there was no significant difference between the two. The high PI/long prime made significantly more positive self-statements compared to the other three groups. There is no significant relationship between the two positive illusion groups and negative self-statements. Therefore, high positive illusion on its own does not predict a higher frequency of positive self-statements as it would appear that the conditions under which an individual recalls information about their stressful event modulates this effect.

It was predicted in hypothesis 9.2 that there would be a positive correlation between level of positive illusions and the frequency of positive contextual inferences. Results of the MANCOVA done in order to answer this set of hypotheses (Table 23) show that there is no significant main effect for positive illusions on the frequency of positive or negative contextual inferences. The effect of PI on the frequency of CI is modulated by the priming manipulation, with the high and low PI groups behaving differently depending on the prime. For the two PI groups, the effects were found for both positive contextual inferences ($F_{(1,30)} = 7.21, p = .01$) and negative contextual inferences ($F_{(1,30)} = 5.52, p = .03$).

Phase II Hypotheses: Positive Illusions

Hypothesis 10 examines the stability of positive illusions over time, from Phase I to Phase II. A repeated measures MANOVA was performed on the high and low positive illusion groups examining positive illusions as four separate components: dispositional optimism, internal locus of control, invulnerability, and self-perception. Results shown in Table 28 show a main effect for level of PI on all four components. This indicates that overall the two PI groups (i.e., high and low) remained significantly different over time in regards to the four

separate component scores. However, there was an overall effect of time. When the individual PI components were examined there was a significant change from T1 to T2, specifically on two components: dispositional optimism and self-perception scores. There was no significant effect of time by PI on the component PI scores indicating that for both the high and the low PI groups, optimism and self-perception changed in a similar manner.

Table 28

Repeated Measures MANOVA for the Effects of Time on Component Score
Positive Illusions

Source	df	F
<u>Between:</u>		
Positive Illusions	4, 31	10.47**
Dispositional Optimism	1, 34	25.25**
Internal Locus of control	1, 34	6.02*
Perceived Invulnerability	1, 34	9.23*
Self-Perception	1, 34	7.05*
<u>Within:</u>		
Time	4, 31	2.82*
Dispositional Optimism	1, 34	4.30*
Internal Locus of Control	1, 34	0.33
Perceived Invulnerability	1, 34	0.76
Self-Perception	1, 34	4.90*
<u>Between-Within:</u>		
Positive Illusion x Time	4, 31	1.25

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

Table 29 shows the LS means for the two PI groups (high and low) from T1 to T2. In examining the dispositional optimism scores, both high and low PI groups show a significant increase over time. The significant change in the self-perception measures from T1 to T2 show scores for both high PI and low PI

groups decreased over time, with the high PI group decreasing at a more dramatic rate.

Table 29

LS Means for High and Low Positive Illusion Groups (CompPI) at T1 and T2

	<u>Time 1</u>		<u>Time 2</u>	
	High PI	Low PI	High PI	Low PI
Dispositional Optimism	11.61	8.11	12.00	9.00
Internal Locus of Control	15.39	10.72	14.55	12.77
Perceived Invulnerability	-9.88	-4.00	-7.61	-4.33
Self-Perception	111.72	98.22	106.55	97.27

Summary of Hypotheses 10.1. It was predicted in hypothesis 10.1 that the level of positive illusion reported in Phase I (namely, dispositional optimism, internal locus of control, perceived invulnerability, and enhanced self-perception) would not differ from the level of positive illusion reported in Phase II. This hypothesis cannot be judged simply. When PI is treated as four separate measures (i.e., dispositional optimism, internal locus of control, perceived invulnerability, and self-perception) there is a significant time effect on two of the components: dispositional optimism and self-perception. These are not big effects but they have definitely changed over time. The results of the MANOVA of the effects of time on the component PI variables (Table 28) does not demonstrate a significant two-way interaction between PI and time. This suggests that the way it changes for the high PI group is the same for the low PI group, in that they change consistently (some components are stable and some are not).

Conclusions

This chapter has described the treatment and analyses of the data in order to address the hypotheses of the study. The following chapter will now discuss

those results within the theoretical context of positive illusions, coping, and inferential processes.

CHAPTER V

Discussion

Introduction

Survivors are the people who are left when others are swept away. They were part of the company when the wave rolled in, and they are still part of the company when the wave carried others away. After the brow is mopped and the stomach has settled, after the goodbyes to old comrades and some antagonists, what then? Forget and go on? Not likely. (Gottlieb, 1995, p. 6)

The study so far has collected and analyzed data that will assist in the discussion of the theory of positive illusions proposed by Taylor (1983; Taylor & Brown, 1988) which states that individuals who cope best with traumatic, or stressful, events are those who manifest three "pervasive, enduring and systematic" illusions: unrealistic optimism, exaggerated perceptions of control or mastery, and unrealistically positive self-evaluations. The main objectives of this study were to: (a) explore the construct of positive illusions as it relates to a number of other variables associated with mental health (i.e., positive appraisals, high self-efficacy, active coping strategies, positive dispositional affect, job satisfaction, and positive perceptions of occupational climate), and (b) explore the reliability of nurses' retrospective recall of coping behavior by examining their inferential reasoning when asked to rate 16 coping items, and to determine if factors such as level of positive illusion, temporal distance, level of stress, and a priming manipulation can predict their pattern of response.

In the discussion that follows the term "cause" and "causality" are used, and should be taken advisedly in the sense of functional analyses. When the term "cause" is used in this discussion the author only wishes to connote that variance in one variable or set of variables is predictive of certain changes in others. This discussion will be organized around four main themes. The first theme focuses on positive illusions as a construct and the degree to which the four

components (dispositional optimism, internal locus of control, perceived invulnerability, and self-perception) contribute to its overall structure. Related to this discussion will be how the relationship between PI and the different variables explored (i.e., appraisals, self-efficacy, coping strategies, work variables) support, or do not support, the construct of positive illusions as proposed by Taylor (1983; Taylor & Brown, 1988) for this population. The second theme will explore the possibility that positive illusions act as a coping strategy (or set of strategies) in and of themselves, and that their contribution to adjustment has been previously underestimated by coping research. The third theme will discuss the general stability of positive illusions and whether or not the obtained data support a position of it being primarily situationally responsive or dispositionally anchored. The final theme will focus on the process of coping measurement, using the information gained from the data on positive illusions, and the patterns of inferential reasoning revealed through protocol analysis. Of particular interest is the interplay between level of positive illusion, temporal distance, and the priming manipulation using the short and long narratives generated by nurses in Phase I.

The Construct of Positive Illusions

Initially, it was predicted that individuals who express high levels of positive illusions would simultaneously rate themselves high on a number of positive variables representative of a positive view of the self. That is, people high in dispositional optimism and internal locus of control, who perceive themselves as less vulnerable to negative events compared to others, and who see themselves in a more positive light than their peers in terms of their personal qualities and abilities, when faced with a stressful situation will demonstrate effective coping by expressing positive appraisals of their stressful event (i.e., challenge and benefit), feel self-efficacious in their ability to resolve their stressful situation, report the use of active coping strategies to cope with the event (i.e., planful problem-solving, confrontive coping, seeking social support, accepting responsibility), experience a high level of job satisfaction (both intrinsic and extrinsic), and express positive perceptions of their work environment (i.e.,

challenge and control problem-solving, supportive communication). The findings of this study reveal that while some of these predictions were validated, a number of them in fact were not.

The discussion regarding the construct of positive illusions will focus on the results of the canonical correlations and the multiple regression analyses described in the previous chapter. While the Pearson correlations provide important information on the relationship between pairs of variables, it is the results of the canonical correlations which are of primary interest in terms of the construct. However, it is important to include the Pearson correlations in order to compare the results of this study to previous studies using similar types of correlations for different populations. To assist the reader in the following discussion of the results from Phase I, Table 30 presents an overview of only the significant Pearson correlation results (for a full description of all Pearson correlations see Appendix E), Table 31 presents an overview of the multiple regression results, while Table 32 presents an overview of meaningful associations drawn from the four canonical correlations performed (for complete canonical correlation results refer to Tables 8, 9, 10, and 11). The canonical correlation for the work variables was not included in Table 32 as there was no significant correlation between the sets.

In reviewing the canonical correlations, the degree to which the four PI components contribute to the overall construct becomes more evident. Taylor (1983; Taylor & Brown, 1988) has emphasized the particular importance of positive illusions such as self-enhancement, perceived invulnerability to negative events (unrealistic optimism), and exaggerated perceptions of control or mastery. Two of the four measures for the PI components have been specifically identified by Taylor as measuring the presence of positive illusions: the measures for self-perception and perceived invulnerability. Both these measures make use of social comparisons to others (e.g., a nurse the same age and gender) in order to see how the respondents view themselves relative to some other referent point. Taylor has suggested that individuals typically possess overly positive self-views when comparing themselves to others, and tend to see themselves as less at risk of negative events and more likely to experience positive events compared to the average person. These measures (i.e., self-perception and perceived

Table 30

Overview of Substantive Pearson Correlations for the Component Positive Illusion Variables

	<u>Positive Correlations</u>	<u>r</u>	<u>Negative Correlations</u>	<u>r</u>
<u>Component Positive Illusion Score</u>				
1) Dispositional Optimism	Challenge Problem-Solving	.17*	Negative Affect	-.23**
	Supportive Communication	.19**		
	Positive Affect	.37**		
2) Internal Locus of Control			Positive Affect	-.17*
3) Perceived Invulnerability	Benefit Appraisals	.21**	Distancing	-.28**
	Self-Efficacy	.72**	Internal Job Satisfaction	-.23**
	Self-Controlling	.52**	Extrinsic Job Satisfaction	-.25**
	Accepting Responsibility	.22**	Challenge Problem-Solving	-.28**
			Control Problem-Solving	-.26**
4) Self-Perception			Supportive Communication	-.22**
	Planful Problem-Solving	.19**	Self-Controlling	-.15*
	Positive Reappraisal	.17*	Accepting Responsibility	-.18*
	Challenge Problem-Solving	.17*	Escape-Avoidance	-.15*
	Control Problem-Solving	.24**		
	Positive Affect	.25**		

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

Table 31

Overview of Multiple Regression Analyses for Age, Years in Present Position, and Total Years of Nursing Experience

	<u>Parameter Estimates</u>		
	Age	Years in Present Position	Total Years of Nursing Experience
<u>Positive Illusion Variables:</u>			
Dispositional Optimism	.87**	.29*	-.03
Internal Locus of Control	.04	.07	.33
Perceived Invulnerability	.01	.17**	-.66**
Self-Perception	.26**	.03	-.67**
<u>Model R²</u>	.72	.38	.06

*p < .05, ** p < .01

Table 32

Overview of Canonical Correlations between Positive Illusion Set and Related Sets

<u>Set</u>	<u>PI Components</u>	<u>Correlation</u>	<u>Related Components</u>	<u>Correlation</u>	<u>Canonical Correlation¹</u>	<u>% Shared Variance</u>
1) <u>Appraisal/SE/ Coping Strategy Set</u>	1) Optimism Internal Locus of Control Self-Perception	.53 -.44 . .82	Self-Efficacy Challenge Threat	.90 .53 -.33	.38	.14
2) <u>Coping Strategy Set</u>	1) Optimism Internal Locus of Control Self-Perception	.46 -.61 . .76	Positive Reappraisal Self-Controlling Escape-Avoidance Planful Problem- Solving	.70 .39 -.36 .30	.40	.16
3) <u>Appraisal/SE/ Coping Set</u>	1) Optimism Internal Locus of Control Self-Perception	.50 -.52 . .84	Self-Efficacy Positive Reappraisal Challenge Self-Controlling Escape-Avoidance	.71 .61 .40 .31 -.30	.47	.22
3) <u>Dispositional Affect</u>	1) Optimism Internal Locus of Control Self-Perception	.85 -.38 . .58	Positive Affect Negative Affect	1.00 -.56	.44	.19

¹ Focusing on variables contributing most strongly to the relationship to simplify discussion (therefore reported canonical correlations are approximate).

vulnerability) have the potential, therefore, to identify whether the respondents are making these types of comparisons. The measures for dispositional optimism and internal locus of control have also been included as they are often implicated in the stress literature as important contributors to effective coping. Taylor often refers to these characteristics in her discussions regarding illusions and coping, as high end scores on these measures could be seen as representative of illusionary thinking. How Taylor's measures of positive illusion (i.e., self-perception and perceived invulnerability) compare, and possibly compete, with these other two measures in terms of their contribution to effective coping is of interest in understanding the positive illusion construct.

The results of this study demonstrate that the degree to which each component contributes to the PI construct fluctuates slightly depending on the second set of variables under consideration (e.g., appraisals, coping strategies, dispositional affect). In general, however, the structure of PI remains fairly consistent. With regards to the nurses' responses to their stressful events (i.e., the type of appraisals, level of self-efficacy, and type of coping strategies reportedly used) the components that contribute most to the PI construct are self-enhancement followed by dispositional optimism. Internal locus of control also contributes in a substantive way; however, it does so in the opposite direction to that which was predicted (i.e., in a negative rather than a positive direction). The variable of vulnerability contributes little to the PI construct in regards to the stressful event. A similar pattern occurs when the PI construct is considered in terms of its relationship to dispositional affect, although optimism makes a stronger contribution this time compared with self-perception. With regards to the work variables it is dispositional optimism which contributes the most to the PI construct, however, as this canonical correlation does not reach significance ($p = .08$) the interpretation of this structure is unreliable.

Within the third set of analyses comparing PI with appraisals, self-efficacy, and the coping strategies, it is the PI components of self-enhancement, high dispositional optimism and low internal locus of control that were most strongly associated with high self-efficacy, challenge appraisals, the use of positive reappraisal and self-controlling coping strategies, and the nonuse of escape-avoidance strategies. Interestingly, the PI components were not

associated in any substantive way with the active coping strategies of seeking social support, accepting responsibility, confrontive coping, or planful problem-solving in this third analyses. This is not to say that these nurses do not actively engage in these strategies (as the scores obtained on the Ways of Coping Questionnaire (WCQ) indicate that they do) but the predicted associations between these specific problem-focused or active coping strategies and the PI variables is not present for these nurses. With regard to the work variables, it would appear that the PI set has little in common with this particular set. Interestingly, Table 30 reveals that many of the work variables are negatively correlated with perceived invulnerability. Perhaps it is due to the minimal contribution made by invulnerability to the PI set within the canonical correlations that creates this effect.

This observed variation in terms of the contribution of self-enhancement and invulnerability to the PI variable suggests that positive illusions do not contribute to positive perceptions and coping response in a consistent manner, but may in fact (as suggested by Taylor & Gollwitzer, 1995) "rise and fall" in order to meet specific demands. Self-enhancement (in combination with dispositional optimism and low internal locus of control), for example, appears to be a very important PI component when the appraisals, self-efficacy, and coping strategies are being considered separately and in combination with one another. On the other hand, the component of perceived invulnerability contributes little to the PI set and, therefore, little to the association between PI and the other variables considered. In addition, there is no significant association between the PI components as a set and the work variables of job satisfaction and perceptions of occupational climate. The appraisal/coping responses have been generated in reference to an event identified as being the most stressful as the result of organizational downsizing and change. On average, nurses have identified these events as "moderately stressful" (i.e., somewhere between "I think about it sometimes and I am still slightly concerned, however, it does not interfere with my daily routine, and any anxiety about it is very manageable" and "I think about it several times during the day as it is still a concern and it is important; I am concerned about it to the extent that sometimes it causes me to feel uncomfortably anxious."). These situations, therefore, represent events that

are personally threatening at varying levels. Perhaps a reason for this difference in the nature of the PI construct between the two sets (i.e., appraisal/ coping and work) is that perceptions of occupation and job satisfaction have more to do with generalized observations about the nurses' environment, whereas the responses regarding appraisals and coping strategies have more to do with personal feelings and reactions to a specific situation. Thus, the latter responses are self-relevant and potentially more personally threatening, and as such, the associated PI components of self-enhancement and optimism serve a more self-protective function. The PI components do not appear to be as important, or perhaps necessary, when considering work-related perceptions such as satisfaction or work climate.

Wood, Taylor, and Lichtman (1985) have explored the usefulness of self-enhancement when faced with threatening self-relevant information. Referring to the work of Brickman and Bulman (1977) and Gruder (1977), Wood et al. have stated that "under threat individuals often opt for a self-enhancing strategy [and] they may avoid comparisons with others who appear to be superior" (p. 1170). It is possible that the nurses in this study compared themselves to other nurses less fortunate, or able, than themselves in evaluating their skills and personal qualities, which resulted in a self-enhanced position. However, according to Woods et. al., this may not have been necessary. In a study of breast cancer victims, Woods et al. found that "the respondents did not confine their comparisons to specific targets; at times they seemed to invent comparison targets, and they were able to arrive at comparison dimensions on which they appeared advantaged, even when other dimensions on which they were unfortunate loomed quite large" (p. 1182). The results of this present study suggest that self-enhancement may indeed be an important factor in coping with a specific stressful work event, especially one in which self-identity has been threatened. However, despite the severity of the event in terms of its level of stress, nurses held on to enhanced views of themselves compared to others, and a generalized expectation for positive outcomes in the future, even though they expressed low levels of internal locus of control.

Greenwald (1981) has proposed that as threats to the self increase, positive biases become more apparent (as cited in Taylor & Brown, 1988). Taylor, Collins,

Skokan, and Aspinwall (1989), on the other hand, have suggested that positive illusions do not necessarily increase in response to threat but rather the presence of positive illusions contributes to negative information being processed differently. They have stated that if the negative information has no real significant meaning or lasting implications, the individual will use both cognitive and social filters to diminish the impact. This, therefore, supports Taylor's position that positive illusions have a "buffering" effect. If, however, the negative information has more significance, then it is "cordoned off from the rest of the self-concept through negative self-schemas or pockets of incompetence that are domain-specific" (p. 127). Together, these specific responses to negative information allow illusions such as enhanced self-perception to remain relatively intact. This is not to say that negative information is denied. The results suggest that nurses who are self-enhancing and optimistic do not use escape-avoidance strategies (i.e., wishing it away, hoping for miracles, fantasizing, isolating, taking it out on other people, using drugs or alcohol to feel better) to distance themselves from the event. They appear, therefore, to want to stay aware of the situation but at the same time utilize cognitive strategies (i.e., positive reappraisal) to diminish its potential negative emotional impact.

Perceived invulnerability does not appear as important to the PI construct as do the other components with this group of nurses. The mean score for the sample is 5.95 with a potential range of -48 to +48, which indicates that the nurses tended to rate themselves as more like the average nurse (a score of 0) in terms of their perceived risk of experiencing certain negative events. Taylor and Brown (1988) have discussed how people in general tend to have positive perceptions of how events will turn out in the future, and relate this to dispositional optimism. What distinguishes dispositional optimism (i.e., generalized outcome expectancies which are positive) from "unrealistic" optimism (reflective of perceived invulnerability) is that the latter involves perceptions that the individual is "more likely than others" to experience positive events or outcomes, and "less likely than others" to experience negative events. Taylor and Brown go so far as to have suggested that "mildly depressed people and those with low self-esteem appear to entertain more balanced assessments of their likely future circumstances" (p. 197). If this is true, one might infer that

these nurses fit this profile as their scores for perceived invulnerability appear to be "balanced." This might be further supported in that these nurses see themselves as having a low internal locus of control. However, this explanation is in conflict with the fact that nurses are generally self-enhancing, comparing themselves more favorably to other nurses their own age and gender.

Perhaps, the failure of this invulnerability illusion to demonstrate itself in the PI construct is more due to the actual measure used, and whether or not it is a valid instrument for these nurses. The scale, as it is, and with this particular population (i.e., ages 23 to 67), may not have measured "perceived risk" to negative events but rather it may have measured actual "life events." For example, many of the questions ask about risk for financial problems, marital problems, heart disease, diabetes, and so on. For many of the nurses in this study, they may not have been predicting risk so much as reporting actual life events. However, one finding that does not support this possible explanation is the results of a multiple regression which demonstrated that age did not have a significant effect on the vulnerability scores (see Table 12). With this in mind, this explanation seems less probable in explaining invulnerability's low contribution to the PI construct. However, it is possible that perceived invulnerability may have been better identified with an instrument that was more specific to the stressful work situation rather than one focused on illnesses and random events. For example, Taylor et al. (1992) found differences in the levels and expression of optimism with AIDS patients when a dispositional optimism measure was compared with a measure of AIDS-specific optimism. Perhaps the same might hold true for invulnerability as well.

One other possibility, and perhaps the more likely one, in explaining the tendency of nurses to rate themselves as similar to other nurses in terms of risk, is that this study was conducted during a period of labor tension and contract negotiations. The environment was one that was openly calling for solidarity with one another and this may have created conditions in which nurses felt equally "at risk" with their colleagues. Also, studies have demonstrated that when this measure was used with friends and family members as reference points, the tendency to perceive oneself as less vulnerable to negative events was diminished (Perloff & Fetzer, 1986; Taylor & Brown, 1988). Many nurses have

close working relationships with their colleagues; therefore, their relationships with their colleagues (i.e., average nurse their age and gender) may have affected the final scores. Taylor and Brown (1988) also refer to studies which show "that even under the most minimal of social conditions, a pervasive tendency exists for individuals to see their own group as better than other groups" (p. 195) As a result, nurses may have been reluctant to compare themselves as more invulnerable than their peers in terms of risk.

Another surprising result was the unpredicted direction of the nurses' internal locus of control in relation to the identified appraisals and coping strategies. Instead of being positively associated with certain appraisal and coping strategies as predicted (e.g., high self-efficacy, positive reappraisal, planful problem-solving, confrontive coping), internal locus of control (considered within the PI set) was associated with these variables in a negative direction. Nurses, therefore, do not feel that they exercise personal control over events in general. This is a very curious finding considering these same nurses were high in dispositional optimism and were self-enhancing. How does one understand and explain these results which appear counter-intuitive?

As it turns out, the literature reveals that the processes governing personal control are actually quite complex and that control can be exercised in numerous ways. Internal locus of control "refers to the conviction that events are contingent upon one's own behavior, and an external locus of control refers to the conviction that events are not contingent upon one's actions but upon luck, chance, fate, or powerful others" (Folkman, 1984, p. 841).

According to Folkman "generalized beliefs about control, which concern the extent to which individuals assume they can control outcomes of importance, are among those beliefs that influence primary appraisal" (p. 841). Beliefs about control, therefore, are important in determining whether a situation is perceived as threatening or challenging. This group of nurses, despite a low internal locus of control, perceived their situation as challenging and expressed high self-efficacy in terms of resolving the event in the future. Furthermore, personal control has frequently been identified as integral to a positive self-esteem and self-concept, and has been associated with mastery, motivation, persistence, and performance (Taylor & Brown, 1988). In support of this, Cohen and Edwards

(1988) have identified personal control as a superordinate mechanism that successfully buffers stress, along with self-efficacy, optimism, and effort or ability (as cited in Taylor & Brown, 1988). Again, the nurses were self-enhancing and generally optimistic. Therefore, despite the low score for internal locus of control, one might assume that these nurses do in fact perceive themselves as exercising some form of personal control even though it is not directly expressed through the measure of control used in the study.

The research has shown that the relationship between control and stress is not as simple as it is often portrayed (Folkman, 1984; Thompson, 1981). In a review of studies concerning control and organizational behavior, Spector (1982) points out that locus of control is very sensitive to experience, especially to situations perceived as controllable or uncontrollable, and states:

because internals tend to believe that they can control the work setting through their behavior, they should attempt to exert more control than would externals, provided that control is perceived to lead to desired outcomes or rewards. If a situation cannot provide desired outcomes, the internal should not differ from the external in attempts at control. (p. 485)

The association of low internal locus of control with the emotion-focused coping strategies (i.e., self controlling, positive reappraisal) found for this group of nurses can possibly be explained by what has been described by Folkman and Lazarus (1985) in some of their work: in situations perceived as uncontrollable, emotion-focused strategies prevail, in situations perceived as controllable, problem-focused strategies prevail. Based on these findings, one explanation may be that while the scale used for measuring internal locus of control attempts to tap into generalized beliefs about personal control, it may be that perceiving oneself as generally not in control of events contributes to the perception that the stressful situation is uncontrollable, which in turn affects the type of coping strategies chosen or reported. This might explain the predominance of emotion-focused strategies identified by the nurses. However, it may also be that the situation is perceived by these nurses as only "temporarily" uncontrollable as the

high scores for dispositional optimism and self-efficacy imply that nurses believe that some positive outcome will occur in the future.

A second explanation is based upon Folkman's (1984) proposal that beliefs about control can be generalized (as in the case of internal locus of control) or situational. She describes how the ambiguity of the situation really determines the extent to which individuals determine their level of personal control. For example, in highly ambiguous situations, generalized beliefs about personal control will likely be applied and, as such, remain intact. However, when the situation is much lower in ambiguity, then situational characteristics rather than generalized beliefs determine judgements about controllability. The findings may actually reflect this duality in personal control observed in the nurses. The nurses express generalized beliefs of low internal locus of control, however, because their other responses (i.e., appraisals and coping) are specific to a particular situation, beliefs about personal control are expressed more clearly through measures such as self-efficacy, challenge appraisals, and reappraisal coping strategies.

The association between the other PI components and the low level of internal locus of control expressed does not necessarily negate a desire for mastery and control. In a study by Taylor, Collins, Skokan, and Aspinwall (1989), they describe individuals who express a high need for mastery and control, as those who avail themselves of opportunities to exert control, and as a consequence improve their ability to judge which situations signal opportunities for control or its absence. This is in contrast to low control individuals who may not expose themselves to the same opportunities and, as a result, not be as knowledgeable about what situations can afford them in terms of control. Again, the expression of control by these nurses may be evident in their scores for dispositional optimism, high self-efficacy, challenge appraisals, and positive reappraisals.

Levenson (1981) points out that even though scores might indicate that an individual is low on internal locus of control and high on scales for "powerful others" or "chance", the person may not feel "out of control." This is because individuals may in fact be confident in their ability to affect final outcomes through other means (e.g., by working closely with someone in power). Control,

therefore, has different dimensions whereby an individual can exercise different forms of control (on their own, or through others or the situation) depending on the context. The mean scores for intrinsic and extrinsic job satisfaction for these nurses are 24.70 ($SD = 6.72$) and 18.16 ($SD = 4.93$) respectively⁵. These scores suggest that while nurses tend to be neutral with regards to the extrinsic factors at work (e.g., pay, working conditions, recognition), they are more satisfied with the intrinsic factors (e.g., obtaining personal satisfaction from doing their job well). Perhaps personal control is achieved, therefore, through activities in which they can exercise more control (e.g., individual tasks, assignments, relationships with colleagues and patients). This is further reflected in that those nurses expressing low locus of internal control self-enhance in terms of their abilities and skills compared to other nurses their age.

In support of this, Bandura (1986) and Lazarus and Folkman (1994) have stated that personal control can be achieved both behaviorally and cognitively, and how the object of control is very complex; they also propose that control can refer not only to what can be achieved through the situation but also to the individual's own internal state as well. Exercising or achieving personal control, therefore, may not be something that is "behaviorally" visible. Typically, a higher-order view of coping has existed in which "engagement" with the stressful event has been perceived as more effective than "disengagement" (Tobin, Holroyd, Reynolds, & Wigal, 1989). In situations, however, in which engagement is not perceived as useful and the person does not feel they can exercise control, the individual is left to cope in the most cognitively-effective fashion. Folkman (1984) refers to the work of Langer (1975) and has stated that "when experience does not reinforce internal control beliefs, an illusion of control can be created through cognitive coping or reappraisal" (p. 848). As mentioned previously in the literature review, there are different ways in which individuals achieve illusionary control: aligning themselves with the "force of chance"; associating with powerful others; and searching for meaning and understanding. The

⁵ These values are raw scores. The median for the potential range of scores for intrinsic job satisfaction is 36, while the median for extrinsic job satisfaction is 18. Scores higher than the median represent increasing dissatisfaction, while scores lower than the median represent increasing satisfaction.

findings indicate that this may be the case for these nurses, in that they report positive reappraisal as a primary coping strategy. Challenge appraisals made a strong contribution to the appraisal set and are also reflective of control expectancies. According to Folkman, challenge appraisals "seem likely when encounters that are appraised as relevant to well-being hold a potential for control, either of one's emotions or the environment, and the exercise of control creates little if any additional distress" (p. 847).

Maintaining positive illusions such as self-enhancement and high optimism, and coping through strong self-efficacy beliefs, challenge appraisals, and positive reappraisal may have become, therefore, an effective control vehicle for these nurses (a form of cognitive coping) and perhaps this has ultimately acted to "buffer" these nurses against the potential negative implications of what may be perceived as an uncontrollable situation. This is despite (or possibly as the result of) a low internal locus of control. As pointed out by Folkman (1984), in some stressful transactions a low internal locus of control can be very adaptive in that it has the potential to reduce the degree of threat the person experiences. Feeling that one is personally responsible for one's fate, but finding that one cannot, in fact, exercise control in an important situation can be potentially traumatic. In the end, however, high internal locus of control does not appear to be a good predictor of positive coping outcomes and, therefore, it is possible that it is also not a good measure of positive illusions. Identifying "illusion of control" processes, however, would seem a better measure of positive illusions rather than internal locus of control, if this is possible.

The canonical correlation which looked at the PI components and the work variables as a set describes a slightly different pattern compared to the previous canonical correlation concerning the appraisal/SE/coping strategy set. Dispositional optimism emerged strongly as the primary PI component in the first set. Vulnerability, self-perception and internal locus of control contributed very little to the overall correlation. However, while this is the strongest linear combination that could be created from the two sets, it is borderline in terms of significance ($R = .29$, $p = .08$). What is suggested, however, by this combination is that the positive illusion set does not contribute in a meaningful way to the work variables set as it did to the variables concerning the stressful event.

In summary, the results demonstrate that enhanced self-perception is the illusion component that makes the most significant contribution to the construct of PI and its association with a number of positive appraisals and coping strategies (i.e., challenge appraisals, positive reappraisal, high self-efficacy). While positive illusions have been associated in past research with active coping strategies, these associations did not appear in a substantive way within this study. However, this does not necessarily negate an association between the two as a review of the mean scores demonstrates that, in fact, the active coping categories were rated very low by the nurses. Positive illusions may be related to active coping strategies, but for this population they are not. Also, the PI component of perceived invulnerability did not contribute as expected (i.e., its contribution was negligible) to the association between PI construct and the appraisal/ coping responses for this population. Additionally, the fact that these positive illusion variables (especially that of enhanced self-perception) have not appeared in a consistent pattern with all forms of positive appraisals and perceptions (e.g., perceptions of work climate and job satisfaction) suggests that they may serve a specific purpose in their expression. For example, dispositional optimism may be more instrumental in addressing external events, whereas, enhanced self-perception and perceived invulnerability may be more instrumental in addressing internal, self-relevant events. Finally, the results have shown that the presence of illusions such as enhanced self-perception and high optimism does not prevent an individuals from holding contradictory self-views or negative perceptions at the same time (e.g., low internal locus of control). This finding actually supports Taylor's position that the presence of positive illusions does not create a "Pollyanna" approach to life, and that the individual is still capable of making realistic appraisals. The results also support Taylor's position that illusions (primarily self-enhancement) contribute to positive perceptions and coping (positive reappraisal, self-efficacy, challenge appraisals, and the nonuse of escape-avoidance coping strategies).

There remains, however, a number of questions regarding whether or not positive illusions can be associated with adjustment and effective coping for this population. For example, are positive illusions merely an expression of an individual's self-schema that is positively biased, and in the final analysis

contribute little on their own towards a person's adjustment to traumatic events? On the other hand, are illusions simply an "outcome" of effective coping as suggested by Suls and David (1996)? Or, is it at all possible that illusions are actually effective coping strategies in and of themselves which actively assist an individual in dealing with severe threats and, as such, have the potential to act alone? Ultimately, it is likely that positive illusions in fact represent all three aspects: that they are by nature dispositionally anchored and are always present at some baseline level, called into action when the individual is faced with a stressful event, and are further reinforced when the person successfully resolves his or her stressful event. The next section will address these different possibilities.

Positive Illusions as a Coping Stratagem

Coping has been defined as a multidimensional process that involves cognitive, behavioral, and emotional efforts (i.e., a biopsychosocial response) by an individual to manage the psychological demands that strain existing or perceived resources (Carver & Scheier, 1994; Folkman & Lazarus, 1980, 1985). Two general coping categories have been identified: (a) problem-focused coping, which involves activities the person actively engages in with the goal of eliminating or minimizing the source of stress, and (b) emotion-focused coping, where the individual engages in strategies aimed at reducing the emotional impact of the event (Folkman, Lazarus, Gruen, & DeLongis, 1986).

Studies have found that when a situation is perceived by the individual as uncontrollable, emotion-focused coping predominates, while problem-focused coping predominates when the situation is perceived as controllable (Folkman & Lazarus, 1980; Lazarus & Folkman, 1987). Taylor (1983, 1989) has associated positive illusions with coping strategies such as positive reappraisal, accepting responsibility, and confrontive coping. Taylor has also described in several studies how individuals who are motivated to achieve mastery, or regain control, use positive illusions to accomplish this (Taylor, Helgeson, Reed, & Skokan, 1991; Taylor, Lichtman, & Wood, 1984). The findings of this study, however, have not revealed any strong association between positive illusions and many of the

problem-focused or active coping strategies (e.g., confrontive coping, seeking social support, planful problem-solving) although meaningful associations with emotion-focused strategies have been demonstrated (e.g., a positive correlation with self-controlling coping and a negative correlation with escape-avoidance). The coping strategy that has shown the strongest association with the PI construct, was positive reappraisal. Whether or not it can be considered an "active" coping strategy is debatable, as its expression is primarily cognitive, rather than behavioral⁶. For example, Lazarus and Folkman (1984) have identified positive reappraisal as an emotion-focused strategy, while Taylor has considered it an active coping strategy. However, regardless of its category, positive reappraisal has not been paired with any of the more direct modes of coping for this population.

The other finding regarding the coping strategies is the nonuse of escape-avoidance strategies with the PI construct of self-enhancement, high optimism and low internal locus of control. These findings are in some ways similar to those of Folkman and Lazarus (1980) in which optimism was associated with less avoidant behavior and less emotional disengagement. However, Folkman and Lazarus found in their population of college students that those higher in optimism also used more problem-focused coping strategies which included seeking social support, which again is not descriptive of the nursing sample here. Perhaps one difference between these college students and the nurses in this study, is the degree to which they felt vulnerable to negative events. One of the findings of this study is that level of vulnerability is significantly and positively associated with the number of years in the present nursing position. While the greater the number of years implies more seniority and less risk for being "bumped", these nurses are not protected from possible unit closures and mergers. The longer a nurse is in a particular position, the less experience they typically have with other areas of medicine and the different procedures that are associated with those areas. Perhaps the most effective way of coping is to be knowledgeable about the realities of the hospital environment, to be alert to any

⁶ The same may be said about the 'accepting responsibility' coping strategy. This confusion around the classification of strategies into 'emotion-focused' and 'problem-focused' is why viewing coping strategies within these two categories is often discouraged.

signs of change, and not pretend that things are not happening around you. This might ultimately be very self-protective, in that the nurse who feels more at risk, is nonetheless more alert to (and possibly better prepared for) potential negative events.

Another study by Aspinwall and Taylor (1992), which examined the impact of individual differences and coping on college adjustment and performance, found a direct effect of optimism on adjustment. They found that most of the predicted effects were mediated by coping methods such as the nonuse of avoidance coping along with the greater use of active coping and seeking of social support. Again, in some respects, their results are similar to those obtained for the nurses in this study with respect to the nonuse of escape-avoidance. However, they are dissimilar in the use of active coping strategies and seeking social support.

What can explain the relative absence of active coping strategies for this population? Folkman (1984) has suggested that in very stressful situations, the use of emotion-focused coping may be initially undertaken to deal with high emotions which then allows the individual to more effectively utilize problem-solving responses once the individual is emotionally ready. However, the mean score for perceived level of stress for these nurses is 4.01 (somewhere between "concerned but any anxiety about it is manageable" to "concerned to the extent that sometimes it causes me to feel uncomfortably anxious"). Perhaps the perceived level of stress is not high enough to activate a concerted effort to manage the situation through the use of problem-focused strategies. Another finding that supports the possibility that the identified stressful situation does not represent one that requires an active problem-focused approach, is that nurses appraise the situation as challenging and ultimately one in which they will be self-efficacious in finding a solution.

So what are the coping strategies that are being put into play? Despite a generalized view that they are not personally in control of what happens to them in the future, it would appear that these nurses are coping by holding positive, self-enhanced views of themselves, feeling optimistic about their futures, appraising their stressful events in a positive way, and by feeling self-efficacious in finding a solution. Given the amount of change that staff have experienced,

the fact that they have "survived" until this point, and the fact that they anticipate that more changes are ahead (e.g., the future merging of three hospitals), this pattern may in some ways be very understandable. Nurses are working in an environment in which personal control does not always seem possible, and for many of them, they have had first hand experience of this (e.g., mergers and bumping). An important demographic finding is that just over half of the nurses have one or more children, and 63.3% report that they are the primary wage earners for their families. For many of the nurses, leaving the hospital is probably not an option especially as conditions are not likely to be much better elsewhere in the city. Therefore, nurses may be coping by staying in a type of holding pattern; maintaining the status quo as best they can while they anticipate what is to come next. Perhaps another explanation is that they have come to terms with the unpredictable nature of their environment and have come to accept (and possibly endure) the chronic stress of the hospital's reorganizations and lack of resources. Perhaps the only way nurses are now able to cope is by protecting themselves both cognitively and affectively through the use of self-enhancement, reframing their stressful event in a more positive light, and by holding to the belief that things will work out for the best in the end.

While the canonical correlations assessed the relationships between the construct of positive illusions and the other variables as sets, it did not evaluate the degree to which nurses were actually using the various coping strategies as defined by the WCQ. Nurses may, therefore, be coping in other ways that have not yet been discussed. However, the mean scores for the coping strategies (see Table 7) reveal that overall the scores are "low" to "extremely low." This may partially explain why the active coping strategies (confrontive, seeking social support, accepting responsibility, planful problem-solving) did not emerge in a substantive way in the canonical correlation analyses. Several explanations can be proposed to explain these findings.

The first explanation comes from the observation that frustration, anger, and insecurity are common themes throughout the nurse's narratives. The following are examples taken from the narratives: "there is a deterioration of respect for the nursing profession, particularly by management"; "at the end of my work day I am too exhausted to perform any activity that requires patience

and commitment"; "I feel frustrated that perhaps my strengths and contributions are not recognized and my efforts will all be in vain"; "It's been two years and I still don't feel part of this hospital. I don't like the way you are a number and not a person. I also don't attach myself because you never know if it [hospital closure] will happen again"; "It [hospital closure] was a major loss in my life and at times I feel I am still grieving"; "The hospital environment is presently not a "happy" or "joyful" place to be working in"; "Now I find myself growing increasingly angry. I leave work frequently exhausted and drained and have taken to shutting myself in my apartment on the weekends to bask in solitude and blessed quiet, refusing often to answer the phone"; "If this is what nursing has become--I want out!."

Nurses have been exposed to dramatic changes and reorganizations for well over a decade. One only has to refer to the learned helplessness literature (Abramson, Seligman, & Teasdale, 1978; Maier & Seligman, 1976; Seligman, 1975, 1991) to understand what might possibly be in effect for the nurses. Nurses may have reached a point where they feel ineffective in an environment that resists their efforts to act positively upon it, and that they have possibly stopped trying to bring about change. Perhaps the nurses studied feel that the use of active problem-focused coping strategies in response to their stressful events is without purpose at this time.

A related explanation for these findings (i.e., lack of problem-focused coping strategies) is supported by the literature available on victimization. Janoff-Bulman and Frieze (1983) have proposed that individuals rely on three common assumptions about themselves and the world that help them set goals, plan activities, and order their behavior: (a) that they are personally invulnerable, (b) the belief that the world is meaningful and comprehensible, and (c) that they perceive themselves in a positive light (p. 3). According to Janoff-Bulman and Frieze, following a traumatic event victims experience a loss of equilibrium and their recovery depends on re-establishing these three fundamental assumptions. One way of doing this is to view the traumatic event as an "isolated event" not representative of the way things truly are. This enables individuals to retain a sense of potential mastery in their day to day activities, and not to internalize the negative event as reflective of something they are

responsible for. Finding meaning in the situation may be reflected in their generally optimistic outlook: "every cloud has a silver lining." Overall, nurses in this study do tend to externalize responsibility for their stressful events (very low score on "accepting responsibility" coping category) and are self-enhancing which lends support to this process as a possible explanation.

Taylor (1983; Collins, Taylor, & Skokan, 1990; Dakof & Taylor, 1990) have also addressed this process of victimization. In one article, Collins et al. proposed five tasks that are undertaken to reestablish a balance: (a) making downward social comparisons, (b) creating hypothetical "worse" worlds, (c) focusing on personal attributes that make one appear advantaged, (d) construing benefit from the event, and (e) manufacturing normative standards of adjustment that make one's own adjustment appear exceptional. The findings of this study indicate that the nurses may be engaging in many of these tasks, in particular those relating to self-enhancement and challenge appraisals.

Another possibility for the relative absence of reporting problem-focused coping, is that the nurses' narratives may be more representative of chronic, global stressful events than of acute, isolated events. If this is the case, then it is possible that their coping methods have been tailored over time to deal with the chronicity of the events, and therefore do not portray the usual pattern of strategies used for dealing with more acute stressors. Several studies by Carver (Carver, Pozo, Harris, Noriega, & Scheier, 1993; Carver & Scheier, 1994) demonstrated that active coping can have different effects depending on the situation. Some situations foster the use of active coping because there is the expectation that this approach may have a positive effect. However, there are other situations (i.e., coping with breast cancer) in which Carver et. al. (1993) found that acceptance and endurance was preferred over active coping strategies. Perhaps the nurses in this study are exhibiting this latter pattern of coping over the use of active coping, as their stressful events have occurred within the larger context of hospital downsizing and reorganization over the past years, and endurance has perhaps become the norm.

A final explanation for the findings may be that nurses have coped primarily by maintaining an enhanced self-perception, and this has been achieved through the consistent and regular use of downward social

comparisons. In an environment of ongoing mergers, position closures, and bumping, one does not have to look far in order to find a referent point. As Taylor (1983; Aspinwall & Taylor, 1993) has frequently pointed out, social comparison plays an important role in restoring self-esteem after stressful or traumatic events. As few other active coping strategies emerged as important in the analyses of this study (as they relate to positive illusions), perhaps the positive illusion of enhanced self-perception has in fact represented the nurses' primary means of coping, and the illusion has done so by acting as a strong emotional "buffer" to protect the nurses from the negative impact of their situation. As stated by Taylor (1983) "the effective individual in the face of threat . . . seems to be one who permits the development of illusions, nurtures those illusions, and is ultimately restored by those illusions" (p. 1168). Nurses are coping, therefore, by maintaining the belief that compared to other nurses they possess better skills and abilities. This, perhaps, imparts some level of emotional protection in an unpredictable environment by allowing the nurse to think "I am important, it will happen to them, not me."

Most importantly, one significant factor which may have prevented positive illusions from having been identified as a coping strategy (or set of strategies) in the past, is that they are not picked up by the WCQ (Folkman & Lazarus, 1988b) or by similar inventories for that matter. Concurrently, there may also be different forms of active coping associated with positive illusions which are also not being adequately identified (e.g., seeking out specific types of information for the purposes of upward or downward comparisons, aligning oneself with powerful others). A study by Stone, Greenberg, Kennedy-Moore, and Newman (1991) revealed that there were problems with the applicability of the coping items to different kinds of stressful events (e.g., certain kinds of illnesses). Perhaps the same problem exists for identifying coping strategies used to deal with stressful work events (e.g., dealing with superiors, informational problems, prioritizing, recognition). This would give support to the claim by Suls and David (1996) that coping measures give an incomplete picture of how an individual actually copes with stressful events. It is possible that the WCQ has consistently missed one or more dimensions of coping (e.g., the existence of positive illusions) which are complementary to, or possibly a

precursor to, those strategies identified as problem-focused or emotion-focused coping. After reviewing the 66 coping items on the WCQ, there appear to be only two items that come close to identifying these social comparisons and self-enhancing beliefs: (a) "I thought about how a person I admire would handle it" (upward comparison; scored under self-controlling), and (b) "I reminded myself how much worse things could be" (situational downward comparison; filler item and not scored under any scale). These two items are clearly inadequate in terms of identifying the positive illusion dimension.

As discussed earlier, the "illusion of control" can come about as the result of using the coping strategy of "positive reappraisals." Taylor (1983; Taylor & Brown, 1988) has identified three important themes in a person's attempt to adapt to a stressful event: (a) a search for meaning, (b) an attempt to regain a sense of mastery, and (c) an attempt to restore self-esteem through processes of social comparison. It would seem that positive reappraisals may, in fact, be an important factor in achieving all three of these themes. Its strong association with self-enhancement and optimism may suggest that its presence reflects to some extent the presence of the PI components. Positive responses to these items, therefore, may be the closest thing to inferring that positive illusions may be in effect for the individual.

Carver, Scheier, and Weintraub (1989) have developed a scale (COPE) which appears to improve the ability to identify different dimensions of active coping which might demonstrate a better ability to identify the presence of positive illusions. Carver et al. have suggested that Folkman and Lazarus's WCQ is missing certain elements of problem-focused coping, which they subsequently included in their scale. The five scales which they claim measure distinct aspects of problem-focused coping are: (a) active coping which primarily involves initiating action, (b) planning which involves thinking about how to cope with the stressor, (c) suppression of competing activities which involves putting all other things aside, (d) seeking social support for instrumental reasons such as getting advice or getting information, and (e) restraint coping which is waiting to act at an appropriate time. Viewed within this framework, nurses in this study may in fact be engaged in some form of problem-focused coping (e.g., planning, suppression, restraint) but the problem is that these strategies have not been

picked up by the WCQ. For example, Carver et al. describe restraint coping in the following way:

Restraint coping is waiting until an appropriate opportunity to act presents itself, holding oneself back, and not acting prematurely. This is an active coping strategy in the sense that the person's behavior is focused on dealing effectively with the stressor, but it is also a passive strategy in the sense that using restraint means not acting.

If the nurses in this study are in fact using a form of restraint coping, it is possible that holding positive illusions (such as self-enhancement and feeling optimistic) may be what allows nurses not to act. Illusions may, therefore, provide a type of temporary comfort zone.

In the end, however, even the categories suggested by Carver do not appear to tap into these illusionary cognitions directly for the purposes of measurement (i.e., self-enhancement, illusions of control, unrealistic optimism). Of course, an obvious problem in measuring these dimensions is that positive illusions are mildly self-deceptive in nature. That, in itself, may make it extremely difficult (perhaps in some aspects, impossible) for any coping measure to adequately identify these processes.

Therefore, while enhanced self-perception and high optimism do not appear to be directly associated with active, problem-focused coping (as defined by the WCQ) for this group of nurses, the assumption cannot be made that the nurses are not coping effectively with their stressful situations. As proposed by Carver and Scheier (1994), active coping has different affective consequences under different situations depending on whether it is perceived as challenging (where the person expects a beneficial outcome) or as a threat (where the person perceives the possibility of a harm-loss outcome). With regard to the present study, their following observation seems relevant:

It may be that links between coping reactions and distress emotions are very different in transactions that involve primarily threat than in transactions that involve primarily challenge. This is a dimension of the

stressful situation that has not received as much careful attention in the stress literature as it should. (p. 194)

Carver and Scheier propose that active coping strategies are reserved for those events in which positive change is anticipated. For those situations in which positive change is not expected, individuals may resort to containing the negative feelings through other means. In the case of these nurses, this may be where positive illusions play an important role. Perhaps this position is best stated by Taylor and Brown (1988):

To summarize then, evidence from converging sources suggests that positive illusions about the self, one's control, and the future may be especially apparent and adaptive under circumstances of adversity, that is, circumstances that might be expected to produce depression or lack of motivation. Under these circumstances, the belief in one's self as a competent, efficacious actor behaving in a world with a generally positive future may be especially helpful in overcoming setbacks, potential blows to self-esteem, and potential erosions in one's view of the future. (p. 210)

Within this context, therefore, maintaining positive illusions may be viewed as a coping strategy in and of itself.

The Nature of Positive Illusions: Dispositional or Situational?

To what extent are positive illusions fundamentally dispositional and to what extent are they primarily situationally responsive as proposed by Taylor (Taylor, 1983, 1989; Taylor & Armor, 1996; Taylor & Brown, 1988; Taylor & Gollwitzer, 1995)? The results of this study appear to support both positions. In the canonical correlation, the positive illusion components of high optimism, high self-perception, and low internal locus of control correlate strongly with positive affect ($r = .99$) and negative affect ($r = -.56$). While this in itself does not establish a dispositional basis for positive illusions, it does suggest that they share similar attributes in the case of positive affect, while PI and negative affect

are less similar. Illusions as a set also remained stable across the various stages of change that the nurses experienced, that is, anticipation, impact, and post-impact. Furthermore, positive illusions as a set remained somewhat stable between Phase I and Phase II of the study, and although changes did occur with two of the dimensions, they changed in such a way that they appeared to compensate for one another (i.e., self-perception decreased and optimism increased on the repeated measures). When looking at age, years in nursing, and years in present position, however, there was more variability in the component scores, suggesting that the PI variables were more responsive to changes in age (as a set PI increased with age, particularly as a result of optimism and self-perception) and the situation (nurses perceived themselves as more vulnerable the longer they had been in their present position, yet felt more invulnerable the longer they had practiced nursing in total years).

How can this "dual personality" of positive illusions be explained? Epstein (1980) has suggested that an individual's conceptual system is "a network of beliefs and assumptions, some of which are more fundamental and pervasive than others" (p. 168). He has presented this conceptual system as two hierarchically ordered levels: higher order postulates (e.g., I am a good person) and lower order postulates (e.g., I am a good cook). The higher-order postulates address core beliefs, or schemas, that the individual holds to be true about the self, while the lower-order postulates address more specific domains of interaction with others and the world. As such, one tends to see more flexibility and accommodation with the lower postulates than with the higher-order postulates where contradictions or challenges are perceived as more threatening.

A similar self-theory referred to as "reality negotiation" is proposed by Snyder (1989), which assists individuals in managing discrepant information about the self. Snyder defines reality negotiation as "any coping process that involves the incorporation of change-inducing information into one's personal theory of self" (Snyder & Higgins, 1988, as cited in Snyder, 2000). He presents an interactive matrix with two dimensions: the linkage-to-act (the degree to which the information has personal relevance) and valence-of-act (the degree to which the information is seen as being positive or negative). The goal of this motivational self-theory is to demonstrate the need of individuals to increase

their linkage to good acts and decrease their linkage to bad acts. Consequently, positive acts are generally accounted for by the "enduring good-self" while negative associations or acts are dealt with by making excuses and acknowledging a "temporary bad-self." The first priority, however, is to maintain a "good/in-control" persona with a "generalized sense of a strong linkage to positive acts" (Synder, 1989, p. 135).

It is the acknowledgement of formulations such as these that encourages an examination of the construct of positive illusions within a self-theory framework. Positive illusions may be expressed through a hierarchical structure: aspects of each component to some degree being central to the person's self-schema, while other aspects fluctuate in response to situational demands. Showers, Abramson, and Hager (1998) have proposed a similar view of self that is multifaceted, with certain aspects that are fixedly stable (e.g., core schemas) while others are easily changed. Showers et al. have suggested that individuals draw on self-knowledge to enable them to function effectively in specific contexts, and that high self-esteem often functions as a buffer that helps to minimize negative information that may become salient in times of stress.

The point at which enduring beliefs and assumptions (such as those demonstrated with illusionary thought and self-enhancement) become stable attributes which define a person's general personality is a valid point of discussion for this study. It has been difficult to accept Taylor's assertions that "situational factors can explain 100% of the variance in the degree to which people demonstrate positive illusions" (p. 891; Taylor & Armor, 1996). While it is highly probable that situational factors do play an important role in the expression of positive illusions, the fundamental character of positive illusions (i.e., unrealistic optimism, perceived invulnerability to negative events, and enhanced self-perception in particular) has too much in common with dispositional or trait attributes (i.e., positive affect, self-esteem, dispositional optimism) to be viewed exclusively from Taylor's position.

Despite criticisms regarding her position (Watson & Hubbard, 1996; Coyne & Gottlieb, 1996; Suls & David, 1996), Taylor (Taylor, 1983, Taylor & Armor, 1996; Taylor & Brown, 1988) has continued to refute a dispositional nature to explain positive illusions emphasizing instead situational factors in the

stress-coping process and the conceptualization of positive illusions more as a coping strategy. Taylor and Armor (1996) have stated that positive illusions are "not a personality style so much as it is a set of mentally healthy responses to trying situations that the majority of people are able to muster under some circumstances, and that most people are equally likely to put away under others" (p. 892). Despite the fact that positive illusions can demonstrate the ability to "rise and fall" in response to different situations, this argument does not preclude it from being dispositionally anchored. Many trait attributes can demonstrate a similar property as people can regulate their expression under certain situations when it is necessary, and then again not under others (e.g., shyness). In addition, the fact that positive illusions may demonstrate themselves as a "coping stratagem" also does not prevent it from being viewed as a relatively stable set of attributes. Optimism is often viewed as dispositionally anchored, yet it is also viewed as an important coping response, in that it contributes to a person's sense of hope and expectancy of positive outcomes. A form of situational-specific optimism has also been identified (Taylor, Kemeny, Aspinwall, Schneider, Rodriguez, & Herbert, 1992), which further demonstrates the potential multidimensionality of certain concepts.

Showers, Abramson, and Hager (1998) have recently described "how the flexibility of the self-structure may actually stabilize more tangible indices of a person's well-being such as global self-esteem or current mood." They propose that this depends on three aspects of the self-structure: differential importance, self-complexity, and compartmentalization. The first aspect acknowledges how individuals ascribe different levels of importance to self-aspect categories or domains, and how positive aspects are usually given greater importance than negative aspects. The second aspect describes the importance of having multiple self-aspects that contain "distinct and differentiated content" so that implications for one aspect does not necessarily "spill over" into another. The last aspect that addresses how individuals tend to organize information is that they do so in such a way that it is uniformly positive or uniformly negative, and that it requires more effort for the individual to integrate both negative and positive self-aspects within the same compartment. Applying this framework for self-structure in understanding positive illusions, it is conceivable that individuals

who have achieved a high degree of complexity and integration have the capacity to express positive illusions at multiple levels. Even self-enhancement has been shown to be expressed differentially: self-enhancement has been shown to be consistent across highly evaluative traits, but not across traits low in evaluativeness; self-enhancement correlations are minimal for non-evaluative traits and increase with increasing trait evaluativeness (Asendorpt, & Ostendorf, 1998).

This study appears to support the possibility that positive illusions can have multiple roles and functions; that positive illusions can exist at one level in which their relative stability gives some consistency to one's character or personality, and also at another level where the illusions fluctuate in order to allow individuals to cope most effectively and accommodate themselves to the situation. Supported by the findings of Taylor and Gollwitzer (1995), illusions demonstrated the ability to "recede" when realistic appraisals were required to formulate a plan of action (deliberative mind-set), yet emerged once again in order to assist in the achievement of goals related to that plan (implemental mindset).

One set of analyses in this study addressed the relative stability of the positive illusion construct over time, and what was discovered was that there was in fact some flexibility with specific PI components. When the component scores were examined in Phase II, significant change did occur for the PI variables of optimism and self-perception. It is possible that a TotPI score representing the full construct might appear stable over time only because the scores for optimism and self-perception (which change in opposite directions) cancel one another out. However, do these findings of instability and fluctuation negate the relative overall stability or dispositional nature of positive illusions?

Prior to addressing this question, one methodological question that needs to be considered, is whether the optimism and self-perception scores changed as a result of time or as a result of the think-aloud procedure. As a control group was not used in the present study, it is impossible to address this possibility with any degree of certainty. However, the testing procedure was reviewed, and it is possible that the methodology may have affected the outcomes. The last item nurses responded to in the think-aloud procedure was "came out of the

experience better than when I went in." This was followed by repeating the positive illusion measures, the first one being the optimism scale (i.e., LOT). It is conceivable that the last coping item primed the nurses to take a more optimistic position compared to when the scale was completed in Phase I.

Another finding was that enhanced self-perception declined from Time 1 to Time 2. This decline in scores may have resulted from the process of talking about coping with their stressful situation, which subsequently dampened the nurse's tendency to self-enhance regarding their abilities and skills on the self-perception measure. This effect appeared to be stronger for the high illusion group (see Table 29). The think-aloud procedure, which required the nurses to be self-reflective, may have produced a form of deliberative mind-set (Taylor & Gollwitzer, 1995), which in turn affected the self-perception score. However, the results of the repeated measures analyses of all the CompPI scores demonstrates that not all the positive illusion variables were suspended: internal locus of control and perceived invulnerability remained stable from T1 to T2.

Therefore, while the results show significant changes in some of the PI components, perhaps in the end the four PI components act as an interactive set with some of the components providing a stabilizing or buffering effect, while other components diminish or increase in strength. Taylor (1983; Taylor & Brown, 1988) has suggested a process that might account for this called, "cheerful ineptitude" or "learned haplessness", in which a disconfirmed cognition is quickly substituted with another which accomplishes the same goal or achieves the same value. Perhaps in a similar way, the component PI variables are capable of balancing, or substituting for one another, ultimately contributing to a general structure that is "enduring and pervasive."

As one is unable to perfectly separate reality from illusion, so too can one not definitively label positive illusions as completely dispositional or situational. To define it as strictly one or the other is foolish, as it is important to openly acknowledge the interactive nature of the various components that make up the construct, and to understand how its overall qualities of stability and flexibility are ultimately adaptive.

Summary of Phase I Discussion

It appears from the results that the positive illusion construct (as a set) is best represented by a pattern of high self-perception, high dispositional optimism, and low internal locus of control associated with the appraisal/SE/coping variables of high self-efficacy and challenge appraisals, positive reappraisal and self-controlling coping, and the nonuse of escape-avoidance coping. The same PI set pattern was strongly associated in a positive direction with dispositional affect, and negatively associated with negative affect. The positive illusion component of perceived invulnerability did not contribute in any substantive way to the positive illusion set. What was clearly evident, was the relative absence of active, or problem-focused, coping associated with the PI set for these nurses. Also, the PI set was not significantly associated with any of the work variables. While the PI construct showed relative stability across the significant canonical correlations, it demonstrated some variability over time, and in response to increasing age, how long the nurse had been in their position, and total years of nursing experience. One conclusion from these findings is that positive illusions as a set appear to act as an important coping strategy, or set of strategies, in helping to "buffer" the negative effects of stressful situations. These situations may be perceived as "uncontrollable" or ones in which positive outcomes may not be anticipated, and where active coping strategies may be viewed as ineffective by the individual. It was suggested that the identification of positive illusions as a coping strategy, or set of strategies, has not occurred as they do not appear to be represented in existing coping measures. However, another issue related to this is that these cognitive processes by their very nature may in fact be impossible to measure in a reliable way within a standardized format.

Coping Measurement

A final point of discussion in this study is the general reliability of coping measurement as it is typically applied (i.e., retrospective recall of coping strategies reported on a coping inventory). A study by Ptacek, Smith, Espe, and Raffety (1994) explored the assumption that individuals accurately recall the

coping strategies which they used in response to a prior stressful event. Their findings revealed that only 34% of the variability of daily coping measures completed by students during an exam period could be explained by a coping inventory completed five days later. They concluded that the differences in coping item scores between T1 and T2 could be explained by "individual differences in memory, cognitive processing, and personality, each of which in turn may relate to certain psychological and physical outcomes" (p. 48). They maintain that the reliability of coping measures that make use of retrospective recall is very poor even over a relatively short period of time.

Phase II of the study addressed some of these individual differences by examining the reliability of coping recall as it might be affected by level of positive illusions and the means by which an individual is primed to recall the stressful event in question (i.e., using a short vs. long narrative to recall the event). The researcher's original intent was to first investigate the effect of a priming manipulation on: (a) coping item rating correspondence across time, and (b) the proportion of self-statements to contextual inferences. This was to be followed by an investigation of the effect of different levels of positive illusions on type and frequency of self-statements and contextual inferences. The basic assumption regarding the priming manipulation was that a long prime would enhance recall, and thereby increase the consistency between the T1 and T2 measures of coping strategies reportedly used by the nurse; and that the nurse's reading of a full narrative would attenuate the proportion of self-statements to contextual inferences. Conversely, it was proposed that the short prime manipulation would create conditions in which the nurse would have to work harder at recreating the stressful event from memory, that there would be less accurate recall of coping strategies used previously, and that the nurse would make disproportionately more self-statements compared to contextual inferences over time. In regards to positive illusions, the intent was to explore the effect of level of PI on the type and frequency of self-statements and contextual inferences. Again, the hypotheses were based on what was thought to be reasonable assumptions considering the literature about self-enhancement, positive self-bias, and positive illusions: that a person with higher levels of positive illusions would make more positive self-statements and contextual

inferences compared to a person with lower levels of positive illusions. Nurses with lower positive illusion scores (i.e., lower self-perception, perceived vulnerability, low internal locus of control, low optimism) were expected to see themselves and their environment in a more negative light.

However, as a result of some interesting and significant interactions between level of positive illusions (i.e., high and low) and the priming manipulations (i.e., short and long) these two variables cannot be discussed separately. Neither of these variables demonstrated a main effect on their own, and there was also a significant effect of temporal distance on the short-prime group that must be incorporated in the overall findings. Consequently, positive illusions and the priming manipulation must be considered together for the purpose of discussion.

This discussion will commence by first addressing one set of analyses in Phase II which explored the effects of level of positive illusion on the type and frequency of self-statements and contextual inferences made by the nurse in response to coping items during a think-aloud procedure while controlling for temporal distance (Hypothesis 9.0). This set of analyses perhaps best addresses the complexity of the significant interactions that exist between positive illusions, priming manipulation, and time. Prior to conducting the MANCOVA analysis, the variables under consideration were tested for the assumption of parallelism. The preliminary testing of this assumption revealed that positive self-statements could not be considered along with the variables of negative self-statements, positive contextual inferences, and negative contextual inferences because temporal distance and priming did not covary in a similar way for positive self-statements as it did for the other three self-statement and contextual inference variables.

Two significant patterns emerged for the positive self-statements. The first pattern was that there was a significant difference in the frequency of positive self-statements between the high and low illusion group in the long-prime manipulation but not in the short-prime manipulation. These results suggest that in the short-prime manipulation, nurses regardless of their level of positive illusion, generated an equal frequency of positive self-statements. The second pattern that emerged from this analysis, was that there was a strong positive

correlation between positive self-statements and temporal distance for the short-prime group, but not for the long prime group. These results suggest that when a respondent was not "anchored" to the stressful event (i.e., the short prime) by way of the original narrative, there was a tendency to generate more positive self-statements as the distance between the event and its recall became greater. This temporal distance effect was not observed when the nurse was exposed to the long prime condition even though the long-prime group generated more positive self-statements overall. The observed difference in the long-prime group was that those nurses higher in positive illusions generated significantly more positive self-statements than those lower in positive illusions.

These results were further supported by another analysis in which a strong positive correlation also emerged between SCDiff (i.e., the proportion of self-statements to contextual inferences) and temporal distance for the short prime group, but not for the long prime group (Hypothesis 6.0). This analysis demonstrated that both prime groups behaved as predicted. In the long prime group where nurses read their full narrative, there was less effect of temporal distance, and nurses talked about their coping using relatively the same proportion of self-statements and contextual inferences (SCDiff). However, nurses in the short-prime group who read a one-sentence reminder of their stressful event, made proportionately more self-statements to contextual inferences compared to the long prime group, and this proportion became greater the further away the nurse was from the event's original occurrence. These results suggest that when individuals do not have the advantage of conditions which serve to improve their recall (i.e., long narrative) they may "fill in" missing information primarily by generating more positive self-statements as temporal distance increases.

Therefore, while the predictions about the priming manipulation were partially met in these analyses, beyond this point, however, the predicted direction of the hypotheses became more complex as the assumptions made about high and low levels of illusions were not completely supported. What the results suggest is that overall the relationship between the type and frequency of the negative self-statements, negative contextual inferences and positive contextual inferences, and level of positive illusion, is significantly affected by

the type of priming manipulation used (i.e., short or long). As well, the level of positive illusion and the priming manipulation also interact to produce significant differences in the actual recall of enacted coping strategies which will be discussed later in this section. The final explanation of the overall results will be drawn from the integration of these two areas.

The following discussion will focus first on the differences and similarities between the four treatments groups in regards to the frequency and type of self-statements and contextual inferences generated. The four groups are: (a) high positive illusion/long prime (HPI/LP), (b) high positive illusion/short prime (HPI/SP), (c) low positive illusion/long prime (LPI/LP), and (d) low positive illusion/short prime (LPI/SP). First a general overview of the results will be given in reference to these four groups. Following this, theoretical explanations (drawing primarily on attribution theory) for the results will be presented. Table 33 summarizes the assumptions that have been posited for the results of Phase II and is included here to help guide the reader.

Type and Frequency of Self-Statements and Contextual Inferences

The results show that the four PI groups in Phase II were significantly different in the generation of positive self-statements, negative contextual inferences, and positive contextual inferences. There was, however, no significant difference in the frequency of negative self-statements between the four PI groups. In general, the HPI/LP nurses responded in the expected direction. Overall, they made more positive self-statements and positive contextual inferences than the low illusion groups. However, they also made more negative contextual inferences compared to the other three groups. It would seem, therefore, that the responses of this group were not biased only in a positive direction as predicted, as they also generated the most negative inferences (see Table 24, p. 152). Given the previous analyses which found that the short prime manipulation was strongly correlated with positive self-statements (Table 27, p. 156) and with a greater proportion of self-statements to contextual inferences over time (Table 21, p. 147), it would appear that the effects of a high level of positive illusion (as seen with the HPI/LP) in combination with the long prime overrides the temporal effects of the short-prime manipulation in terms

Table 33

Overview of Theoretical Assumptions Posited for Phase II Results

<u>Group</u>	<u>Change in Mood</u>	<u>Motivation</u>	<u>Attributional Activity</u>	<u>Frequency of SS and CI</u>	<u>Recall T1 to T2¹</u>
<u>High PI/Long Prime</u> (HPI/LP)	Moderate increase in negative mood caused by prime	To self-enhance and maintain self-consistency with HPI schema; restore self-esteem	Increase in attributional search	Increased	More accurate
<u>Low PI/Short Prime</u> (LPI/SP)	Moderate increase in negative mood caused by combination of low PI and prime	To self-enhance and restore self-esteem	Increase in attributional search	Increased	More accurate
<u>Low PI/Long Prime</u> (LPI/LP)	More dramatic increase in negative mood caused by combination of low PI and prime	Strong need to self-enhance to restore self-esteem	Attributional search hindered by negative mood; resort to the use of simple heuristics and global self-schemas	Decreased	Less accurate
<u>High PI/Short Prime</u> (HPI/SP)	Positive mood maintained by presence of HPI and little effect of SP	Self-esteem maintained by presence of HPI	Low threat does not require extensive attributional search; use of simple heuristics and global positive self-schemas	Decreased	Less accurate

Note: PI=Positive Illusions; SS=Self-Statements; CI=Contextual Inferences; T1=Phase I; T2=Phase II.

Footnote: ¹ For behavior and attitude/ value items only; no significant difference between groups for emotion items

of the frequency of positive self-statements.

Consistent with the findings regarding the short prime effect and the results discussed above regarding the HPI/LP group, one might logically expect that the HPI/SP group would generate the next highest frequency of positive self-statements and contextual inferences. Surprisingly, it is the LPI/SP group that achieves this. In terms of frequency of negative and positive contextual inferences, and positive self-statements, the LPI/SP group actually generated more self-statements and inferences than the LPI/LP group (see Tables 24 and 26). It appears, therefore, that for the low illusion group, the short prime condition in combination with the low level of illusion had a similar effect on the nurses in that group as the long prime manipulation did for the high illusion group. Surprisingly, the HPI/SP nurses generated the lowest frequency of negative contextual inferences, the second lowest positive contextual inferences, and the lowest frequency of positive self-statements of the four groups. These last findings imply that the previously discussed interaction between the short prime manipulation and temporal distance and its effect on the generation of positive self-statements and the SCDiff, appears to be much more for the low PI group than for the high PI group.

Overall, these results are somewhat baffling, but not unexpected given the complexity of the context of study, that is, information processing and causal attribution. Perhaps it is possible to explain these interactions by re-examining some of the literature on self-schemas which might account for the effect of positive illusions, and affective responses to negative information (contained in the narrative) particularly in the area of negative mood induction.

Self-schemas. McClain and Abramson (1995) recently looked at the relationships between self-schemas, recent negative life-events, and depressed mood. In exploring Beck's cognitive model of depression, which proposes that "depressive self-schemas are cognitive structures that generate negative context and lead to preferential processing of negative information" (p. 419), the authors have suggested that when confronted with negative life events, individuals who are cognitively vulnerable would become depressed. What they found, however, was that it was not so much the presence of a negative schema but the absence of a "sufficiently positive schema" which served as a vulnerability factor. They

support this with findings on depressive realism whereby "depressed subjects lack a positive bias, but do not exhibit a negative one" (p. 429). However, when it came to the specific domains of competence, self-worth, and motivation, the authors found that when the subject was more depressed, the tendency was to endorse and recall more negative and fewer positive adjectives to describe themselves.

Isen (1985, 1987) has identified a process called "negative affect repair" in which individuals in an experimental setting experience difficulty in maintaining a negative mood state despite being directed to do so. Interestingly, those individuals placed in the positive mood condition had much less difficulty maintaining a positive state. Isen suggests that negative moods trigger conflicting tendencies for most people caught between the motivation to alleviate the negative mood state while at the same time endorsing the negative aspects of self. Brown and Taylor (1986) explored the effect of mood (happy and sad) on the processing of personal information. Their findings lend support to Isen's motivational process, when they found that "individuals in the sad mood induction tended to recall positive and negative self-referent material with equal frequency, and that recall for positive traits did not differ between the two mood groups" (p. 447). In their conclusions, Brown and Taylor have stated that while self-schemas have generally been seen as "relatively enduring, trait-like structures [they] are also sensitive to more temporary, situational influences, such as mood states" (p. 449).

While Taylor's studies have focused on the identification of the nurse's positive and negative trait attributes, this present study allowed the nurses opportunities to generate a wider range of descriptive inferences to justify their choice of a coping item rating. Thus, the nurse was free to discuss trait, emotional, behavior, and attitude/ value attributes that described the self, others, and the situation in which the stressful event occurred. The obtained results demonstrated a similar propensity to generate both negative and positive self-statements and contextual inferences.

In order to meet the criteria for Phase II the narrative had to be of sufficient length and contain a clear description of the nurse's affective response to the stressful event. It is possible that the nurse's full narrative acted as a form

of negative mood induction, and thereby created some of the effects described by 5(1984, 1987) and Brown and Taylor (1986). The next section addresses the issue of mood.

Affective responses to negative information. The explanations proposed above do not fully account for the responses by the LPI/LP group, who made fewer positive self-statements and positive contextual inferences overall compared to the other three groups. They also generated less negative contextual inferences compared to the LPI/SP group. It was predicted that the long-prime condition would enhance the individual's tendency to generate more self-statements and contextual inferences, both positive and negative. This was not the case for the LPI/LP. Perhaps for this group the long prime condition in some way resulted in suppressing the LPI nurse's motivation to engage fully in the process of generating multiple attributions (i.e., related to self-statements and contextual inferences) for their rating of coping actions during Phase I. In support of this, Wyer and Carleston (1979) have suggested that emotional reactions can affect judgements in a variety of ways: an emotional reaction can have informational value, it can "prime" different sets of previously formed cognitions, or it can interfere with the processing of other information. In regards to the last possibility, Wyer and Carleston have suggested that internal "noise" caused by the emotional reaction may prevent the individual from thinking up counter-arguments.

This last possibility could explain the lower frequency of inferences in the LPI/LP group, that is that the long prime condition created an emotional reaction that interfered with the processing of relevant information related to the coping items and consequently, emotionally inhibited the nurses from generating multiple inferences. However, if the long prime was affectively-laden enough to create a dampening effect on the generation of inferences for the LPI/LP group, how does this explain the fact that the HPI/LP generated the highest frequency of all types of self-statements and contextual inferences? Perhaps the higher level of PI acted as a "buffer" or "shield" to the negative mood that the long narrative may have produced, and as a result these nurses experienced minimal negative mood arousal.

Taylor (1991) has proposed that "negative events evoke strong and rapid physiological, cognitive, emotional, and social response . . . followed by physiological, cognitive, emotional, and behavioral responses that damp down, minimize, and even erase the impact of that event" (p. 67). Referring to a number of studies, Taylor describes how negative events elicit more attributional activity than do positive events (Peeters & Czapinski, 1990; as cited in Taylor, 1991), and how people tend to engage in a more careful examination of negative events resulting in more potential causal information (Abele, 1985; Bohnner, Bless, Schwarz, & Strack, 1988; Wong, 1979; Wong & Weiner, 1981; Kanouse & Hanson, 1972; as cited in Taylor, 1991). She goes on to describes how negative mood states activate various processes and activities which include: gathering of more diagnostic information; more chunking of information; more complex processing strategies; and less use of cognitive heuristics. On the other hand, positive mood can also lead to information processing that may lead to more error. For example, positive mood has been shown to foster processing that makes greater use of judgmental heuristics; the use of broad and inclusive categories rather than specific strategies in classifying tasks; employing simple intuitive solutions to problems; and fostering processes that allow decisions to be made more quickly while using less information (Isen & Daubman, 1984; Isen & Means, 1983; Isen, Means, Patrick, Nowicki, 1982; as cited in Taylor, 1991).

Following this line of reasoning, perhaps HPI/LP nurses generated a higher frequency of self-statements and inferences in response to stronger, negative emotions generated by the long prime, whereas the LPI/SP nurses generated the next highest frequency because there was only minimal negative arousal as a result of the short prime. If low illusion nurses are more vulnerable to negative stimuli compared to high illusion nurses, perhaps the short narrative was enough to "prime" previous negative feelings associated with the event, as suggested by Wyer and Carleston (1979). The difficulty with this explanation, however, is that the other two groups, HPI/SP and LPI/LP do not follow a similar pattern. While all groups may respond to the negative stimuli of the narrative, perhaps the difference in response lies with the motivational basis for the generation of attributions, and the possibility that the motivations of the four groups are not the same.

Motivational basis for attributional search. Social inferences have been said to be highly influenced by individuals' goals and needs. Kunda (1990) has suggested this motivated cognition can be classified into two categories: one where the motive is "to arrive at an accurate conclusion, whatever it may be" and the second in which the motive is "to arrive at a particular directional conclusion" (p. 480). The latter may be motivated by an individual's desire to maintain a positive self-image. Dunning (1995) has also suggested that "people's search for information about the self is governed by motives of self-enhancement [seeking accurate feedback to the extent that it will be favorable] and self-assessment [seeking accurate feedback regardless of its favorability]" (p. 1297).

According to Dunning, individuals struggle with these two motivations: the need to understand accurately what their abilities and attributes are that would ultimately lead to successful outcomes, and the need to maintain a positive sense of oneself even in the face of contradictory information. Is it possible, however, that for some individuals (and under certain conditions) the need to self-enhance overtakes the need to seek out accurate self-assessment, and that this tendency is more pronounced during their self-descriptions to others, or for that matter, during the act of completing self-report measures, despite the directive to provide accurate accounts. Perhaps it is possible that the nurses in the HPI/LP group compensate for the negative arousal effect produced by the narrative by making more inferences and causal attributions to achieve a level of self-consistency (in line with their high positive illusions) by engaging in self-enhancing behavior (the generation of more inferences overall). This is also supported in part by research in causal attribution, which has demonstrated a propensity for individuals to present themselves in a positive light, to take credit for their successes but to blame others for their failures (Fiske & Taylor, 1984).

Dunning further explored to what extent people's motivation to self-enhance or to self-assess changes as a function of whether the trait under consideration was deemed important or not important, and whether or not they had the power to influence the expression of that trait. Dunning's findings revealed that, as the importance of the trait increased, both motives of self-enhancement and self-assessment were evoked. When participants believed that a trait was a "fixed, unchangeable quality" and "important", self-enhancement

became more prevalent along with the desire for accurate self-assessment. This pattern did not appear when the participants were told the trait was not important.

Self-esteem motives should be most evident when the domain is of consequence to the individual. It is under these conditions that initial success should inform the individual that he or she can attain favorable outcomes and maintain mastery over the world. It is under these circumstances that failure undermines such beliefs and is the most threatening. In contrast, when the domain is inconsequential, the individual's beliefs about his or her future well-being are not influenced by success or failure. Consequently, according to a self-enhancement model, expectations about success and failure should have little impact on people's desire for feedback about the self. (p. 1304)

The need to maintain, or restore, self-esteem in response to the long narratives presented may have been stronger among our high positive illusion group. Perhaps it was the affective component that was revealed in the long narrative (which was not present in the short one-sentence reminders) which triggered the HPI/LP group to perceive the narrative as a threat to self-esteem, and to generate so many explanations to account for their rating of the specific coping item being discussed in order to achieve consistency.

Given these explanations (i.e., negative mood information processing and the self-assessment/self-enhancement theories) for the HPI/LP group, how does one now understand the results for the LPI/SP group. The LPI/SP group generated the next set of highest frequency scores for positive self-statements, negative contextual inferences, and positive contextual inferences. The one-sentence reminders that served as the short prime were brief and general in nature, and contained little to no affective statements. While the LPI/SP group was not exposed to the same level of negative information as the long prime groups, it is possible that the short prime in combination with a lower level of positive illusion still resulted in a negative mood and the perception of threat to

self-esteem, resulting in a more thorough informational search to counter these negative responses.

Dunning, Leuenberger, and Sherman (1995) have addressed motivated inference making in response to threat and suggested that individuals construct self-serving models of excellence to "bolster" self-esteem in order to achieve a maximizing or maintenance effect. They differentiate the two motives in the following:

[Bolstering] can mean that people are trying to maximize their positive views of self, enhancing their esteem at every given opportunity.

Alternatively, it can mean that people are trying to maintain or recapture a positive view of self that has temporarily been lost—a process they stop once a positive view of self has been restored. (p. 66)

Perhaps the motivation of three of the groups (i.e., HPI/LP, LPI/LP, and LPI/SP) was to maintain, or restore, self-esteem after experiencing a threat, while only the HPI/SP, who perhaps felt minimal threat, acted only to maximize self-esteem through self-enhancement.

One other explanation for the increased attributional search by the LPI/SP may have to do with the effects of temporal distance. In regards to the short prime groups, there was the finding that as temporal distance increased, so too did the tendency for nurses to make more positive and negative self-statements, in addition to making proportionately more self-statements compared to contextual inferences (SCDiff). Without the potentially negative effects of the long prime, these nurses may have responded in accordance with this temporal distance effect. As a result, perhaps they drew more on self-referent schema information and were, therefore, more motivated by the general tendency of individuals to self-enhance in order to maintain positive self-views.

Dunning (1999) gives some support to this possible explanation for the LPI/SP group when he suggests that "the basic building blocks of social cognition are shaped by motivations to retain flattering self-images" (p.79). In one study, Dunning (1989) found that when presented with an ambiguous situation participants used "self-serving trait definitions" when providing self-

evaluations. He also discovered that as the ambiguity of the ability definitions increased and participants had a greater range of criteria to choose from, they endorsed both positive and negative characteristics as self-descriptive to a greater degree. It is possible that the one-sentence reminders may have created a similar condition of ambiguity as they were brief and contained little to no affective content.

A final explanation for the LPI/SP group might be that the short prime provoked only a mild defensive reaction with these nurses, such that they generated multiple explanations to support their rating, but that the prime was not affectively laden enough to promote a strong negative reaction which might have inhibited their response as described by Wyer and Carleston (1979). A more recent study by Polzer, Kramer, and Neale (1997) found that perceived threats to an individual's self-esteem ultimately affected the magnitude of positive illusions expressed.

In line with this reasoning, perhaps in a similar way to the responses of the LPI/SP group, the HPI/SP nurses also did not feel threatened by the short prime. Perhaps because of the additional buffering effects of high PI, these nurses did not experience any significant change in affect, and therefore did not feel the need to self-protect through the generation of multiple attributions. However, the HPI/SP produced even fewer self-statements and inferences than the LPI/SP. This result was very surprising as it was predicted that the combination of both the high positive illusion and the short prime manipulation would produce the highest frequency of inferences of all four groups. In the end, the effect of not having the full narrative (short prime) did not outweigh the effects of having the full narrative (long prime) for the high positive illusion group in terms of the generation of self-statements and contextual inferences.

Until now, the discussion has focused on the effects of level of positive illusion and a priming manipulation on the frequency and type of inferences made in response to the 16 coping items. Now, in order to understand these last unexpected results regarding the LPI/SP group which sets it apart from the other three, it is necessary to discuss the results of hypothesis 5.0 which explored the nurses' recall of coping strategies used to deal with their stressful event. The reason for this is the assumption that there are other important factors impacting

on the four groups under consideration, and a full understanding of the dynamics between and within the groups requires additional information drawn from other analyses.

Recall of Coping Strategies

The last set of results concerning positive illusions and the priming manipulation appear in hypothesis 5.0. For each coping item, the nurses rated the item in terms of how they coped with their stressful situation at the time of Phase I and later again in Phase II. One of the central questions asked in this section of the study was whether or not a priming manipulation would assist a person in achieving a more accurate recall of the coping strategies previously reported on the Ways of Coping Questionnaire (WCQ; Folkman & Lazarus, 1985). Nisbett and Wilson (1977) have stated that causal accounts are more accurate the closer the recall occurs to the occurrence of the mental processes involved. Mood-dependent recall has proposed that priming individuals with stimulus material that closely approximates the emotion of the event when it was experienced, results in more accurate reporting (Bower, 1981; Isen, Shalker, Clark, & Karp, 1978).

It was proposed that the longer narrative would improve recall by creating a kind of "diary" or "record" effect that would assist nurses in reorienting themselves (behaviorally, cognitively, and affectively) to the event. Exposure to the shorter narrative was not expected to have the same effect, as the one-sentence reminder would require the nurse to generate information from long-term memory without written assistance. The results were again very surprising. A simple prime effect was not found, nor was a simple positive illusion or time effect found. For all intents and purposes, it would appear that all four groups were not different from one another and that they behaved in the same fashion over time in regards to recall. However, a significant three-way interaction (prime x positive illusion x time) effect was found for the four groups for the behavior and attitude/ value items (refer to Table 18, Figures 1 and 2).

Interestingly, no effect was found for the emotion coping items suggesting that recall appears to be more accurate for the affective strategies across groups. It is possible that the emotional responses were easier to recall, especially if the

narratives (short or long) served to prime congruent emotional responses experienced in Phase I. This is consistent with Bower's (1981) work on mood-congruent recall. The fact that there was less consistency with the behavior and attitude/ value items may suggest that Bower's mood-congruent theory is more applicable to affective material.

In regards to the behavior and attitude/ value items, results show that despite having made fewer contextual inferences and self-statements than the HPI/LP and LPI/SP groups during the think-aloud protocol, the HPI/SP nurses and LPI/LP nurses now contribute most to the significant change in coping item scores from T1 to T2. The HPI/SP achieved the largest change in coping scores followed closely by the LPI/LP. While the other two groups (i.e., HPI/LP and LPI/SP) increased their scores slightly, the changes were not significantly different from T1 to T2. The rating scores for behavior coping items at T1 and T2 were higher for the HPI/LP compared to the LPI/SP, but the pattern of scores for the attitude/ value items were opposite for the two groups (refer to Table 19, Figures 1 and 2). Even though these two groups showed different patterns of response to the two sets of coping items (frequency was higher for behavior items, lower for attitude/ value items for HPI/LP, while the reverse order was true for LPI/SP), overall findings suggest that the generation of multiple inferences about the self, others, and the situation in combination with the condition by which their stressful event was recalled (short or long prime), ultimately resulted in these two groups recalling their coping strategies more accurately at T2. This consistency in recall was originally predicted only for the long prime manipulation but not for the short prime manipulation. The results suggest, however, that the level of positive illusion plays an important role with the short-prime as well as the long prime manipulation.

What explanation can be given for the less accurate scores at T2 for the HPI/SP and LPI/LP? Perhaps in the case of the HPI/SP group, their positive mood and self-esteem were not affectively threatened by the short prime, and therefore were maintained by the presence of high positive illusions. As their positive mood was not affected, a more intensive, or deliberate informational search was probably not necessary. This group may have given higher ratings to the coping items more as the result of a positive mood and self-enhancing

mindset which led to an overconfident response to the item. As a result of this feeling of confidence with their initial rating, these nurses subsequently felt less inclined to support their response with multiple inferences and self-statements. The link between positive illusions and overconfidence has been demonstrated by Wolfe and Grosch (1990), with subjects high in self-esteem reporting with significantly more certainty than those with low self-esteem. How accurate they are is another issue.

In terms of the LPI/LP group the process may have been very different, as a person with lower illusions is assumed to be more "realistic" in their appraisals rather than self-enhancing (Taylor & Gollwitzer, 1995). It is possible that the LPI/LP group may have responded in a more reflexive, self-protective fashion in order to counter the negative affect induced by the long narrative. As previously mentioned, negative mood can result in the hindering of a thorough attributional search (Wyer & Carleston, 1979). This may explain why LPI/LP nurses do not generate multiple causal explanations. The negative mood may have ultimately motivated the nurse to bring about rapid closure to the item. Their higher rating of the coping item may have been a self-enhancing attempt to compensate for the negative feelings the narrative may have induced. The HPI/SP group on the other hand may have simply responded quickly and "efficiently" as a result of their "enduring and pervasive" positive illusions. Without the benefit of the longer narrative, the short prime nurse possibly generates a cognitive category of stressful events similar to the one-sentence reminder. They respond, therefore, as if the event was one of many, and with the mindset that they are high functioning, invulnerable, optimistic individuals, and therefore, generally successful in coping with stress. This explanation would support the position that positive illusions are important elements in a person's self-referent schema, and consequently assists, motivates, and quite possibly biases, a person's recall.

Summary of Phase II Discussion

In reference to coping measurement, the results of Phase II have explored the possibility that positive illusions and other factors such as temporal distance and priming play important roles in influencing an individual's recall of coping strategies used to deal with a stressful event. The results have suggested that the

level of positive illusion, type of priming manipulation, and temporal distance all play important roles in (a) the accuracy of coping item recall, (b) differences in the proportion of self-statements to contextual inferences generated, and (c) the type and frequency of self-statements and contextual inferences generated in explaining coping strategies used to manage a stressful work event in the past.

While there is sufficient evidence in the literature to suspect that situational and personological factors influence coping measurement even when the respondent is currently experiencing the stressful event (Ptacek, Smith, Espe, and Raffety, 1994; Stone, Greenberg, Kennedy-Moore, Newman, 1991), this phase of the study, in which recall was shown to be clearly influenced by conditions such as temporal distance, priming manipulations, and level of positive illusion, has demonstrated that researchers should consider the results of retrospective reports of coping with extreme caution.

Generalizability and Limitations of the Study

If this study has established one thing, it is that not only is the process and measurement of coping complex, but so too is the discussion of a study that seeks to understand it. The difficulty stems from the fact that the researcher must often generate inferences and develop causal theories in order to explain the results, and in doing so "goes beyond the information given" (Dumont, 1993); in the case of this study, inferences about inferences. The very method of "think-aloud" for example, has been criticized for proposing that a person's "cognitive processes" are in fact being measured (Ericsson & Simon, 1984). While the think-aloud format appears to be more liberating in terms of not restricting participant's responses (as checklists and questionnaires have been accused of) there are many other factors which may interfere: testing environment, response to the researcher, discomfort with the procedure, distractions, etc. However, the main difficulty is the tremendous complexity of the field and the challenge of understanding multifaceted personalities, complicated human information processing systems, and unavoidable bias on the part of the participant and the researcher.

Nonetheless, this study has revealed certain patterns of responses which are statistically significant. The interesting fact here is that these differences were observed in "high" and "low" positive illusion groups, who, in reality, really are all high illusion in that they all fall in the top 60% of the potential positive illusion spectrum defined in this study (see p. 111 for a complete description of the criteria used for the designation of high and low illusion groups). This brings up the first limitation of the study, which is that true "low" illusion nurses (the lower 40% of possible PI scores) were not represented in this sample as they did not choose to participate. As a result of this situation, an interesting question would be "if these differences are seen between 'high' high illusion and 'low' high illusion groups, what would the differences be if a truly low illusion group were represented?." The nature of the study relied on volunteer nurses to complete a rather "hefty" questionnaire. Only one-third of the pool of nurses solicited for the study returned the questionnaire. As such, we have no information about the remaining two-thirds who did not respond, particularly in terms of the their level of illusion. Perhaps nurses who were low in illusion, (one with very low self-esteem or who is clinically depressed) might have found the task of completing the questionnaire too burdensome. Or perhaps these nonrespondents may have been more suspicious of the researcher's intentions compared to those nurses who did respond, given that the questionnaires were distributed through the worksite. However, while this limitation may have affected the results and discussion of the construct of positive illusions through the canonical correlations (as we are really just observing it within a certain segment of this population) its effect was perhaps less "traumatic" in the second part that looked at coping measurement.

In terms of the measures, there are several concerns. How to use the LOT was one issue (Carver & Schreier, 1994): to use it in its original format or use only the positively worded sentences as suggested by Marshall, Wortman, Kusulas, Hervig, and Vickers (1992). Dispositional optimism played a central role in the positive illusion construct, and as such, one needs to ask whether that is reflective of the true relationship between the variables, or an artifact of the adjusted measure. One important point, however, was that the correlational results indicated that the adjusted measure used in this study (i.e., the positively

worded items only) correlated positively with positive affect ($r = .37$) and negatively with negative affect ($r = -.26$). Findings similar to these are what encouraged Marshall et. al. to recommend using this format in order to avoid the confounding effects of negative affect. The possibility is that this study suffered a similar fate, however, just in the opposite direction: the use of the positively worded scale created a confounding effect as the result of positive affect.

The other measurement concern is with the "Perceived Risk" measure (Perloff & Fetzer, 1986) used to identify the presence of perceived invulnerability. This measure was suggested by Taylor (personal communication, April 1998), and it has been used by her in several studies with college students (Taylor & Gollwitzer, 1995). The problem is that while it might be a good measure for younger adults, one wonders about its construct validity with an older population. The items ask about risk to such events as divorce, muggings, financial problems, and health problems such as heart disease and diabetes. It would seem that as the age of nurses increases, the level of vulnerability would also increase, as it is more likely that some of these events at a certain point may in fact become a reality for the older population. Once this begins to happen to any great degree, it becomes more of a "life events" checklist and loses its original intent of measuring perceptions of risk. Luckily, for this sample, perceived vulnerability (i.e., positive scores on perceived invulnerability) did not correlate positively with age; however, one wonders to what extent these concerns may have affected the final results.

Most of the research regarding positive illusions has been conducted with women with breast cancer (Taylor, 1983; Taylor, Lichtman & Wood, 1984; Wood, Taylor & Lichtman, 1985), men with AIDS (Taylor, Kemeny, Aspinwall, Schneider, Rodriguez & Herbert, 1992), and college students (Aspinwall & Taylor, 1992; Taylor & Gollwitzer, 1995). This study explored this construct within the general work population. The difficulty with this sample of nurses (as with those samples of women with breast cancer), is that it is made up primarily of women. As such, the findings cannot be generalized to men. While the sample naturally controlled itself for the confounding effects of gender, it would have been interesting to have had a larger sample that also included a sufficient number of men in order to carry out the required analyses. In reality, however,

there is still only a small percentage of men in nursing. One other limitation was that the questionnaire was only in English, which may have made it more difficult for the French-speaking nurses to understand and complete, and the second part of the study excluded those who did not have English as a first language. Therefore, these identified limitations result in the findings (in particular the results from Phase II) generalizing primarily to English-speaking female nurses.

An improvement in the overall design of the study would have been the addition of a control group, that is, one that would repeat the positive illusion and coping measures at Time 2 but not be exposed to a priming manipulation or participate in the think-aloud procedure. This would have been an important referent point from which to judge the effects of the priming on recall of coping strategies used. Unfortunately, financial constraints prevented this from being carried out.

Recommendations for Future Research

1. The replication of the results of this study with improvements in gender balance, control groups, and perhaps a sample that is more representative of the general population.
2. The inclusion of low illusion participants that would allow for an improved and more extensive exploration of the positive illusion construct.
3. The development and refinement of methods other than self-report (e.g., journal records, behavioral indices, semi-structured interviews, case study designs, field studies, protocol analysis) are required. This is not to suggest that self-report has no value, but that the degree of confidence that researchers typically have of these measures needs to be tempered, as the results of findings such as these suggest.
4. The present study has generated a data base that would allow for further analyses in exploring and extending the questions of this study. For example, to

what extent do variables such as pessimism, negative affect, powerful others, and chance play a role in coping and inference making could be further explored.

5. The transcripts of the nurses could be reviewed qualitatively for general themes, specific or dominant causal attributions, and elements of coping not picked up by the measure, etc.
6. Replication of the results of this study with another population experiencing high levels of stress (e.g., teachers, police, graduate students) is recommended
7. The development of another scale measuring perceived vulnerability that is situation-specific (e.g., perceived vulnerability for negative events in the workplace) is suggested.

Contributions of the Study

Despite the identified limitations, this study has contributed to the field by extending the work and theory of Taylor (1983, 1989; Taylor & Brown, 1988) to another segment of the population. It represents the first study in which positive illusions have been explored within the workplace, rather than with a clinical or student population. While Taylor's theoretical propositions have been exciting and very convincing, there are few studies done by Taylor using positive illusions as a unitary construct. In a study by Taylor and Gollwitzer (1995), they talk about "high" and "low" illusion participants but they appear to measure the construct using separate components. This present study has attempted to better define the positive illusion construct by identifying its underlying structure. Although Taylor has discussed optimism, control, and self-enhancement as central to the construct of positive illusions, the results of this study show that, for this population, the variables of enhanced self-perception, dispositional optimism, and low internal locus of control appear to be the ones most associated with the construct, while the variable of perceived invulnerability played a relatively minor role.

Another contribution of the study is that the results suggest that these components in and of themselves may act as coping strategies. As traditional coping measures do not appear to tap into these type of cognitive strategies (which primarily involve social comparisons) it is possible that the importance of these elements may have been unfortunately overlooked, or underestimated, in much of the coping research to date. While it may be easier for individuals to identify and recall their behaviors and emotions rather than their cognitions at the time of the stressful event, it is important that researchers find ways of better identifying cognitive factors that assist, possibly precede, or act as coping strategies. While Folkman and Lazarus (1985) have attempted to identify and measure primary appraisals, self-knowledge elements such as unrealistic optimism, perceived invulnerability, self-enhancement, and the use of social comparison processes require improved, possibly different, measurement approaches. Perhaps the results of this study, along with future research, will encourage their development.

Another important contribution of the study has been the opportunity to make some empirical comparisons of the positive illusion components to the construct of positive affect. This raises the possibility that positive illusions may in fact act as a nuisance variable in stress research, much in the same way that negative affect does (Watson & Tellegen, 1985). Perhaps in a similar way that negative affect has shown itself to inflate self-report measures of stress and strain, perhaps positive illusions diminish these same measures. While it was not the intention of the researcher to prove that positive illusions is primarily dispositional in nature, the presented results have disconfirmed Taylor and Armor's (1996) assertion that "situational factors can explain 100% of the variance in the degree to which people demonstrate positive illusions" (p. 891). It is the opinion of this writer that the discussion of the results obtained in this study has provided enough empirical evidence and theoretical explanations to consider the "dual personality" of the construct, and to encourage further research in this area.

The final contribution concerning measurement made by this study, has been the use of a think-aloud methodology and protocol analysis in examining the inferential reasoning of respondents while completing a coping inventory (WCQ; Lazarus & Folkman, 1985). The use of this method as applied in this

study has not appeared in the literature, and as such, it represents a new approach to studying self-report measures. The data generated from this method were central in examining the effects of positive illusion, temporal distance, and priming of recall. The results clearly indicate the need to rethink the use of measures such as the WQC. In addition, the coding manual developed for this study is also an important contribution (Appendix F) and was designed to assist other researchers in following up on, or replicating, the results of this study. In the end, however, the results suggest that the growing criticisms of coping inventories appear warranted. Further studies such as this one may eventually force a shift of entrenched paradigms regarding coping measurement to one that is more creative and perhaps less reliant on self-report.

Perhaps most importantly, the results of this study provide support for the potential adaptiveness of positive illusions. Criticisms aimed at Taylor's theory have claimed that illusionary thought serves to harmfully distort, and possibly deny, reality, which cannot be considered effective coping (Colvin & Block, 1994; Colvin, Block, & Funder, 1995). Interestingly, the nurses in this study who express high levels of positive illusions did not show any evidence of denying the reality of their situations (e.g., through distancing and escape-avoidance). As such, these results do not confirm the expressed concerns about positive illusions. Furthermore, the findings have important clinical implications which must be considered. If our clinical interventions are based on a 'reality' approach whereby the client is assisted in having a 'clear' understanding of themselves and their situations (e.g., coping with a terminal illness), care must be taken to understand how illusions may potentially serve an adaptive and self-protective function. Illusions such as self-enhancement, unrealistic optimism, and exaggerated perceptions of mastery need to be understood within the context of other coping mechanisms available to the individual, and challenged only when they prove to be detrimental to the person's well-being.

In summary, what can be said about the population upon whom this study was based? Despite holding a fairly high level of positive illusions (i.e., high dispositional optimism, internal locus of control, perceived invulnerability, and enhanced self-perception) and expressing positive perceptions of their worksite and colleagues, these nurses report generally low levels of job

satisfaction, both intrinsic and extrinsic. When asked on the questionnaire to identify the "most stressful" event that they were currently experiencing as the result of downsizing and reorganization, nurses wrote about events which they felt they were not responsible for. The events were generally appraised as harmful and threatening, and ones which did not represent challenge or benefit. For the most part, however, these events were only rated as moderately stressful. On average, the coping strategies identified by the WCQ were reportedly used only "somewhat" to "not at all." There was, however, a general feeling that one would be self-efficacious in the future in terms of resolving the event.

Yet despite these expressed concerns about their level of satisfaction and work environment, nurses demonstrate through many of their narratives that they are willing to "put up a good fight." Perhaps it is their level of illusions that helps to create and maintain this strong motivation to see the hospital through the dramatic changes that have occurred, and are yet to come. Many of the narratives contain examples of nurses intent on maintaining their original goal of entering nursing: altruistic motivations to care for and support patients within the health care environment. Their general discontent appears to surface from lack of recognition, poor pay, poor communication between them, their colleagues, and administration, and what they see as unrealistic demands on them as the result of rapidly diminishing resources within the system.

These issues need to be addressed, and sooner rather than later. While those that still remain indicate for the most part that they are staying, it has become an environment which is unlikely to be attractive to a younger workforce deciding on their future careers. Older, and more experienced workers generally serve as mentors to the uninitiated. If this present situation of discontent, and in some instances despair, on the part of nurses is allowed to continue without intervention, negative effects, both at a personal and organizational level, can only become more noticable. It is an environment in which nurses often feel they exercise little control. In researching the effects of uncontrollability on decision-making, Kofta and Tyszka (1993) warn that:

... as a consequence of prolonged uncontrollability, a state of cognitive exhaustion develops that undermines constructive information

processing. In this altered state of mind, such creative mental processes as the generation of new concepts, hypotheses of task solutions, plans, and programs are likely to be impaired. (p. 1280)

For those of us who hope for good health care when experiencing our own physical traumas and illnesses, it is worth the extensive effort to understand and communicate the experiences of nurses, who mean so much to the health care system's overall integrity.

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APPENDIX A

Glossary

Adaptation: A broad term that refers to coming to terms with the environment; refers to constant interactions between individuals and their environments, in which realities are neither passively accepted nor completely transformed. Adaptation is a broad, ongoing process of compromise.

Appraisal: An appraisal requires mental activity involving judgment, discrimination, and choice of activity, based largely on past experience.

Bumping: Presently in the hospital system, when a hospital department or a position is closed the employee involved in that reorganization is either given a temporary leave with job security until a job position is found, moved to a new unit, offered a different job position within the hospital system, or receives a severance package. Any job position that is subsequently offered to the employee is determined by that employee's seniority in the department, and within the hospital. The procedure of 'bumping' involves assuming a new job position (which may or may not be presently occupied by another hospital employee with lower seniority) in the hospital system, chosen by the employee from a list provided by the Human Resource Department of potential job positions based on seniority and job skills required. The positions offered may be within the hospital the employee is presently employed, or in another hospital within a 50-kilometer radius. The position may be the same job position previously held, e.g., a nursing position in a critical care unit, or it may require the employee to assume a similar position but with different job tasks and responsibilities e.g., a critical care nurse taking a position on medical floor. Although the choice of positions offered attempts to take into consideration the employee's qualifications and skills, position changes often require that the employee learn, or relearn, knowledge and skills they may not have used for many years. In addition, employees may find themselves working a different shift than what they have been used to, which may not fit with the person's present lifestyle, e.g., a single-parent nurse who has worked permanent days is now asked to work night shifts. The new position chosen may, or may not be, a desirable or suitable position for the employees involved but, in many cases, the employees feel that few alternatives exist apart from choosing from what is available. While the bumping procedure has been identified as a benefit to the employee in maintaining job security, a common complaint has been that it entails a high

"emotional cost" e.g., the stress of uncertainty, the guilt of taking another employee's position, the stress of changing positions, adapting to the new responsibilities and routines, etc. Even those employees whose positions are maintained, but whose hospital unit or department is transferred geographically, or merged with another hospital must cope with change (e.g., a new work group, different location, changed policies, and procedures).

Causal attributions: This term will refer to how individuals use information in the social environment to formulate causal explanations for events (i.e., how something has come about).

Context of Change: For the purposes of this study, context of change refers to whether the change event is experienced as part of a larger group (e.g., as in a departmental merger), or as an individual (e.g., an employee who must vacate his position as a result of a bumping procedure).

Contextual inference: A contextual inference is a specific type of subject verbalization that goes beyond the literal question regarding coping strategy. After selecting a particular coping strategy to deal with their stressful event, they answer the following questions: (a) why I choose this strategy, or why I did not, and (b) whether or not the reason for this choice emanates from conditions outside of the person, that is, from the external environment of the subject. It is considered primarily a function of a situation, or other persons involved in the situation, imposed on the client from outside.

Control: The expectancy, developed through prior experience, that one's behavior will bring about certain reinforcements.

Coping: Responses, primarily behavioral and emotional, which refer to the efforts that people make in dealing with distressing situations. Coping is considered one strategy of adaptation. Folkman and Lazarus (1988) have identified the following eight coping strategies:

(a) **Confrontive coping** which describes aggressive efforts to alter the situation and suggests some degree of hostility and risk-taking.

(b) **Distancing** which describes cognitive efforts to detach oneself and to minimize the significance of the situation.

(c) **Self-controlling** which describes efforts to regulate one's feelings and actions.

(d) **Seeking social support** which describes efforts to seek informational support, tangible support, and emotional support.

(e) **Accepting responsibility** acknowledges one's own role in the problem with a concomitant theme of trying to put things right.

(f) **Escape-avoidance** describes wishful thinking and behavioral efforts to escape or avoid the problem. Items on this scale contrast with those on the Distancing scale, which suggest detachment.

(g) **Planful problem-solving** describes deliberate problem-focused efforts to alter the situation, coupled with an analytic approach to solving the problem.

(h) **Positive reappraisal** describes efforts to create positive meaning by focusing on personal growth. It also has a religious dimension.

Dispositional inference: A dispositional inference is a specific type of subject verbalization that goes beyond the literal question regarding coping strategy. After selecting whether or not they would choose a particular coping strategy to deal with their stressful event, this verbalization answers the following questions: (a) why I choose this strategy, or why I did not (b) whether the reason for the choice emanates from within the subject and (c) that the reason has a long-standing and historical nature. It is considered primarily as a function of a personality characteristic or trait.

Dispositional optimism: Dispositional optimism is a characteristic of individuals who hold generalized expectations of success.

Downsizing: The planned elimination of positions or jobs within an organizational setting.

Event: An administrative decision to downsize, reorganize, merge a hospital department, or close a specific job position.

Job Satisfaction: The result of the worker's appraisal of the extent to which the work environment fulfills the individual's (career) needs.

Mindset: A set of cognitions (e.g., deliberative mindset, implemental mindset). A deliberative mindset is a process which involves the careful appraisal of potentially competing goals, the weighing of likely pros and cons with respect to each potential goal, and a consideration of the feasibility of these goals. An implemental mindset is a process in which an individual musters motivation, resources, and cognitions in service of goal-directed actions. It has

been suggested that these actions lead people in the direction of cognitions that favor goal achievement.

Occupational Self-Efficacy: An individual's beliefs about his or her ability to perform given behaviors in the worksite.

Positive Illusions: An illusion is an enduring pattern of beliefs in which the person perceives events in a way different from the way the event is in reality. Positive illusions are phenomenon which refer to the emergence of positively distorted beliefs in the face of threatening information. Positive illusions make up a major component of cognitive restructuring in which facts may (a) be distorted in order to yield a more positive position or (b) have no factual basis at all.

Primary Appraisals: An appraisal process in which a person judges whether an encounter is irrelevant, benign-positive, or stressful. Stressful appraisals are characterized by threat, challenge, or harm/loss. Threat refers to potential for harm-loss. Harm/loss refers to actual injury already done, as in harm to a friendship, health, or self-esteem. Challenge/benefit refers to the potential for growth, mastery, or gain.

Secondary Appraisals: A complex evaluative process that takes into account which coping options are available, the likelihood that a given coping option will accomplish what it is supposed to, and the likelihood that one can apply a particular strategy or set of strategies effectively. Often equated with self-efficacy.

Self-Efficacy: People's judgment of their capabilities to organize and execute courses of actions required to attain designated types of objectives.

Self-Esteem: Refers to how a person views, or evaluates, him or herself in comparison to those people who make up his, or her, social context.

Social Comparison: The process of self-evaluation in which people have a need to evaluate their opinions and abilities by comparing themselves to others.

Social Support: Resources which refer to the interpersonal networks that people have available to them to help them manage life problems and crises.

Stage of Organizational Change: Organizational change will be categorized as three stages: a period of anticipation, a period of impact, and a period of post-impact. The definitions of these stages are as follows:

(a) **Pre-Impact Stage.** During the period of anticipation, "the event has not yet occurred and the paramount issues to be appraised include whether it will happen, when it will happen, and what will happen" (Folkman & Lazarus, 1984, p. 147) Organizationally, the individual has not been officially placed in a position of having to consider a change event although this does not preclude employees from considering such an event e.g., proactive coping. The change event may have implications for a group of individuals (e.g., a merger of hospital departments) or for just the individual (e.g., an employee being 'bumped'). For example, during this stage individuals may be responding to general information about the total hospital environment. They are aware of past, present and impending changes in the general hospital system, but as yet their particular hospital department, or unit, has not been directly involved in any significant change. The nurse has not been transferred, bumped, or offered a severance option within the last six months. He or she may be aware that there is some potential threat regarding their position in the future, but there has been no official information from administration regarding this possibility.

(b) **Impact Stage:** During this stage, the nurse has received official information, often through a management or Human Resource representative, verbally, or in writing, regarding a change in their position. This may involve an impending departmental closure, reorganization, or merger for a group of employees. Or, the case of an individual employee, a notice of transfer, bumping notice, or severance option has been received within the last six months, but he or she has not moved yet into the new working situation. The nurse is now contemplating a change in the working situation, is responding emotionally to the impact of the event, and is considering possible options. This stage is similar to Taylor and Gollwitzer's (1989) description of the deliberative mindset in which the individual is in a position of considering available information, and is weighing the positive and negative consequences of particular decisions to be made in the near future. If the nurse has already made a decision re: bumping, transfer, or severance option, he or she is preparing to make the change.

(c) **Post-impact Stage:** During this stage, the nurse has assumed whatever position chosen, and presently active in performing the duties of the new job position. In the first case, the nurse has been functioning in his or her new

position, or department, during the last six months. In the case of a departmental merger, the nurse has retained the position position but is conducting it within a new environment, e.g., another hospital, or has remained in the old setting but now working with nurses from another hospital, also within the last six months.

Stress: Stress is considered to be a relationship between the person and the environment that is appraised by the person as relevant to his or her well-being and in which the person's resources are taxed or exceeded.

Total Years of Work Experience: For the purposes of this study, this refers to the number of years the employee has held a position as a registered nurse, and therefore denotes total years of work experience.

Years in Present Position: For the purposes of this study, this refers to the number of years the employee has held the current position only.

APPENDIX B

Phase I Questionnaire Packet:

Letter

Instruction Sheet

Consent Phase I

Participant's Copy of Consent

Questionnaire

Request for Participation in Phase II

(Measures reduced 10% to allow for margins)

PARTICIPANT'S COPY

CONSENT FORM

Research Project Title Understanding and Coping with Streamful Events

Investigator: Sandy Freedman, Doctoral Program, Counseling Psychology

This consent form, which provides information about my doctoral research project and what your participation in it would involve, will allow you to give informed consent to your involvement in it. Please take the time to read the following paragraphs and to look at the questionnaires included in this packet. If you would like more detail about something mentioned here or an item from the packet, or information not included here, you are encouraged to phone Sandy Freedman, at the number given at the end of this form.

1. The purpose of this study is to examine how nurses are presently dealing with hospital reorganization and job closures. The data gathered from completed questionnaires will be examined to see what factors (e.g. organizational, situational, and personal) contribute to nurses' ability to manage the transitions through which they've been passing.
2. Full-time registered nurses (1,0) and part-time registered nurses (.8, .9) solicited for this study have been selected from the RVH hospital population.
3. The procedure for this study asks participants to follow the instructions included in the packet, to complete all forms included (e.g. consent form, demographic information, and questionnaire), and mail them back to the researcher through hospital/ university mail (see packet instructions). This should be done within two (2) weeks after receiving the packet. The forms and questionnaire should take approximately 1 to 2 hours to complete.
4. To the best of the researcher's knowledge there is no likelihood of discomfort or other risks from participating in this study.
5. The name of the participant who has filled out the questionnaires will be known only to the researcher, who guarantees their confidentiality. This is done by using separate identifying codes on the questionnaire and consent form which will be returned separately by mail. This identifying information will not be released to any other person under any circumstances thereby guaranteeing confidentiality for the participant.
6. Any written reports or publications that result from this study will contain only aggregated data and as such will not result in any identification of any participant.
7. A second part to this study will occur in the near future and will involve a small number of nurses (36) who have indicated their interest by signing a form contained in the packet identified as "Request for Further Participation". This consent form in no way obligates you to participate in the second part of the study.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in this study and agree to participate as a subject. In no way does this waive your legal rights nor release the investigators from their legal and professional responsibilities. You are free to withdraw from the study at any time. If you have further questions concerning matters related to this research, please contact Sandy Freedman, 697-9277 (Extension 1) or 949-9438

<u>Participant's Name</u>	<u>Participant's Signature</u>	<u>Date</u>
<u>Sandy Freedman</u> Investigator's Name	<u>Investigator's Signature</u>	<u>Date</u>

* A copy of this consent form has been given to you to keep for your records and reference.

COPIE DU (DE LA) PARTICIPANT(E)

FORMULAIRE DE CONSENTEMENT

Titre du projet de recherche: Comprendre et faire face aux événements stressants

Chercheur: Sandy Freedman, programme de doctorat, psychologie de counselling

Ce formulaire de consentement, qui fournit des informations concernant mon projet de recherche doctorale et ce que votre participation dans ce dernier impliquera, vous permettra d'y donner un consentement éclairé. Veuillez prendre le temps de lire les paragraphes suivants et d'examiner les questionnaires inclus dans ce paquet. Si vous désirez obtenir plus de détails concernant quelque chose mentionné ici ou un item du paquet, ou des informations non incluses ici, vous êtes encouragé(e) à téléphoner à Sandy Freedman, au numéro donné à la fin de ce formulaire.

1. Le but de cette recherche est d'examiner comment les infirmières et infirmiers font face à la présente réorganisation hospitalière et à la fermeture de postes. Les données tirées des questionnaires retournés seront examinées pour voir quels facteurs (e.g. organisationnels, émotionnels et personnels) contribuent à la capacité des infirmières et infirmiers à gérer les transitions par lesquelles elles et ils sont passés.
2. Les infirmières et infirmiers enregistré(e)s en poste à plein temps (1.0) et les infirmiers et infirmières en poste à temps partiel (.8, .9) choisi(e)s pour cette étude ont été sélectionné(e)s au hasard parmi la population hospitalière de l'HRV.
3. La procédure à suivre pour cette étude demandée aux participants de se conformer aux 'instructions' incluses dans le paquet, de remplir tous les formulaires inclus (e.g.: le formulaire de consentement, la feuille de données et le questionnaire) et de les retourner à la chercheuse par le courrier de l'hôpital et/ou de l'université (conformément aux instructions). Ceci devrait être fait à l'intérieur d'un délai de deux (2) semaines suivant la réception du paquet. Cela devrait prendre environ 1 à 2 heures pour compléter le formulaire et le questionnaire.
4. Au meilleur de la connaissance de la chercheuse, il est peu probable qu'il y ait de l'inconfort ou des risques à participer à cette étude.
5. Le nom du (de la) participant(e) qui aura rempli le questionnaire ne sera connu que de la chercheuse, qui garantit sa confidentialité. Ceci est obtenu par l'usage de codes d'identification séparés sur le questionnaire et le formulaire de consentement, qui seront retournés séparément par la poste. Cette information d'identification ne sera divulguée à aucune autre personne et en aucune circonstance, garantissant de ce fait la confidentialité pour la (le) participant(e).
6. Tout rapport écrit ou publication résultant de cette étude ne contiendra que des données agrégées et, comme telles, elles n'entraîneront l'identification d'aucun participant.
7. Une deuxième partie de cette étude sera faite dans un proche avenir et impliquera un petit nombre d'infirmiers et d'infirmières (36) qui auront manifesté leur intérêt par la signature d'un formulaire contenu dans le paquet et intitulé "demande de participation supplémentaire". Ce formulaire de consentement ne vous oblige en aucun cas à participer à la deuxième partie de l'étude.

Votre signature de ce formulaire indique que vous avez compris à votre satisfaction l'information concernant la participation à cette étude et que vous avez accepté d'y participer comme sujet. Cela ne suspend en aucun cas vos droits légaux, ni ne libère les chercheurs de leurs responsabilités légales et professionnelles. Vous êtes libre de vous retirer de l'étude en tout temps. Si vous avez des questions supplémentaires concernant cette recherche, veuillez contacter: Sandy Freedman, 697-9277 (extension 1) ou 949-9438.

Nom du (de la) participant(e)

Signature du (de la) participant(e)

Date

Sandy Freedman
Nom de la chercheuse

Signature de la chercheuse

Date

* Une copie de ce formulaire de consentement vous a été remise pour être conservée dans vos dossiers pour référence.

Data Sheet

Present Specialty/Work Area: _____ How Long: _____ Total Number of Years Worked in Nursing: _____

Present Status (Please circle): Full-Time 1.0 Part-Time .8 .9 Permanent Temporary

Other Nursing Positions Held in the Past _____

Please Circle: Male Female Your Age: _____ Languages (i) 1st _____ (ii) Others _____ Fluent in Which? _____

Marital Status: _____ Number of Children: _____ Ages: _____ Are you the primary wage earner in your family? Yes No.

Certificate(s) Held: _____ University Degree(s) Held: _____

Are you presently studying or taking courses? Which? Where? _____

Have you ever been part of a departmental merger? Yes No When? _____ Where? _____

Have you ever been "bumped" from your position? Yes No When? _____ Where? _____

Have you ever "bumped" someone from their position? Yes No When? _____ Where? _____

Please identify the situation that best describes you at this moment

- _____ Although I am aware of organizational changes (e.g. mergers, bumping) in the hospital, they have not affected my position within the last 6 months, and I have had no written or verbal notice of any changes to my position whatsoever.
- _____ I have been a part of an merger of departments, and during the last six months I have been working in the newly merged department.
- _____ I have been bumped from my position and during the last six months I have been working in my new position.
- _____ During the last six months I have received written or verbal notification of a departmental merger which will directly involve me but the merger has yet to occur.
- _____ During the last six months I have received written or verbal notification that my position will close but I have not yet left this position.
- _____ During the last six months I have received written or verbal notification that I will be bumped from my position but I have not yet left my present position.
- _____ During the last six months I have received written or verbal notification of a departmental merger or position closure and have accepted a severance package or know that I will be laid off but I have not yet left my present position.
- _____ During the last six months I have left the hospital as the result of accepting a severance package or being laid off.

If none of the above situations fit your present situation, please describe it

If you do not wish to participate in this study could you please explain your reasons for not doing so:

Request for Further Participation

A small group of nurses who completed and mailed back the enclosed questionnaires will be asked to participate in the second part of this study (Part 2). This part of the study will involve meeting individually with the researcher for approximately one hour, engaging in a task related to coping measurement, and then filling out a short questionnaire. Your participation in Part 2 and all information gathered will be treated with the same confidentiality as in Part 1.

You will be approached for Part 2 only if you indicate your interest by filling out the bottom of this form and returning it with your signed consent and information sheet (the blue forms) from Part 1 in the enclosed envelope. **Please note that this is not a consent form for Part 2.** Signing this form to indicate your interest in Part 2 in no way commits you to participate. If you are called by the researcher for Part 2, the procedure will be fully explained to you and, if you agree, a meeting will be arranged. As this part of the study will be done outside of work hours you will be offered a small stipend of **\$20.00** for your participation of approximately one hour. You would be free to refuse to participate at any point in this process.

You are encouraged to call the researcher if you have any questions concerning this form or for more information on Part 2.

Sandy Freedman Phone Number: 697-9277 (Ext. 1) or 949-9438

I would consider participating in the second part of this study if invited.

Name: _____

Home Phone Number _____

Hospital Local _____

Please indicate times of the day/week you would preferred to be called: _____

Part One

The first part of this questionnaire asks you about your thoughts and feelings about yourself, your work, and your work environment. Please answer as honestly as possible.

Using the following scales please indicate the extent to which they agree with each of the following items:

- 0 = Strongly disagree
1 = Disagree
2 = Neutral
3 = Agree
4 = Strongly agree

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1.	In uncertain times, I usually expect the best.	0 1 2 3 4
2.	It's easy for me to relax.	0 1 2 3 4
3.	If something can go wrong for me, it will.	0 1 2 3 4
4.	I always look on the bright side of things.	0 1 2 3 4
5.	I'm always optimistic about my future.	0 1 2 3 4
6.	I enjoy my friends a lot.	0 1 2 3 4
7.	It's important for me to keep busy.	0 1 2 3 4
8.	I hardly ever expect things to go my way.	0 1 2 3 4
9.	Things never work out the way I want them to.	0 1 2 3 4
10.	I don't get upset too easily.	0 1 2 3 4
11.	I'm a believer in the idea that "every cloud has a silver lining".	0 1 2 3 4
12.	I rarely count on good things happening to me.	0 1 2 3 4

Please circle the response that best reflects how you feel about the following statements. Use the scale below.

1 = If you agree slightly	4 = If you disagree slightly
2 = If you agree somewhat	5 = If you disagree somewhat
3 = If you agree strongly	6 = If you disagree strongly

1.	Whether or not I get to be a leader depends mostly on my ability.	1 2 3 4 5 6
2.	To a great extent my life is controlled by accidental happenings.	1 2 3 4 5 6
3.	I feel like what happens in my life is mostly determined by powerful people.	1 2 3 4 5 6
4.	Whether or not I get into a car accident depends mostly on how good a driver I am.	1 2 3 4 5 6
5.	When I make plans, I am almost certain to make them work.	1 2 3 4 5 6
6.	Often there is no chance of protecting my personal interest from bad luck happenings.	1 2 3 4 5 6
7.	When I get what I want, it's usually because I am lucky.	1 2 3 4 5 6

1 = If you agree slightly
2 = If you agree somewhat
3 = If you agree strongly

4 = If you disagree slightly
5 = If you disagree somewhat
6 = If you disagree strongly

8.	Although I might have good ability, I will not be given leadership responsibility without appealing to those in power.	1	2	3	4	5	6
9.	How many friends I have depends on how nice a person I am.	1	2	3	4	5	6
10.	I have often found that what is going to happen will happen.	1	2	3	4	5	6
11.	My life is chiefly controlled by powerful others.	1	2	3	4	5	6
12.	Whether or not I get into a car accident is mostly a matter of luck.	1	2	3	4	5	6
13.	People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.	1	2	3	4	5	6
14.	It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.	1	2	3	4	5	6
15.	Getting what I want requires pleasing those people above me.	1	2	3	4	5	6
16.	Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.	1	2	3	4	5	6
17.	If important people were to decide they didn't like me, I probably wouldn't make many friends.	1	2	3	4	5	6
18.	I can pretty much determine what will happen in my life.	1	2	3	4	5	6
19.	I am usually able to protect my personal interests.	1	2	3	4	5	6
20.	Whether or not I get into a car accident depends mostly on the other driver.	1	2	3	4	5	6
21.	When I get what I want, it's usually because I worked hard for it.	1	2	3	4	5	6
22.	In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.	1	2	3	4	5	6
23.	My life is determined by my own actions.	1	2	3	4	5	6
24.	It's chiefly a matter of fate whether or not I have a few friends, or many friends.	1	2	3	4	5	6

This next scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Use the following scale to rate your answers.

Indicate to what extent you feel this way in general, that is, on average.

- 1 = Very slightly or not at all
 2 = A little
 3 = Moderately
 4 = Quite a bit
 5 = Extremely

Attentive	1 2 3 4 5	Excited	1 2 3 4 5
Strong	1 2 3 4 5	Hostile	1 2 3 4 5
Irritable	1 2 3 4 5	Proud	1 2 3 4 5
Inspired	1 2 3 4 5	Jittery	1 2 3 4 5
Afraid	1 2 3 4 5	Ashamed	1 2 3 4 5
Alert	1 2 3 4 5	Scared	1 2 3 4 5
Upset	1 2 3 4 5	Enthusiastic	1 2 3 4 5
Active	1 2 3 4 5	Distressed	1 2 3 4 5
Guilty	1 2 3 4 5	Determined	1 2 3 4 5
Nervous	1 2 3 4 5	Interested	1 2 3 4 5

For each of the qualities or skills below, we would like you to rate yourself in comparison to your peers. Specifically, we want you to think about how the average nurse of your age and gender rates on each of these qualities or skills, and then rate yourself in comparison. Please use the following scale to rate yourself.

- 7 = Much better than the average nurse of my age and gender
 6 = Somewhat better than the average nurse of my age and gender
 5 = Slightly better than the average nurse of my age and gender
 4 = About the same as the average nurse of my age and gender
 3 = Slightly worse than the average nurse of my age and gender
 2 = Somewhat worse than the average nurse of my age and gender
 1 = Much worse than the average nurse of my age and gender

____ Athletic ability	____ Academic ability	____ Intellectual self-confidence
____ Cheerfulness	____ Drive to achieve	____ Originality
____ Leadership ability	____ Artistic ability	____ Creativity
____ Social self-confidence	____ Sensitivity to others	____ Personal appearance
____ Popularity with own sex	____ Understanding of others	____ Self-respect
____ Popularity with opposite sex	____ Clarity of personal goals	____ Individuality
____ Writing ability	____ Confidence in the ability	
____ Public speaking ability	to obtain personal goals	

The next set of questions deal with your belief and attitudes about yourself and others:

1. How likely is it that the average nurse of your age and gender will develop heart disease sometime during his or her life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

2. How likely is it that the average nurse of your age and gender will develop an addiction to prescription drugs sometime during his or her life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

3. How likely is it you will lose the use of one or more limbs sometime during your life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

4. How likely is it that the average nurse of your age and gender will be a victim of a mugging sometime during his or her life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

5. How likely is it you will have serious financial problems sometime during your life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

6. How likely is it you will develop diabetes sometime during your life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

7. How likely is it that the average nurse of your age and gender will lose a partner to early death sometime during his or her life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

8. How likely is it you will get a divorce sometime during your life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

9. How likely is it that the average nurse of your age and gender will have serious financial problems

1	2	3	4	5	6	7
Not at all likely						Extremely likely

10. How likely is it you will be a victim of a mugging sometime during your life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

11. How likely is it you will lose a partner to early death sometime during your life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

12. How likely is it that the average nurse of your age and gender will develop diabetes sometime during his or her life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

13. How likely is it that the average nurse of your age and gender will get a divorce sometime during his or her life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

14. How likely is it you will develop heart disease sometime during your life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

15. How likely is it that the average nurse of your age and gender will lose one or more of his or her limbs sometime during his or her life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

16. How likely is it you will develop an addiction to prescription drugs sometime during your life?

1	2	3	4	5	6	7
Not at all likely						Extremely likely

Please read each statement below and decide to what degree each describes your workplace. Please use the following scale.

0 = False
 1 = Mostly False
 2 = Mostly True
 3 = True

1.	Trouble we experience is caused by the decisions we make	0 1 2 3
2.	People make an extra effort to understand the organization's purposes and goals.	0 1 2 3
3.	It is not wise to plan ahead and hope because things don't turn out anyway.	0 1 2 3
4.	My work is dull and meaningless.	0 1 2 3
5.	Most of the unhappy things that happen to us are due to things beyond our control.	0 1 2 3
6.	We believe that things will work out for the better if we work together.	0 1 2 3
7.	Our work and efforts are not appreciated no matter how hard we try and work.	0 1 2 3
8.	When our organization tries to solve problems we try new and exciting ways.	0 1 2 3
9.	Our work situation is determined by factors over which we have little influence.	0 1 2 3
10.	We work together to solve problems.	0 1 2 3
11.	In the long run, the bad things that happen to us are balanced by the good things that happen.	0 1 2 3
12.	We encourage each other to try new things and experience.	0 1 2 3
13.	Success is determined by the decisions we make.	0 1 2 3
14.	We trust that policies and changes are really in everyone's best interest.	0 1 2 3
15.	It is better to keep things the same rather than to make changes.	0 1 2 3
16.	We have a sense of being strong even when we face big problems.	0 1 2 3
17.	Top management makes all the decisions, we just react.	0 1 2 3
18.	We are dedicated to do the best job possible.	0 1 2 3
19.	We will experience a major disruption if we have another problem or change.	0 1 2 3
20.	New challenges improve morale.	0 1 2 3

When we struggle with problems or conflicts in our workplace, I would describe the way we work in the following way:

21.	We confront and embarrass each other in meetings.	0 1 2 3
22.	We are respectful of each others' feelings.	0 1 2 3
23.	We are not open and honest with each other.	0 1 2 3
24.	We work hard to be sure colleagues/co-workers are not offended or hurt emotionally.	0 1 2 3

0	=	False
1	=	Mostly False
2	=	Mostly True
3	=	True

25.	We walk away from disagreements and heated discussions feeling frustrated.	0 1 2 3
26.	We affirm each others opinions and viewpoints, even when we may disagree.	0 1 2 3
27.	We make matters more difficult by getting emotionally upset and stirring up old problems.	0 1 2 3
28.	We take the time to hear what each other has to say or feel.	0 1 2 3
29.	We work to be calm and talk things through.	0 1 2 3
30.	We get upset, but we try to end our differences on a positive note.	0 1 2 3

For the following set of questions, ask yourself "How satisfied am I with this aspect of my job?". Please use the following scale to indicate your level of satisfaction:

1	=	I am very satisfied with this aspect of my job
2	=	I am satisfied with this aspect of my job
3	=	I can't decide whether I am satisfied or not with this aspect of my job
4	=	I am dissatisfied with this aspect of my job
5	=	I am very dissatisfied with this aspect of my job

1.	Being able to keep busy all the time.	1 2 3 4 5
2.	The chance to work alone on the job.	1 2 3 4 5
3.	The chance to do different things from time to time.	1 2 3 4 5
4.	The chance to be somebody in the community.	1 2 3 4 5
5.	The way my boss handles his/her workers.	1 2 3 4 5
6.	The competence of my supervisor in making decisions.	1 2 3 4 5
7.	Being able to do things that don't go against my conscience.	1 2 3 4 5
8.	The way my job provides for steady employment.	1 2 3 4 5
9.	The chance to do things for other people.	1 2 3 4 5
10.	The chance to tell people what to do.	1 2 3 4 5
11.	The chance to do something that makes use of my abilities.	1 2 3 4 5
12.	The way company policies are put into practice.	1 2 3 4 5
13.	My pay and the amount of work I do.	1 2 3 4 5
14.	The chances for advancement on this job.	1 2 3 4 5
15.	The freedom to use my own judgment.	1 2 3 4 5

- 1 = I am very satisfied with this aspect of my job
2 = I am satisfied with this aspect of my job
3 = I can't decide whether I am satisfied or not with this aspect of my job
4 = I am dissatisfied with this aspect of my job
5 = I am very dissatisfied with this aspect of my job

16. The chance to try my own methods of doing the job. 1 2 3 4 5
17. The working conditions. 1 2 3 4 5
18. The way my co-workers get along with each other. 1 2 3 4 5
19. The praise I get for doing a good job. 1 2 3 4 5
20. The feeling of accomplishment I get from the job. 1 2 3 4 5

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Part Two

To respond to the rest of the questionnaire you must have a specific stressful situation in mind. By "stressful" we mean a situation that was difficult or troubling for you, either because you felt distressed about what happened, or because you had to use considerable effort to deal with the situation.

Take a few moments now, and consider what has been for you the most stressful event that has occurred as the result of recent position/unit closures and hospital reorganization. It may be an event that happened in the recent past and is now over, an event that is presently occurring, or an event that you anticipate will happen to you in the near future. Please describe it as best you can in the space below: what the event is, how you are involved, how it is affecting you and your feelings about it. Do not use any real names in your description. You can use the rest of this page and the next to write about it.

To what extent is this a "stressful" event for you. Please check the one that fits you best at this moment

- ☐ Not stressful at all *(I consider it resolved or no longer important; I rarely feel anxious or tense)*
☐ Somewhere in between
☐ Slightly stressful *(I think about it sometimes and I am still slightly concerned, however it does not interfere with my daily routine, and any anxiety about it is very manageable)*
☐ Somewhere in between
☐ Moderately stressful *(I think about it several times during the day as it is still a concern and it is important; I am concerned about it to the extent that sometimes it causes me to feel uncomfortably anxious)*
☐ Somewhere in between
☐ Very stressful *(I think about it often through the day as I am very concerned about it's outcome; I feel anxious about it to the point where I am distracted from other activities and thoughts)*
☐ Somewhere in between
☐ Extremely stressful *(I think about it most of the day, as the outcome is extremely important to my well-being; I feel anxious about it to the point where I sometimes feel overwhelmed; it is disrupting my daily routine)*

Has this stressful event that you just described happened?

Yes

No

If this event has happened, when did it occur approximately?

What month? _____ What week in that month? _____ What year? 1997 1998

If this event has not happened, when do you anticipate that it might happen?

What month? _____ What week in that month? _____ What year? 1999 Don't Know

Keeping the stressful event/situation that you just wrote about in mind, please indicate to what extent the following emotions describe how you feel about this event.

- 1 = Not at all
 2 = A little
 3 = Moderately
 4 = Quite a bit
 5 = A great deal

Worried 1 2 3 4 5

Disappointed 1 2 3 4 5

Happy 1 2 3 4 5

Fearful 1 2 3 4 5

Eager 1 2 3 4 5

Disgusted 1 2 3 4 5

Pleased 1 2 3 4 5

Relieved 1 2 3 4 5

Anxious 1 2 3 4 5

Confident 1 2 3 4 5

Angry 1 2 3 4 5

Hopeful 1 2 3 4 5

Sad 1 2 3 4 5

Guilty 1 2 3 4 5

Exhilarated 1 2 3 4 5

Sometimes when we are experiencing a stressful event, we find ourselves in a situation where we have to make important decisions, or set some important goals for ourselves. In relation to the stressful event you have just described, are you PRESENTLY having to make any important decisions or goals? Please circle the correct response.

YES

NO

If you answered YES, in a few lines, please describe what kind of decision you are having to make, or goal you are having to set.

How confident did you/or do you feel about your ability to deal with this stressful event? Please circle the best response.

- 0 - Not confident at all
- 1 - Slightly confident
- 2 - Moderately confident
- 3 - Quite confident
- 4 - Extremely confident

As you respond to each of the statements, please keep the stressful situation in mind that you identified earlier. Read each statement carefully and indicate, by circling 0, 1, 2, or 3, to what extent you are using it in this situation. If you have identified a stressful event that has not yet occurred but you anticipate will occur in the near future, please circle the items that you think would reflect how you would see yourself dealing with the event.

- 0=Does not apply or not used
- 1=Used somewhat
- 2=Used quite a bit
- 3=Used a great deal

1.	I just concentrated on what I had to do next -the next step	0	1	2	3
2.	I tried to analyse the problem in order to understand it better	0	1	2	3
3.	I turned to work or another activity to take my mind off things	0	1	2	3
4.	I felt that time would have made a difference - the only thing was to wait	0	1	2	3
5.	I bargained or compromised to get something positive from the situation	0	1	2	3
6.	I did something that I didn't think would work, but at least I was doing something	0	1	2	3
7.	I tried to get the person responsible to change his or her mind	0	1	2	3
8.	I talked to someone to find out more about the situation	0	1	2	3

0=Does not apply or not used		1=Used somewhat	2=Used quite a bit	3=Used a great deal
9.	I criticised or lectured myself			0 1 2 3
10.	I tried not to burn my bridges, but leave things open somewhat			0 1 2 3
11.	I hoped for a miracle			0 1 2 3
12.	I went along with fate; sometimes I just have bad luck			0 1 2 3
13.	I went on as if nothing had happened			0 1 2 3
14.	I tried to keep my feelings to myself			0 1 2 3
15.	I looked for the silver lining, so to speak; I tried to look on the bright side of things			0 1 2 3
16.	I slept more than usual			0 1 2 3
17.	I expressed anger to the person(s) who caused the problem			0 1 2 3
18.	I accepted sympathy and understanding from someone			0 1 2 3
19.	I told myself things that helped me feel better			0 1 2 3
20.	I was inspired to do something creative about the problem			0 1 2 3
21.	I tried to forget the whole thing			0 1 2 3
22.	I got professional help			0 1 2 3
23.	I changed or grew as a person			0 1 2 3
24.	I waited to see what would happen before doing anything			0 1 2 3
25.	I apologized or did something to make up			0 1 2 3
26.	I made a plan of action and followed it			0 1 2 3
27.	I accepted the next best thing to what I wanted			0 1 2 3
28.	I let my feelings out somehow			0 1 2 3
29.	I realized that I had brought the problem on myself			0 1 2 3
30.	I came out of the experience better than when I went in			0 1 2 3
31.	I talked to someone who could do something concrete about the problem			0 1 2 3
32.	I tried to get away from it for a while by resting or taking a vacation			0 1 2 3
33.	I tried to make myself feel better by eating, drinking, smoking, using drugs, or medications, etc.			0 1 2 3
34.	I took a big chance or did something very risky to solve the problem			0 1 2 3
35.	I tried not to act too hastily or follow my first hunch			0 1 2 3
36.	I found new faith			0 1 2 3
37.	I maintained my pride and kept a stiff upper lip			0 1 2 3

	0=Does not apply or not used	1=Used somewhat	2=Used quite a bit	3=Used a great deal
38.	I rediscovered what is important in life			0 1 2 3
39.	I changed something so things would turn out all right			0 1 2 3
40.	I generally avoided being with people			0 1 2 3
41.	I didn't let it get to me; I refused to think too much about it			0 1 2 3
42.	I asked advice from a relative or friend I respected			0 1 2 3
43.	I kept others from knowing how bad things were			0 1 2 3
44.	I made light of the situation; I refused to get too serious about it			0 1 2 3
45.	I talked to someone about how I was feeling			0 1 2 3
46.	I stood my ground and fought for what I wanted			0 1 2 3
47.	I took it out on other people			0 1 2 3
48.	I drew on my past experiences; I was in a similar situation before			0 1 2 3
49.	I know what had to be done, so I doubled my efforts to make things work			0 1 2 3
50.	I refused to believe that it had happened			0 1 2 3
51.	I promised myself that things would be different next time			0 1 2 3
52.	I came up with a couple of different solutions to the problem			0 1 2 3
53.	I accepted the situation, since nothing could be done			0 1 2 3
54.	I tried to keep my feeling about the problem from interfering with other things			0 1 2 3
55.	I wished that I could change what had happened or how I felt			0 1 2 3
56.	I changed something about myself			0 1 2 3
57.	I daydreamed or imagined a better time or place than the one I was in			0 1 2 3
58.	I wished that the situation would go away or somehow be over with			0 1 2 3
59.	I had fantasies or wishes about how things might turn out			0 1 2 3
60.	I prayed			0 1 2 3
61.	I prepared myself for the worst			0 1 2 3
62.	I went over in my mind what I would say or do			0 1 2 3
63.	I thought about how a person I admire would handle it			0 1 2 3
64.	I tried to see things from the other person's point of view			0 1 2 3
65.	I reminded myself how much worse things could be			0 1 2 3
66.	I jogged or exercised			0 1 2 3

APPENDIX C

Think-Aloud Procedure:

General Purpose and Procedure for Think-Aloud

Consent Phase II

Initial Instructions Long Prime

Initial Instructions Short Prime

Practice Exercises

Final Instructions

Prompts

Introduction to Think-Aloud Procedure

During the next hour, you will be asked to do two activities. The first activity will involve teaching you how to do a 'think-aloud' task. This methodology has been used a great deal in research to try to get a better understanding of how people 'think' while they are doing certain tasks. For example, it has been used to understand how students think when they are asked to do a complicated problem-solving task. The purpose of today is to better understand how a person actually thinks when making a choice on a questionnaire item about how they coped with a stressful situation. This will ultimately help researchers and clinicians understand the many factors that contribute to how people respond to self-report questionnaires. You will be asked to respond to 16 items taken from the coping inventory from the original questionnaire that you completed several months ago. You will be asked to respond using the think-aloud method. This first activity should take you about 30–45 minutes. This activity will be audiotaped. Your audiotaped responses will then be transcribed onto paper by myself and the tapes will be erased once the study is completed. No identifying data will be included in the transcripts. All the transcripts from the participants in the second part of the study will then be subjected to data analysis by a small team of research assistants (3) who are fellow graduate students. We will be looking for common themes among all the transcripts.

The second activity you will be asked to do, will be to fill out a short questionnaire that contains a few of the sets of questions from the first questionnaire that you filled out several months ago. This should take you about 15 minutes.

You will now be asked to sign the consent for the second part of this study. Even if you sign the consent, you are free to withdraw at any point during the next hour for any reason whatsoever. You will receive the \$20.00 stipend whether or not you complete this phase. Do you have any questions or concerns?

(Sign consent before proceeding)

CONSENT FORM

Research Project Title: Coping with the Process of Organizational Change and Job Closure

Investigator: Sandy Freedman, Doctoral Program, Counselling Psychology

This consent form, a copy of which will be given to you, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. The investigator binds herself to the same principles and precautions stated in the consent form for Part 1 of this study.

1. The purpose of this study is to better understand the type of thinking an individual engages in when deciding on whether or not they used a particular coping strategy in dealing with a past stressful event.
2. Nurses selected for this study have been chosen from a group of nurses from Part 1 of the study who indicated their interest by signing the form "Request for Further Participation."
3. The procedure for this study requires that the participant 'think-aloud' thoughts as they occur in response to sixteen coping items, shown to the participant one at a time. The participants' responses to coping items will be audiotaped for the researcher's use. After the 'think-aloud' procedure has concluded the nurse will be asked to complete several measures related to the study which should take approximately 15 minutes.
4. All audiotaped material will be transcribed and numbered separately from the original tape so that only the researcher will know the identity of the participant. By doing so, confidentiality is ensured. The tapes will be erased as soon as the data have been transcribed.
5. For SMH nurses: If you wish to speak to someone within the nursing department at SMH who knows the **procedural aspects of this study only** (but who is not privy to any of the collected data) you may contact Ms. Elaine McAlister, at local 2630.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in this study and agree to participate as a subject. In no way does this waive your legal rights nor release the investigators from their legal and professional responsibilities. You are free to withdraw from the study at any time. If you have further questions concerning matters related to this research, please contact: **Sandy Freedman 697-9277 (Extension 1) or 949-9438.**

Participant's Name

Participant's Signature

Date

Sandy Freedman
Investigator's Name

Investigator's Signature

Date

* A copy of this consent form has been given to you to keep for your records and reference.

Long-Instructions

I am about to present to you some items taken from one of the questionnaires that you completed several (weeks or months) ago in the first part of this study. These are items that have been chosen because they are representative of general coping patterns, not because they are particularly significant for you. As a result, you may find that some you would agree with, and some you will not.

I am interested in the kind of thinking you do in deciding whether an item is one that you would choose, or not choose, in describing how you coped with a stressful event in the past.

First I am going to give you some practice items so you can become familiar with the task of thinking aloud your thoughts. After you have had a chance to practice, I am going to give to you a copy of the stressful event that you first described several (weeks or months) ago in the first part of this study. I will ask you to read it out loud. After that I will be presenting 16 items to you on cards one at a time. I want you to tell me the reasons why you would choose, or not choose, each item presented as a way you dealt with the stressful event you have been asked to read. In addition, I will ask you to rate the item from 0--3 as you did in the first part of the study. To all this material I would like you to read **ALOUD** and tell me everything that comes to your mind about this material, no matter what it is, **THE MOMENT THE THOUGHTS OCCUR TO YOU**. This may be mid-sentence, at which point please feel free to stop and tell me what you are thinking.

You may return to any portion of this task whenever you wish to. When you do, please continue to **READ AND THINK ALOUD**.

Short-Instructions

I am about to present to you items taken from one of the questionnaires that you completed several weeks (months) ago in the first part of this study. These are items that have been chosen because they are representative of general coping patterns, not because they are particularly significant for you. As a result, you will find that some you would agree with, and some you will not.

I am interested in the kind of thinking you do in deciding whether an item is one that you would choose, or not choose, in describing how you coped with a stressful event in the past.

First I am going to give you some practice items so you can become familiar with the task of thinking aloud your thoughts. After you have had a chance to practice, I am going to give to you a one-sentence reminder of the stressful event that you first described several months ago in the first part of this study. I will ask you to read it out loud. After that I will be presenting 16 items to you on cards one at a time. I want you to tell me the reasons **why** you would choose, or not choose, each item presented as a way you dealt with the stressful event you have been asked to read. In addition, I will ask you to rate the item from 0--3 as you did in the first part of the study. To all this material I would like you to read **ALoud** and tell me everything that comes to your mind about this material, no matter what it is, **THE MOMENT THE THOUGHTS OCCUR TO YOU**. This may be mid-sentence, at which point please feel free to stop and tell me what you are thinking.

You may return to any portion of this task whenever you wish to. When you do, please continue to **READ AND THINK ALoud**.

Practice Tasks

Before we begin with the questions and coping items, here are some practice tasks to help you become comfortable with reading and **THINKING ALOUD**. You may re-read the Instructions any time you wish to.

1. How many windows are there in your home? Describe your thoughts as you count them.
2. Subtract the following: Five hundred and twenty-one minus two hundred and ninety-two. Describe the manner in which you calculate this example.
3. Here is one more practice task. Read the following two items and verbalize all the thoughts you have about it relative to the reasons you would give yourself for either choosing, or not choosing, it as a coping strategy for dealing with a stressful event.

Changed something so things would turn out all right.

Avoided being with people in general.

Additional Instructions

The questionnaire items that you are being asked to assess will now be presented to you. Please read the items **ALoud** and **THINK ALoud**, telling me everything that comes to your mind regarding the reasons why you would choose, or not choose, the particular item shown on the card as a way of coping with the stressful situation you just read. I would also like you to indicate what rating you would give the coping item from 0 to 3.

Prompts

1. You may re-read the instructions any time you like.
2. Please tell me what you are thinking at the end of each item, if possible.
3. There may be other ways of coping that you use that are not included in these items. However, just in terms of these items, please tell me what comes to your mind in terms of the reasons why you would choose, or not choose, this particular item.
4. What are you wondering about?
5. Now you can proceed to the questionnaire items in the same manner as you have with the Instructions and the Practice Tasks.
6. Would you like to re-read the Instructions?
7. Remember to rate the item from 0--3 according to the scale in front of you.

APPENDIX D

Phase II Positive Illusion Measures

APPENDIX E

Pearson Correlation Tables

Table E1
Correlation Matrix of the PI Components

Table E2
**Correlation Matrix of the Intercorrelations Between Appraisal,
Self-Efficacy, and Coping Strategy Variables**

Table E3
**Correlation Matrix between PI and Appraisals, Self-Efficacy,
and Coping Strategies**

Table E4
**Correlation Matrix between PI and Dispositional Affect,
Level of Perceived Stress, Perceptions of Occupational Climate,
and Job Satisfaction**

Table E1

Correlation Matrix of the Positive Illusions Components: Dispositional Optimism, Internal Control, Perceived Invulnerability, and Self-Perception (N = 185)

	Internal Locus of Control	Perceived Invulnerability	Self-Perception
	<i>r</i>	<i>r</i>	<i>r</i>
Dispositional Optimism	-.04	.004	.25**
Internal Locus of Control		-.06	-.05
Perceived Invulnerability ¹			.42**

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

¹ Tables which describe analyses involving the PI component of invulnerability will be worded 'Invulnerability' even though the measure's proper name is 'Perceived Risk' in the literature. Positive scores on the measure indicate a greater sense of perceived vulnerability while negative scores indicate a greater sense of invulnerability.

Table E2

Pearson Correlation Matrix of the Intercorrelations Between the Appraisal, Self-Efficacy, and Coping Strategy Variables (N = 185)

	1	2	3	4	5	6	7	8	9	10	11	12
<u>Appraisals</u>												
1. Threat		.52**	-.24**	-.24**								
2. Harm			-.27**	-.26**								
3. Benefit				.62**								
4. Challenge												
5. Self-Efficacy	-.19*	-.20**	.09	.19**								
<u>Coping Strategies</u>												
6. Confrontive	.13	.38**	-.11	-.03	-.06							
7. Distancing	.06	.04	-.05	-.145	-.11	-.01						
8. Self-Controlling	.08	.06	.10	.47**	.34**	.20**	.08					
9. Seeking Social Support	.16*	.3**	-.04	-.003	.008	.47**	-.06	.33**				
10. Accepting Responsibility	.08	.11	.09	.18*	.08	.32**	.08	.37**	.33**			
11. Escape-Avoidance	.27**	.32**	-.05	.14	-.19**	.32**	.24**	.37**	.24**	.38**		
12. Planful Problem-Solving	.18*	.06	.07	-.02	.03	.27**	.01	.15*	.38**	.19**	.03	
13. Positive Reappraisal	.05	.05	.14*	.17*	.14	.15*	.17*	.36**	.33**	.35**	.26**	.42**

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

Table E3

Pearson Correlation Matrix between Positive Illusions Components with Appraisals, Self-Efficacy, and Coping Strategies (N = 185)

	<u>Positive Illusion Components</u>			
	Optimism r	Internal LOC r	Invulnerability r	Self-Perception r
<u>Appraisals</u>				
Threat	-.07	.03	-.13	.004
Harm	-.05	-.09	-.16	-.004
Challenge	.11	.04	-.05	.17
Benefit	.02	-.06	.21**	.05
<u>Self-Efficacy</u>	.11	-.14	.72**	-.13
<u>Coping Strategies</u>				
Confrontive Problem-Solving	.05	-.07	-.01	-.02
Distancing	.00002	-.14	-.28**	.06
Self-Controlling	.0009	-.17	.52**	-.15*
Seeking Social Support	.05	.02	.08	.04
Accepting Responsibility	.01	-.16	.22**	-.18*
Escape-Avoidance	-.07	.02	.02	-.15*
Planful Problem-Solving	.04	.007	-.10	.19**
Positive Reappraisals	.14	-.18	.05	.17*

*p < .05, ** p < .01

LOC = Locus of Control

Table E4

Pearson Correlation Matrix between Positive Illusions Components with Dispositional Affect, Level of Perceived Stress, Perception of Occupational Climate, and Job Satisfaction (N = 185)

	<u>Positive Illusions Components</u>			
	Optimism r	Internal LOC r	Invulnerability r	Self-Perception r
Intrinsic Job Satisfaction	-.12	.06	-.23**	-.02
Extrinsic Job Satisfaction	-.16	-.04	-.25**	-.08
Challenge Problem-Solving	.17*	.003	-.28**	.17*
Control Problem-Solving	.06	.06	-.26**	.24**
Conflictual Communication	-.14	-.11	-.13	.10
Supportive Communication	.19**	.04	-.22**	.10
Positive Affect	.37**	-.17*	-.009	.25**
Negative Affect	-.23**	.07	.01	-.13
Level of Stress	-.0006	-.08	.07	-.09

*p < .05, **p < .01

Note: LOC = Locus of Control

APPENDIX F

Data Coding Manual

Appendix F.1

Default Coding System (DCS)

Appendix F.2

Examples of coding categories applied to a pilot transcript

Appendix F.3

Overview of Coding Categories for Scoring and Calculations for Converting to Proportions

CODING MANUAL

Positive Illusions, Coping and Inferential Reasoning
During the Process of Organizational Change

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November, 1999

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Introduction

Background of the Study

Inference-making has been described as a fundamental and pervasive human process, and as such has commanded much interest amongst those concerned with attribution theory. It has been said that inferences are needed in completing the simplest to the most complex of tasks. Human inference has been defined as the process of collecting and combining information, and then making a judgment based on that information (Taylor & Fiske, 1975). However, while people have been described as "intuitive scientists" who are gifted and who are generally successful in their causal explanations, it has been shown that at times a person's attempt to understand, predict, and control events in the social sphere may be seriously compromised by specific inferential shortcomings (Nisbett & Ross, 1980). Dumont (1993; Dumont & Lecomte, 1987) have suggested that an inference is "any judgment that goes beyond the information given or that we have at our disposal." As such, our causal inferences have the potential to demonstrate significant error and bias, especially as the ambiguous nature of the event increases.

Wyer and Carlston (1979) have suggested that the basic elements of a judgmental situation consist of the judgment or inference itself, the thing being judged, the information that directly or indirectly bears upon this judgment, and the person making the judgment. They have stated that "a judgment or inference about an object or situation may be conceptualized as the assignment of the object or situation to a verbal or nonverbal concept, or cognitive category [and that in] many instances, this assignment will be based upon the similarity of the object or situation's attributes to those the judge uses to define the concept or characterize its exemplars" (p. 6). An inference based on new or old information involves several interrelated steps. Wyer and Carlston (1979) described these steps as follows:

The information must first be encoded or interpreted. Second, its potential implications for the judgment to be made must be identified. Third, when there is more than one possible implication

of the information, the alternative implications must be combined or integrated in a single judgment that is considered most representative of the set of alternatives. (p. 12)

According to Olson and Ross (1985) attribution research has been primarily concerned with two main areas: the "basic processes" of attribution and the "consequences" of attribution. The study of basic processes focuses on "how people combine information to make causal judgments, when attributional processing will occur, and whether judgmental biases can distort causal conclusions" (p. 287). The second area focuses on the consequences of attributions for the perceivers' thoughts, emotions, and behaviors. While examining the consequences of attribution is an important area, especially in regards to behaviors and outcome, it is the first area of "basic processes" of which this study is most concerned.

The influence of people's judgment on the causes and meanings of behavior has been explored by Nisbett and Ross (1980). They have stated that in trying to make sense of events individuals use "knowledge structures", and it is within these structures that theories and beliefs about self and others rest. In the case of a self-schema, the beliefs about oneself can be powerful determinants in shaping one's behavior, despite situational deterrents. Numerous studies have addressed the nature of individuals' attributions towards objects and situations outside of themselves. For example, the area of impression formation has concerned itself with how preformed schemas and stereotypes influence people's first impressions (Chaiken & Trope, 1999; Zunda, 1999). However, less attention appears to have been paid to the processes by which individuals attempt to infer their own needs, abilities, personality characteristics, moods, or feelings towards other persons or events.

In light of the evidence concerning inferential error and bias, to what extent is human inference about oneself subject to the same inferential shortcomings? To what extent do we presume that that self-information is accurate? At what point can we assume that the person has gone "beyond the information given" and how do we understand the information that individuals have "at their disposal"? Numerous studies on introspective processes have

addressed some of these concerns (Burger, 1985; Costa & McCrae, 1990; Ericsson & Simon, 1984; Olson & Ross, 1985; Wilson, 1985). For example, research on self-report measures have explored the important question of instrument validity and reliability given our understanding of attributional errors (Chen & Spector, 1991; Coyne & Gottlieb, 1996; Depue & Monroe, 1986; Ptacek, Smith, Espe & Raffety, 1994; Stone, Greenberg, Kennedy-Moore & Newman, 1991; Watson, 1990). Yet despite concern and cautionary warnings, self-report measures continue to be used extensively in clinical and research endeavors, often with the attitude that they are fairly accurate reflections of the participant's inner workings.

Taking into account these concerns about introspective activities, should statements made about oneself be considered as an inferential process, and if so, should these self-statements be treated with equal concern regarding their potential for error and bias? According to Olson and Ross (1985), the most important aspect of Kelley's work "was his insistence that self-perception as well as social perception is a proper domain for attribution theory . . . and [that he] developed a general theory of attribution in which the roles governing self-perception were essentially identical to those governing social perception" (p. 285). In a chapter entitled "The Lay Scientist Self-Examined", Nisbett and Ross (1980) provide numerous references in order to support the position that self-statements may in fact be considered "self-inferences." In the summary of their chapter they state the following (p. 226-227):

- Our ability to know ourselves is more limited and more subject to error than common-sense beliefs would suggest;
- People's characterizations of their own dispositions, though difficult to assess objectively, clearly reflect a heavy reliance on theories about themselves; self-characterizations often seem to persist despite contradictory data;
- Knowledge of one's own emotions and attitudes, though commonly believed by the layperson (and many philosophers) to be direct and certain has been shown to be indirect and prone to serious error; "such

knowledge is based in large part of inferences about the causes of behavior;

- People's causal accounts explaining their own behavior have been shown to be:
 - a) often empirically wrong
 - b) little different from the accounts of observers working from impoverished information and without benefit of the introspective clues available to the actor, and
 - c) based more heavily on causal theories than of the observation of mental events.

Therefore, although we value accuracy in our judgments about people and events around us, our causal inferences have the potential to demonstrate significant error and bias. An important question of this study on inferential reasoning, positive illusions, and coping, is: to what extent are the responses indicated on a coping checklist a realistic and accurate account of how that person coped versus a product of a relevant self-schema (positive or negative) associated with the act of coping and, therefore, not as "realistic" or accurate? For example, to what extent does an overly-positive self-schema assist, shape, or potentially bias, the response of individuals who are asked how they coped with a particular stressful event in the past? If the latter is true, and individuals responses can be shown to be a product of a particular self-schema, then dispositional factors (which for several decades have been downplayed in the coping research) contributing to that self-schema are relevant to the study of coping.

While a strong case could be made to support the position that statements made about oneself could be considered inferential, for the purpose of this study any statements about the self will be called "self-statements" rather than "self-inferences." However, this study will support the position that self-statements are to a greater extent "interpretations" of the individuals' understanding of self than a statement of "fact" about oneself and, therefore, may be considered inferences.

Purpose of the Study

Over the past two decades, Taylor (1983; see Taylor & Armor, 1996; Taylor & Brown, 1988, for reviews) has explored the tendency of individuals to develop positive illusions in coping with stressful, or traumatic events. These illusions consist of unrealistic positive self-evaluations, exaggerated perceptions of control, or mastery, and unrealistic optimism. A major purpose of the study is to explore to what extent the level of positive illusions held by an individual bias subjective self-reporting on a coping inventory. This will be explored using a think-aloud protocol.

This study examines different types of statements and inferences in the following areas: (a) statements about the self, and (b) contextual inferences. The category of contextual inferences is subdivided into (a) inferences about others, and (b) situational inferences. In reference to self-statements and inferences about others, these categories will be further subdivided into: (a) disposition/ trait, (b) emotion, (c) behavior, and (d) attitude/ value. All statements/ inferences will also be assigned either a positive or negative value. In all, there are 18 coding categories. (See Table 1.0 for a Summary of Codes). These will be more fully explained in the section titled "Overview of Coding Categories."

The Role of the Raters

Your task will be to provide a reliability check on the coding that has been performed by the researcher on 36 transcripts. The transcripts are the responses of the participants to 16 selected coping items from the "Ways of Coping Questionnaire" (WCQ) developed by Folkman and Lazarus (1988). Initially, you will be given a practice transcript which we will rate together using the coding categories outlined in this manual. Following that, you will be given four transcripts which you will be asked to read. You will then rate randomly selected segments drawn from these transcripts.

The statements/ inferences under consideration will be defined using a set of coding categories. The statements/ inferences being considered fall along a continuum of complexity; some segments are much more complex than others. While the writer has attempted to be as clear as possible in providing guidelines

for the process of rating, it must be acknowledged that these categories form a fuzzy-set; their boundaries are not crisply delineated. For example, some statements/ inferences could be plausibly placed within several categories; they are therefore very difficult to code. For example, a statement about oneself may fall somewhere between being a disposition/ trait self-statement and an attitude/ value self-statement. It is up to you to judge whether that self-statement falls "more" within one category than the other. This coding manual will attempt to make these ambiguous situations as clear as possible for rating, and provide some coding strategies in order to assist you, e.g., the technique of scoping.

Rating of Transcript Segments

In order for a segment to be rated, you must first be able to code a statement/ inference segment within one of two domains: (a) as a statement about the self or, (b) an inference about the context in which the event occurs. Contextual inferences are subdivided into (a) inferences about others, and (b) inferences about the situation (see Table 1.0). Next, you will need to code the nature of the statement/ inference as: (a) disposition/ trait, (b) emotion, (c) behavior, or (d) attitude/ value. You will only be able to apply these four coding categories to self-statements and inferences about others, not to situational inferences. Finally, you will rate the segment as either positive or negative. This last classification can be applied to all of the coded segments described so far. Any statement/ inferential segment that cannot be coded according to these defined criteria will be considered unclassifiable. The following will further explain these coding procedures.

The first step involves deciding if the statement/ inference refers to the participant, another person involved in the situation, or the situation itself. Refer to the section titled "Overview of Coding Categories" (p. 9-18) for descriptions, examples, and key words that can help classify the segments (see Tables 2.0, 3.0, 4.0). Next, refer to these same definitions and key coding words in order to assist you in coding the nature of the segment (i.e. disposition/ trait, emotion, behavior, attitude/ value).

Table 1.0

Proposed Coding Categories

1. Self-Statement:		
	Positive Dispositional Statement/Self	(+DIS)
	Negative Dispositional Statement/Self	(-DIS)
	Positive Emotional Statement/Self	(+EIS)
	Negative Emotional Statement/Self	(-EIS)
	Positive Behavioral Statement/Self	(+BIS)
	Negative Behavioral Statement/Self	(-BIS)
	Positive Attitude/ value Statement/Self	(+AVIS)
	Negative Attitude/ value Statement/Self	(-AVIS)
2. Contextual Inferences:		
a. Others:		
	Positive Dispositional Inference/Other	(+DIO)
	Negative Dispositional Inference/Other	(-DIO)
	Positive Emotional Inference/Other	(+EIO)
	Negative Emotional Inference/Other	(-EIO)
	Positive Behavioral Inference/Other	(+BIO)
	Negative Behavioral Inference/Other	(-BIO)
	Positive Attitude/ value Inference/Other	(+AVIO)
	Negative Attitude/ value Inference/Other	(-AVIO)
b. Situation:		
	Positive Situational Inference	(+SI)
	Negative Situational Inference	(-SI)

Classifying each segment as positive or negative is perhaps the most difficult task. The rating of the segment as positive or negative will be done from the perspective of the participant rather than from a generally accepted cultural viewpoint. For each coping item, two objectives must be met: (a) the assignment of a coding value according to how the participant rated the coping item itself i.e. "does not apply, used somewhat, used a quite a bit, or used a great deal", and (b) the assignment of coding values to all remaining segments within the text arising from the participant's justification of the chosen rating value. The following will expand on how to meet these two objectives.

The first objective is to assign a coding value according to the rating the participant gives the individual coping item. In order to code the rating of the item "positive" or "negative" you will be required to (a) use a default coding system and, (b) "scope" the segment. First, the default coding system (DCS) will be applied (see Appendix C.1). This will allow the participant's rating of the coping item to be classified as either positive or negative; the default system uses the rule that stating that you use or do not use the coping strategy under consideration will automatically determine the default rating. The DCS was designed such that a rating of "used somewhat, used a quite a bit, or used a great deal" will automatically take on the designated default rating. A rating of "does not apply" will take on the opposite rating. For example, "Stood my ground and fought for what I wanted" is assigned a positive/ behavior/ self default rating if the participant indicates that this coping strategy was used at any level. A rating made by the participant that indicates that it was not used i.e., "does not apply or was not used" is assigned the opposite rating to the default i.e., the rating would then change to negative/ behavior/ self. In the case of the coping item, "Wished the situation would go away or somehow be over with", the default rating would be negative/ emotion/ self if the participant indicates that it was used at any level. A rating by the participant of "does not apply or was not used" would be assigned an opposite rating of positive/ emotion/ self.

This default system was constructed using the definitions of the eight coping scales described in the WCQ Manual (Folkman & Lazarus, 1988) which helped determine the direction of the default coding system. However, as several of the coping scales were in a sense "neutral" (e.g., the scale concerning distancing) it required the writer to make a decision whether the rating segment is to be assigned an initial value of positive or negative e.g., "Made light of the situation, refused to get too serious about it" and "Went on as if nothing had happened." The use of the DCS will ensure that the 16 coping items receive consistent initial values throughout the rating process.

After assigning the default code to the segment, you must now "scope" the self-statement/ inference according to the other information the participant provides about their coping. This means that you must refer to the context in which the segment occurs, and you must judge it to be either positive or negative

based on the information given by the participant. Segments, therefore, initially considered positive or negative by default may now be changed if the participant makes a statement or statements which clearly contradicts the default rating. For example, "Kept others from knowing how bad things were" is defaulted negative/emotional/self for an affirmative answer according to the DCS. If however, the narrative indicates that the participant saw that as a positive coping strategy (e.g., letting others know may have had some negative consequences), then the segment's rating is changed to positive/emotional/self. Please ensure that there are sufficient reasons for changing the default rating. Again, the section "Overview of Coding Categories" will give you guidelines for making these decisions.

Having completed the first objective of assigning a default code to the participant's rating of the coping item, the second objective will be to rate the remaining segments according to the criteria described in the next section on "Overview of the Coding Categories." A statement/inference that appears in the text where the participant is qualifying his or her item rating must first be rated as falling within one of the two domains i.e., self or contextual. If the segment has been classified as either "self" or "other", the nature of the statement/inference must now be decided i.e., disposition/trait, emotion, behavior, or attitude/value. Finally, the segment (i.e. self, other, or situational) must be assigned either a positive or negative code. An example of a coded transcript appears in Appendix C.2 to assist you in understanding this system.

Again, it must be stressed that these categories are complex, and therefore certain segments will be more difficult to categorize than others. If this should arise, we will discuss these segments together in order to reach some agreement. If a decision cannot be reached, the segment will be excluded.

Overview of Coding Categories:

There are 18 potential coding categories that a segment may fall into. These categories are listed in Table 1.0 shown previously. All transcripts are divided into segments based on the semantic nature of the narrative. Not all segments of the transcript will be rated as falling within the coding categories

listed in Table 1.0. For instance, during the think-aloud procedure, the participant may make a statement/ inference which is coded, and then go on to further qualify or give details related to that statement/ inference. These following segments are considered "degree markers" and, as such, are not given additional ratings. In part, this is done to prevent an individual who is more talkative or circumstantial being assigned a disproportionate number of ratings compared to those who are more concise or direct in their statements. However, if the participant goes on to make another type of statement/ inference, and then returns to a previous statement/ inference, then this segment can be re-rated a second time. The segments rated as "degree markers" are often helpful in deciding the context of the statement/ inference and should be used as such.

Other segments that you will read which do not fall into the coding categories described may be considered "deliberative" or "descriptive" in nature. A deliberative segment is where the participant is considering a rating or the use of a coping mechanism. The questioning nature of the segment will make it easy to identify. Descriptive segments contain details of the situation the participant makes in order to qualify the answer given. Contained within these often detailed descriptions you will most likely find self-statements, inferences and degree markers. However, much of this detailing will remain uncoded.

It is not necessary to code segments classified as degree markers, deliberations and descriptive text, which do not fall into the target coding categories. Again, the intent of this study is to just code those segments which fall into one of the eighteen coding categories listed in Table 1.0 and described in more detail in the following section.

A. Self-Statements:

Self-statements refer to all statements posited by the participant that: (a) contain attributions about his or her disposition/ traits, emotions, behaviors or attitudes/ values, and (b) which are used to support or explain the rating of the coping strategy being discussed.

The position from which the inference will be judged as either negative or positive, will be from the viewpoint of the participant, rather than from a

generally accepted cultural/ moral viewpoint. An example of this might be: "I thought it was best if I just kept my mouth shut during that meeting." This would be judged as a positive behavioral inference if the participant viewed it as being adaptive and self-protective. If, however, the participant provides further information that the action had negative consequences and as such were not happy with the actions undertaken, then the segment would be rated as negative. As mentioned previously, the segments will be initially coded according to the DCS outlined in Appendix C.1 and will only be changed if the information provided by the participant contradicts the default code. The rater will be required to "scope" the segment by examining the context of the participant's discourse up until that point or immediately following, in order to rate the item as positive or negative.

In some segments, participants may refer to themselves or the group they belong to as "we." For example, "we felt ignored and taken for granted" might be more representative of the participant's own feelings rather than those of the collective group. If the context of the segment gives you the sense that the participant is voicing more his or her own feelings and does not go on to mention any more details of other individuals' feelings or responses, then rate it only as a self-statement, i.e., negative/ emotion/ self for the example given above. If however, the context of the segment clearly makes references to others, then give the segment two ratings, i.e., negative/emotion/self and negative/emotion/ others.

Dispositional/ trait statements about the self.

A disposition/ trait statement about the self refers to statements the participant makes that are descriptive of his or her perceived personality traits. For example, statements might contain references to the participant being honest, outspoken, genuine, generous, or shy. The interpretation must imply that these qualities are perceived as relatively stable qualities of the participant's general character rather than qualities which are more transient or state-induced. The qualities described therefore, should be contained within statements that imply an enduring nature e.g., "I am..."; "I've always been..."; "I'm the type of person who..."; "It's my nature to be...."

Positive Dispositional/Trait Statement/Self (+DIS) e.g., "I am an honest and hardworking person. As a result, I have succeeded in what I do."

Negative Dispositional/Trait Statement/Self (-DIS) e.g., "I'm basically a lazy person . . . always looking for the easy way out. I wish I could change that, but it is very difficult."

Table 2.0: Coding Examples: Dispositional Words

stupid	perfect	fatalist	loyal
mistrusting	curious	perfectionist	confrontational
doer	optimist	open	honest
survivor	protector	empathic	assertive
realistic	vocal	outspoken	dedicated
professional	calm	cool	collected
crazy	strong	humorous	high achiever
argumentative	unapproachable	coward	worrier
protective	defensive	spiritual	defeatist
quitter	strong	serious	ambitious

The writer acknowledges that using the word "disposition" may be somewhat confusing, as one's disposition is made up not only of one's perceived qualities or traits, but also emotional and behavioral responses, and attitudes and values formed over a lifetime. However, as this term has been used throughout the study thus far, to define those statements or inferences that describes personality traits, you are requested to accept this term as representative of personality traits rather than the other three components being considered, i.e. behavior, emotion, attitude/ value.

Emotional statements about the self.

An emotional statement about the self refers to statements the participant makes that are descriptive of his or her emotional state in regards to the stressful event. For example, statements might contain references to the participant being angry, happy, disgusted, sad, or frustrated. The interpretation must imply that these qualities are more transient or state-like rather than qualities which are relatively stable qualities of the self-schema, i.e., traits/ dispositional.

Positive Emotional Interpretation/ Self (+EIS) e.g., "In the end, I was happy with my new position."

Negative Emotional Interpretation/ Self (-EIS) e.g., "I was angry with myself for not doing something more."

Table 3.0	Coding Examples: Emotion Words		
uptight	overwhelmed	agitated	mad
fragile	uncomfortable	tired	happy
feel badly	mourn	angry	grateful
make light of	cheezed off	stressed	anxious
explode	miserable	stagnating	taken aback
shocked	frustrated	upset	humiliated
resentful	burnt out	in pain	hurt
sad	discouraged	doubtful	devalued
apprehensive	vulnerable	guilty	annoyed
torn to pieces	annoyed	exasperated	surprised
threatened	jealous	make light of	distressing
grieving	defeated	cranky	powerless
exhausted	scared	draggy	fed up
bothered	spiritual	mad	panicked
anxious	helpless	bitter	pleased

Behavioral statements about the self.

A behavioral interpretation about the self refers to statements the participant makes that are descriptive of their behaviors or actions at the time of the stressful event. For example, statements might contain references to the participant avoiding people, trying to communicate their ideas, sleeping more than usual, or talking to friends and family for emotional support.

Positive Behavioral Statement/Self (+BIS) e.g., "I broke the ice in the meeting by being the first to voice my concerns."

Negative Behavioral Interpretation/Self (-BIS) e.g., "I found that the more stressed I became the more I ate."

Table 4.0

Coding Examples: Behavioral Words

aggressive	bother	betray	backbite
express	learn	remove	lecture
procrastinate	prioritize	support	rude
obnoxious	gave everything	proactive	over-involved
threatening	tossed aside	vented	rally around
helped	approached	used	stood my ground
offensive	prove	retreat	unavailable
fighting	grumbled	resolve	share
spoke with	backstabbed	inquired	stayed with

Attitude/ value statements about the self.

An attitude/ value statement about the self refers to statements the participant makes that are descriptive of his or her own attitudes or values in relation to the stressful event. For example, segments might contain statements that the participant believes in doing the "right thing", that he or she was raised to be honest with others, or that he or she cannot tolerate political positioning.

The statement should imply that these attitudes or values represent a more general, all-encompassing way of viewing situations or events in life. It is very important that the attitude or value be judged positive or negative by virtue of how the participant presents it. Be careful not to apply societal norms to these statements, or to be subjective in your appraisal of them. For example, a statement of "I don't believe in always telling the truth" must be judged positive or negative in relation to the context of the participant's narrative only rather than the rater's opinion or belief as to whether this is a positive or negative attitude/ value.

It is very difficult to provide examples of single words that will assist you in identifying these segments and as such, none will be provided. You will find that these segments will communicate to you a "position" or "stand" that the participant has taken in the situation they are describing. You will need to look for statements that communicate a sense of "I've always believed in...", "I was raised to think that...", "In our family we valued...", "I try to teach my children...", etc. You may have difficulty here separating disposition/ trait statements and attitude/ value statements. In order to decide, try to use the context around the statement. For example, if the context supports it, "I am a dedicated person" would be rated positive/ disposition/ trait, whereas "I have always believed in giving 100% effort no matter what" would be coded as a positive/ attitude/ value self-statement.

Positive Attitude/ value Statement/ Self (+AVIS) e.g., "I have always believed in doing more rather than less for someone else. I'm proud of that about myself."

Negative Attitude/ value Statement/ Self (-AVIS) e.g., "I've hated my job for some time now... nothing I do seems to change that."

B. Contextual Inferences

All inferences posited by the participants that: (a) contain attributions about the context in which their stressful event occurred, and (b) which are used

to explain the rating of the particular coping strategy under examination to deal with their stressful situation. In coding a contextual inference, the statements are related to the external environment of the participant.

The contextual inferences are subdivided into two subgroups: (a) others, and (b) the situation. "Others" refers to another person(s) who are identified by the participant as involved (directly, or indirectly) in the stressful event of the participant. "Situation" refers to physical aspects (e.g., the size of the workplace) or organizational aspects (e.g., the decision to merge two nursing units) of the environment which the participant feels are important in contributing to their stressful event. Again, the position from which the inference will be judged as either negative or positive, will be from the viewpoint of the participant.

(i) Others:

Dispositional/ trait inferences about others

A disposition/ trait inference about others refers to statements the participant makes that are descriptive of the perceived personality traits of others involved in the stressful event identified. For example, statements might contain references to the other(s) being honest, outspoken, genuine, devious, or shy. The inference must imply that these qualities are relatively stable qualities of the other person(s) rather than qualities which are more transient or state-like, i.e., emotions.

Positive Dispositional Inference/ Others (+DIO) e.g., "Our manager is an honest and hardworking person."

Negative Dispositional Inference/ Others (-DIO) e.g., "The other nurse is basically a lazy person . . . always looking for the easy way out."

Emotional inferences about others.

An emotional inference about others refers to statements the participant makes that are descriptive of other persons' emotional states at the time of the stressful event. For example, statements might contain references to the other(s)

being angry, happy, disgusted, sad, or frustrated. The inference must imply that these qualities are more transient or state-like rather than qualities which are relatively stable qualities of the self-schema, i.e., disposition/trait.

Positive Emotional Inference/Others (+EIO) e.g., "My new manager was very happy with the changes."

Negative Emotional Inference/Others (-EIO) e.g., "She was angry because I didn't know the procedure."

Behavioral inferences about others.

A behavioral inference about others refers to statements the participant makes that are descriptive of another person's behaviors or actions which impact directly, or indirectly, on the participant's stressful situation. For example, statements might contain references to other persons avoiding people, holding meetings to communicate ideas, or making decisions without consultation.

Positive Behavioral Inference/Others (+BIO) e.g., "My husband was always there to listen."

Negative Behavioral Inference/Others (-BIO) e.g., "As soon as the shift was over she would disappear as fast as she could."

Attitude/value inferences about others.

An attitude/value inference about another person(s) refers to statements the participant makes that are descriptive of others' attitudes or values related to the stressful event. For example, statements might contain statements that the other person tried to what was best in the situation, that he or she did not appreciate the staff's efforts, or that he or she were part of a political conspiracy. The inference must imply that these attitudes or values represent a more general, all-encompassing way of viewing situations or events in the other person's life. Remember to code these statements as positive or negative according to the participant's perspective, and not your own.

Positive Attitude/ value Inference/ Others (+AVIO) e.g., "Our work group has always believed in watching out for one another."

Negative Attitude/ value Inference/ Others (-AVIO) e.g., "Management doesn't care about any of us anymore."

(ii) Situation:

A situational inference refers to those statements the participant makes about physical aspects or organizational factors that directly, or indirectly affect their identified stressful situation

Positive Situational Inference (+SI) e.g., "The physical layout of the new unit allows us to work better as a team. It facilitates our communication with one another."

Negative Situational Inference (-SI) e.g., "We are working so short-staffed now it is unsafe for patients. It's something we have no control over."

Overview of Coping Items

Participants in the study were asked to rate 16 coping strategies as they related to a personal stressful event, and then to give reasons why they would rate the coping strategy in the way indicated. Two coping strategies were selected from each of the eight coping scales found in the WCQ. Sixteen items were selected by virtue of having the first and second highest factor loading for each scale. Each of these strategies are described below to help guide you in coding the segments. Appendix C.1 summarizes the sixteen coping strategies used, the coping scale they were drawn from, the default code, and contradictory code for each.

Stood my ground and fought for what I wanted.

This strategy falls within the coping scale of "confrontation" and defaults as a positive behavior. This reflects the position that the individual made an aggressive effort to change the situation, and implies a level of risk-taking. Not engaging in this coping strategy would contradict the default rating only if the person felt that standing ground would be detrimental in some way, to himself or herself or others (positive/ behavior/ self). In other instances, in support of not standing their ground participants may make references to feeling apathetic (negative/ emotional/ self), that the situation was not anything that they felt they could control (negative/ attitude/ self), or that organizational decisions could not be negotiated (negative/ situation). In these last three examples, however, participants would retain a default code of negative/ behavior/ self.

Made light of the situation; refused to get too serious about it.

This strategy falls within the coping scale of "distancing" and defaults as positive emotion. This reflects the position that participants made attempts to cope with the situation by detaching themselves somewhat, perhaps by not catastrophizing (positive/ attitude/ value/ self), or using humor (positive/ behavior/ self). Statements about hope may also appear (positive/ attitude/ value/ self). However, the default code may be changed participants did not use the strategy because by doing so it would have had negative consequences for themselves, or others. For example, a situation in which patient safety was an issue might not allow a nurse to make light of the situation or take it seriously. In this situation, the strategy would be rated positive/ emotional/ self. Again, in the narrative one might see statements indicating a negative situation exists, or that there are behaviors and/ or attitudes on the part of other people that the participant perceives as negative.

I tried to keep my feelings to myself.

This strategy falls within the coping scale of "self-controlling" and defaults as a negative emotion. This reflects the position that people make attempts at self-regulating their feelings and emotions, and that in many situations it might be helpful to communicate what those feelings and emotions are to others,

negative or positive. Doing so may result in the situation being affected in a positive way, or may help the person to feel better. The default rating may be contradicted, however, if the participant feels in some way that the expression of his or her feelings or emotions would have negative consequences. For instance, a nurse working a night shift recognizes that the unit is seriously understaffed and feels that that presents a risk to patients' safety. As a result the nurse may feel that he or she must contain feelings of fear or anxiety until the situation is resolved. The nurse may be doing this in order not to create anxiety on the part of the patients. In this instance, keeping one's feelings to oneself is perceived as serving a positive function and would therefore be rated positive/ emotional/ self.

Talked to someone to find out more about the situation.

This strategy falls within the coping scale of "seeking social support" and defaults as a positive behavior. This reflects the position that the participant has made efforts to enlist the help of others in order to deal with the stressful event. Someone who is unable to do so may feel alienated (negative/ emotion/ self), unsupported (negative/ behavior / others), or may describe aspects of the situation which prevents one from seeking others out for help (negative/ situation). Again, not talking to someone would contradict the default code only if the participant made a case that doing so would bring about harmful consequences for himself, herself, or others.

Criticized or lectured myself.

This strategy falls within the coping scale of "accepting responsibility" and defaults as a positive attitude/ value. This reflects the position that these activities are done with a view to improve oneself, or understand one's actions. However, this could be scoped negative if the participant expresses the view that criticizing and lecturing is a very negative endeavor and that it has negative consequences for himself, herself, or others.

Wished that the situation would go away or somehow be over with.

This strategy falls within the coping scale of "escape-avoidance" and defaults as negative emotion. This reflects the position that this strategy is used to avoid rather than deal directly with the situation. This may be because of the participant feeling hopelessness about the situation (negative/ emotion/ self), in which case the participant is likely to make negative contextual inferences. The participant may also make references to needing to resort to this because there is the perception that he or she has no power or control in the situation (negative/ attitude/ value/ self).

I knew what had to be done, so I doubled my efforts to make things work.

This strategy falls within the coping scale of "planful problem-solving" and defaults as a positive behavior. This reflects the position that the participant tries to actively address the stressful situation in order to bring about some positive change. Again, negative contextual inferences may accompany a participant's statements that this strategy was not used, again reflecting a sense of hopelessness, or apathy.

Changed or grew as a person in a good way.

This strategy falls within the coping scale of "positive reappraisal" and defaults as a positive attitude/ value/ self. This reflects the position that some good may come out of even the worst situation, and may be representative of an individual's sense of hope, positive self-esteem and need for mastery in stressful situations.

Tried to get the person responsible to change his or her mind.

This strategy falls within the coping scale of "confrontation" and defaults as positive behavior. This reflects the position that the participant engaged in some active behavior in order to alter the stressful situation or gain support. Not trying to get the person responsible to change their mind could receive a positive rating in situations where doing so might have negative consequences for himself or herself or others, or perhaps in situations where the participant agrees with the person responsible and does not want to change the person's mind, even though the decision might later present difficulties. An example of this might be

an administrator who agrees with and participates in the plan for a hospital's reorganization, yet whose position is ultimately effected as a consequence of those proposed changes.

Went on as if nothing had happened.

This strategy falls within the coping scale of "distancing" and defaults as negative emotion. This reflects the need for the participant to detach oneself from the stressful event in order to carry on. It may involve an element of denial, or a refusal to become involved. Using this strategy may be changed to a positive rating, if the person makes a case for doing this in order to avoid any negative consequences. For example, a nurse who has a fight with the Head Nurse which does not get resolved, but who must then attend to patient's needs, may state the need to go on "as if nothing happened" in order for anger not to disturb the patients or interfere with their care.

Kept others from knowing how bad things were.

This strategy falls within the coping scale of "self-controlling" and defaults as a negative emotion. This may reflect the participant's difficulty in communicating concerns with others which might prevent the participant from getting support or assistance. This might be scoped positively, however, if the participant feels that not sharing concerns has some positive consequences for others, and thereby feels good about not doing this. An example of this might be a Head Nurse who does not prematurely communicate to the staff anxieties he or she feels about impending organizational changes in order not to cause undue distress to the nurses on the unit.

Talked to someone who could do something concrete about the problem.

This strategy falls within the coping scale of "seeking social support" and defaults as positive behavior. This reflects the participant's need for achieving informational, tangible, or emotional support from colleagues. Not doing so may reflect a sense of apathy, hopelessness, or anger on the part of the participant. Segments may contain references to negative contextual factors that contribute to the participant not using this strategy.

Realized I brought the problem on myself.

This strategy falls within the coping scale of "accepting responsibility" and defaults as positive attitude/ value/ self. This reflects the participants desire to understand how he or she may have contributed to the problem, and to correct the situation if possible. The need to have mastery in stressful situations often allows individuals to seek out elements of the situation that can be acted upon. Situations in which this does not occur, will often involve contextual segments rated negatively which communicates that the problem may have originated from decisions taken by others of which the participant had no input or control.

Hoped a miracle would happen.

This strategy falls within the coping scale of "escape-avoidance" and defaults as negative behavior. Similar to the strategy of "wishing the situation away", these strategies suggest the participant's efforts to escape or avoid the problem. As described by Folkman and Lazarus (1988) strategies labeled "escape-avoidance" differ from strategies labeled "distancing" in that the latter suggests more detachment rather than avoidance. As such, participants may not use more concrete, effective strategies for bringing about change. While the participant may state that this strategy was used (resulting in an initial default code of negative/ emotional) the person may go on to describe that it is only part of his or her repertoire for dealing with the stressful event (e.g., more effective and direct strategies). "Hoping a miracle would happen" might, therefore, be a last resort coping strategy, a kind of "when all else fails" approach, and as such the default rating would be changed to positive/ emotional/ self.

I made a plan of action and followed it.

This strategy falls within the coping scale of "planful problem-solving" and defaults as positive behavior. It reflects the participant's deliberate problem-focused efforts to correct, or deal with the stressful situation combined with an analytic approach (Folkman & Lazarus, 1988). Not using this strategy may reflect the participant's feelings of powerlessness, apathy, or anger. Not using the strategy would be rated positive only if the participant makes a convincing case

that using it would result in negative consequences for himself, herself, or others.

I came out of the experience better than when I went in.

This strategy falls within the coping scale of "positive reappraisal" and defaults as positive attitude/ value. Similar to "changed or grew as a person in a good way" this strategy reflects the participant's need to create a positive meaning from the situation by focusing on personal growth (Folkman & Lazarus, 1988). Elements of hope and spirituality may be referred to. It is likely that you will come across negative/ contextual inferences in those transcripts where the participant feels that he or she did not come out of the experience better than when he or she went in.

Conclusions

This manual has attempted to provide guidelines for coding the transcripts you have been given. As mentioned earlier, the categories form "fuzzy-sets", as the concepts we are trying to quantify are very complex. However, by consistently coding the segments according to the guidelines provided for the various categories, we will hopefully be able to see if any significant patterns exist in the responses of participants to self-report inventories such as the Ways of Coping Questionnaire (Folkman & Lazarus, 1988b).

Appendix C.2 provides a section of a pilot transcript in which codes have been assigned.

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Appendix F.1

Default Coding System (DCS)

Coping Strategy	Scale (WCQ)	Default*	Contradictory**
1. Stood my ground and fought for what I wanted.	Confrontation	+Behavior/Self	-Behavior/Self
2. Made light of the situation; refused to get too serious about it.	Distancing	+Emotion/Self	-Emotion/Self
3. I tried to keep my feelings to myself.	Self-Controlling	-Emotion/Self	+Emotion/Self
4. Talked to someone to find out more about the situation.	Seeking Social Support	+Behavior/Self	-Behavior/Self
5. Criticized or lectured myself	Accepting Responsibility	+Att/Val/Self	-Att/Val/Self
6. Wished that the situation would go away or somehow be over with.	Escape-Avoidance	-Emotion/Self	+Emotion/Self
7. I knew what had to be done, so I doubled my efforts to make things work.	Planful Problem-Solving	+Behavior/Self	-Behavior/Self
8. Changed or grew as a person in a good way.	Positive Reappraisal	+Att/Val/Self	-Att/Val/Self
9. Tried to get the person responsible to change his or her mind.	Confrontation	+Behavior/Self	-Behavior/Self
10. Went on as if nothing had happened.	Distancing	-Emotion/Self	+Emotion/Self
11. Kept others from knowing how bad things were.	Self-Controlling	-Emotion/Self	+Emotion/Self
12. Talked to someone who could do something concrete about the problem.	Seeking Social Support	+Behavior/Self	-Behavior/Self
13. Realized I brought the problem on myself.	Accepting Responsibility	+Att/Value/Self	-Att/Val/Self
14. Hoped a miracle would happen.	Escape Avoidance	-Emotion/Self	+Emotion/Self
15. I made a plan of action and followed it.	Planful Problem-Solving	+Behavior/Self	-Behavior/Self
16. I came out of the experience better than when I went in.	Positive Reappraisal	+Att/Val/Self	-Att/Val/Self

* Rating of 'used somewhat', 'used quite a bit', or 'used a great deal'

** Rating of 'does not apply or not used'

Appendix F.2

Examples of coding categories applied to a pilot transcript

#1 Stood my ground and fought for what I wanted.

That's a quality that I really admire in people.

Descriptive

It..you say stood my ground and I think of someone who has a lot to say and who is steady and certain and it..

Descriptive

it's just a nice quality.

Degree Marker

It's always someone who is not ambiguous and you know where they are . . .

Positive/Disp/Other

and fought for what I wanted . . .

Deliberation

I think you can really go far by saying what you think and by meaning what you say and by not being wishy-washy.

Positive/Att/Val/Self

I . . . as I think about my friendships,

Deliberation

I tend to surround myself with people who are a lot more upfront, a lot more forthright, than the people who are the wishy-washy, namby-pambies of this world.

Positive/Beh/Self

Uumm . . . I use it quite a bit . . .

Degree Marker

sometimes I chicken out,

Negative/Beh/Self

I think that if I think about it, but I would probably rate it a 2, I would say that I do use this type of thing a bit. (Default Code)

Positive/Beh/Self

(Int: Remember you are responding to how you might have used these items in response to that narrative . . . rather than coping in general).

Yes, and I did.

Degree Marker

In response to that narrative I did.

Degree Marker

I was one of the people that actually turned around and mentioned something to the.. what was he . . . I guess he was the (x),

Positive/Beh/Self

he's one of the high-ups, he's at the top of this whole conspiracy theory . . .

Negative/Beh/Other

and I had a question and I asked it in this meeting and what came out of it was . . .

Description

hhaaaahhh . . .

Description

and initially I though 'Oh my God what did I say' and I was completely stressed out . . .

Negative/Emot/Self

all I could think was 'Oh my God don't let
your voice shake whatever you do don't
let your voice shake'

Degree Marker

but I was so angry when I asked the question,

Degree Marker

I was so upset because they were being so
devious and so garbagy

Negative/Beh/Others

that I thought "I can't do this" . . .

Positive/Att/Val/Self

I just, even though it might cost me my job,

Degree Marker

and even though it might increase the
stress levels,

Degree Marker

and even though there might be repercussions,

Degree Marker

I couldn't even think about it at that point . . .

Degree Marker

all I could think of was I'm known for saying
what I have to say so I'm going to say it.

Positive/Disp/Self

But I felt like I was going to be attacked
afterwards,

Negative/Emot/Self

I was so nervous, I really was . . . I remember that
meeting very, very, very well . . . with that one.

Degree Marker

It was really something.

Degree Marker

I still would say I use it quite a bit . . . yeah . . .

Positive/Beh/Self

(Int: And you would rate it as?)

I would still rate it as a number 2.

Degree Marker

I use it quite a bit.

Degree Marker

I think there was a lot in that meeting that I
didn't say . . .

Negative/Beh/Self

why I didn't say it . . . I don't know . . .

Deliberation

I guess other people were talking at the time . . .

Description

or there was other points . . .

Description

or it was moving too fast . . .

Description

it was very hard to get a word in edgewise..

Description

in a lot of those meetings,

Description

they would be the takeover meetings,

Negative Situation

the ones where they were trying to plan what
we were all going to collaborate on . . .

Degree Marker

but aahh . . . I said what I had to say.

Positive/Beh/Self

Appendix F.3

Overview of Coding Categories for Scoring and Calculations for Converting to Proportions

Phase II Variable Definitions

I. Overview

A. Self-Statements and Contextual Inferences

This section describes self-statement and contextual variables (positive and negative) at two levels: (1) self, contextual, other, or situation (other and situation being subcategories of contextual) and (2) behavior, emotional, attitude/ value or total.

(i) Self-Statements

SELF B	Self-Statement Behavior
SELF E	Self-Statement Emotion
SELF A V	Self-Statement Attitude/ Value
TOT SELF	Total Self-Statement

(ii) Contextual Inferences

CON T B	Contextual Inference Behavior
CON T E	Contextual Inference Emotion
CON T A V	Contextual Inference Attitude/ Value
TOT CON T	Total Contextual Inference

(iii) Other Inferences

OTH E R B	Other Inference Behavior
OTH E R E	Other Inference Emotion
OTH E R A V	Other Inference Attitude/ Value
TOT OTH E R	Total Other Inference

(iv) Situation Inferences

SIT B	Situation Inference Behavior
SIT E	Situation Inference Emotion
SIT A V	Situation Inference Attitude/ Value
TOT SIT	Total Situation Inference

B. Positive and Negative Self-Statements and Contextual Inferences

This section describes self-statement and contextual variables at three levels: (1) self, contextual, other, or situation (other and situation being subcategories of contextual), (2) behavior, emotional, attitude/ value or total and (3) positive or negative.

(i) Positive and Negative Self-Statements

POSSTB	Positive Self-Statement Behavior
POSSTE	Positive Self-Statement Emotion
POSSTAV	Positive Self-Statement Attitude/ Value
TTPOSST	Total Positive Self-Statement

NEGSTB	Negative Self-Statement Behavior
NEGSTE	Negative Self-Statement Emotion
NEGSTAV	Negative Self-Statement Attitude/ Value
TTNEGST	Total Negative Self-Statement

(ii) Positive and Negative Contextual Inferences

POSCIB	Positive Contextual Inference Behavior
POSCIE	Positive Contextual Inference Emotion
POSCIAY	Positive Contextual Inference Attitude/ Value
TTPOSCI	Total Positive Contextual Inference

NEGCIB	Negative Contextual Inference Behavior
NEGCIE	Negative Contextual Inference Emotion
NEGCIAV	Negative Contextual Inference Attitude/ Value
TTNEGCI	Total Negative Contextual Inference

(iii) Positive and Negative Other Inferences

POSIOB	Positive Other Inference Behavior
POSIOE	Positive Other Inference Emotion
POSIOAV	Positive Other Inference Attitude/ Value
TTPOSIO	Total Other Inference

NEGIOB	Negative Other Inference Behavior
NEGIOE	Negative Other Inference Emotion
NEGIOAV	Negative Other Inference Attitude/ Value
TTNEGIO	Total Negative Other Inference

(iv) Positive and Negative Situation Inferences

POSSITB	Positive Situation Inference Behavior
POSSITE	Positive Situation Inference Emotion
POSSITAV	Positive Situation Inference Attitude/ Value
TTPOSSIT	Total Positive Situation Inference

NEGSITB	Negative Situation Inference Behavior
NEGSITE	Negative Situation Inference Emotion
NEGSITAV	Negative Situation Inference Attitude/ Value
TTNEGSIT	Total Negative Situation Inference

C. Proportional Positive and Negative Self-Statements and Contextual Inferences

This section describes self-statement and contextual variables at three levels: (1) self, contextual, other, or situation (other and situation being subcategories of contextual), (2) behavior, emotional, attitude/ value or total (these groupings are based on the classification of the coping items as explained previously on pg. **), and (3) positive or negative. In addition, the values have been transformed in order to allow for frequency analyses. This was necessary as there are more contextual inference categories than self-statement categories (10 as compared to 8).

(A) Proportional Positive and Negative Self-Statements

PNPSSTB	Proportional Positive Self-Statement Behavior
PNPSSTE	Proportional Positive Self-Statement Emotion
PNPSSTAV	Proportional Positive Self-Statement Attitude/ Value
PNTTPSST	Proportional Total Positive Self-Statement
PNNGSTB	Proportional Negative Self-Statement Behavior
PNNGSTE	Proportional Negative Self-Statement Emotion
PNNGSTAV	Proportional Negative Self-Statement Attitude/ Value
PNTTNGST	Proportional Total Negative Self-Statement

(ii) Proportional Positive and Negative Contextual Statements (Others and Situation)

PNPSCIB	Proportional Positive Contextual Inference Behavior
PNPSCIE	Proportional Positive Contextual Inference Emotion
PNPSCIAV	Proportional Positive Contextual Inference Attitude/ Value
PNTTPSCI	Proportional Total Positive Contextual Inference
PNNGCIB	Proportional Negative Contextual Inference Behavior
PNNGCIE	Proportional Negative Contextual Inference Emotion
PNNGCIAV	Proportional Negative Contextual Inference Attitude/ Value
PNTTNGCI	Proportional Total Negative Contextual Inference

(iii) Proportional Positive and Negative Other Inferences

PNPSIOB	Proportional Positive Other Inference Behavior
PNPSIOE	Proportional Positive Other Inference Emotion
PNPSIOAV	Proportional Positive Other Inference Attitude/ Value
PNTTPSIO	Proportional Total Other Inference
PNNGIOB	Proportional Negative Other Inference Behavior
PNNGIOE	Proportional Negative Other Inference Emotion

PNGIOAV	Proportional Negative Other Inference Attitude/Value
PNTNGIO	Proportional Total Negative Other Inference

(iv) Proportional Positive and Negative Situation Inferences

PNPSSIB	Proportional Positive Situation Inference Behavior
PNPSSIE	Proportional Positive Situation Inference Emotion
PNPSSLAV	Proportional Positive Situation Inference Attitude/Value
PNTTPSSI	Proportional Total Positive Situation Inference

PNNGSIB	Proportional Negative Situation Inference Behavior
PNNGSIE	Proportional Negative Situation Inference Emotion
PNNGSLAV	Proportional Negative Situation Inference Attitude/Value
PNTTNGSI	Proportional Total Negative Situation Inference

D. Other Variables used in Phase II

PosIII	Positive Illusions Total Score
TEMDIS	Temporal Distance
LS	Level of Stress
OPT1	Optimism Time 1
INTC1	Internal Control Time 1
INVUL1	Invulnerability Time 1
SP1	Self-Perception Time 1
OPTI2	Optimism Time 2
INTC2	Internal Control Time 2
INVUL2	Invulnerability Time 2
SP2	Self-Perception Time 2

II. Description of Coding Abbreviations used for Analyses

The following section further defines the variables summarized above, in addition to some other variables used in the Phase II analyses.

A. Self-Statements and Contextual Inferences

(i) Self-Statements:

SELFB	All positive and negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
SELFE	All positive and negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
SELFAV	All positive and negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TOTSELF	All positive and negative statements made about the self (disposition, emotion, behavior and attitude/ value) across all sixteen coping items.

(ii) Contextual Inferences:

CONTB	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
CONTE	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
CONTAV	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TOTCONT	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation across all sixteen coping items.

A. Self-Statements and Contextual Inferences

(i) Self-Statements:

SELFB	All positive and negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
SELFE	All positive and negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
SELFAV	All positive and negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TOTSELF	All positive and negative statements made about the self (disposition, emotion, behavior and attitude/ value) across all sixteen coping items.

(ii) Contextual Inferences:

CONTB	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
CONTE	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
CONTAV	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TOTCONT	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation across all sixteen coping items.

(iii) Other Inferences

OTHERB	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
OTHERE	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
OTHERAV	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TOTOTHER	All positive and negative inferences made about others (disposition, emotion, behavior and attitude/ value) across all sixteen coping items.

(iv) Situational Inferences:

SITB	All positive and negative inferences made about the participants situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
SITE	All positive and negative inferences made about the participants situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
SITAV	All positive and negative inferences made about the participants situation within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TOTSIT	All positive and negative inferences made about the participants situation across all sixteen coping items

B. Positive and Negative Self-Statements and Contextual Inferences

(i) Self-Statements:

POSSTB	All positive statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).

POSSTE	All positive statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
POSSTAV	All positive statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TTPOSST	All positive statements made about the self (disposition, emotion, behavior and attitude/ value) across all sixteen coping items.
NEGSTB	All negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
NEGSTE	All negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
NEGSTAV	All negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TTNEGST	All negative statements made about the self (disposition, emotion, behavior and attitude/ value) across all sixteen coping items.

(ii) Contextual Inferences:

POSCIB	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
POSCIE	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
POSCLAV	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TTPOSCL	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation across all sixteen coping items.

NEGCIB	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
NEGCIE	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
NEGCI AV	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TTNEGCI	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation across all sixteen coping items.

(iii) Other inferences:

POSIOB	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
POSIOE	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
POSIO AV	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16).
TTPOSIO	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) across all sixteen coping items.
NEGIOB	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).
NEGIOE	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).
NEGIO AV	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16).

TTNEGIO All negative inferences made about others (disposition, emotion, behavior and attitude/ value) across all sixteen coping items.

(iv) **Situation Inferences:**

POSSITB All positive inferences made about the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).

POSSITE All positive inferences made about the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).

POSSITAV All positive inferences made about the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16).

TTPOSSIT All positive inferences made about the participant's situation across all sixteen coping items.

NEGSITB All negative inferences made about the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15).

NEGSITE All negative inferences made about the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14).

NEGSITAV All negative inferences made about the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16).

TTNEGSIT All negative inferences made about the participant's situation across all sixteen coping items.

C. Proportional Positive and Negative Self-Statements and Contextual Inferences

(i) **Self-Statements:**

PNPSSTB	All positive statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15) converted to a proportion (POSSTB score divided by eight)
PNPSSTE	All positive statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14) converted to a proportion (POSSTE score divided by eight).
PNPSSTAV	All positive statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16) converted to a proportion (POSSTAV score divided by eight).
PNTTPSST	All positive statements made about the self (disposition, emotion, behavior and attitude/ value) across all sixteen coping items converted to a proportion (TOTPOST score divided by eight).
PNNGSTB	All negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15) converted to a proportion (NEGSTB score divided by eight).
PNNGSTE	All negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14) converted to a proportion (NEGSTB score divided by eight).
PNNGSTAV	All negative statements made about the self (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16) converted to a proportion (NEGSTAV score divided by eight).
PNTTNGST	All negative statements made about the self (disposition, emotion, behavior and attitude/ value) across all sixteen coping items converted to a proportion (TOTNEGST score divided by eight).

(ii) Contextual Inferences:

PNPSCIB	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15) converted to a proportion (POSCIB score divided by ten).

PNPSCIE	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14) converted to a proportion (POSCIE score divided by ten).
PNPSCIAY	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16) converted to a proportion (POSCIAY score divided by ten).
PNTTPSCI	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation across all sixteen coping items converted to a proportion (TOTPOSCI score divided by ten).
PNNGCIB	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15) converted to a proportion (NEGCIB score divided by ten).
PNNGCIE	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14) converted to a proportion (NEGCIE score divided by ten).
PNNGCIAY	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16) converted to a proportion (NEGCIAY score divided by ten).
PNTTNGCI	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) and the participant's situation across all sixteen coping items converted to a proportion (TOTNEGCI score divided by ten).

(iii) Other Inferences:

PNPSIOB	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15) converted to a proportion (POSIOB score divided by ten).

PNPSIOE	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14) converted to a proportion (POSIOE score divided by ten).
PNPSCIOV	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16) converted to a proportion (POSIOAV score divided by ten).
PNTTPSIO	All positive inferences made about others (disposition, emotion, behavior and attitude/ value) across all sixteen coping items converted to a proportion (TOTPOSIO score divided by ten).
PNNGIOB	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15) converted to a proportion (NEGIOB score divided by ten).
PNNGIOE	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14) converted to a proportion (NEGIOE score divided by ten).
PNNGIOAV	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) within the coping items classified as attitude/ value (items 5, 8, 13, 16) converted to a proportion (NEGIOAV score divided by ten).
PNTTNGIO	All negative inferences made about others (disposition, emotion, behavior and attitude/ value) across all sixteen coping items converted to a proportion (TOTNEGIO score divided by ten).

(iv) **Situation Inferences:**

PNPSSIB	All positive inferences made about the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15) converted to a proportion (POSSITB score divided by ten).
PNPSSIE	All positive inferences made about the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14) converted to a proportion (POSSITE score divided by ten).

PNPSSIAV	All positive inferences made about the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16) converted to a proportion (POSSITAV score divided by ten).
PNTTPSSI	All positive inferences made about the participant's situation across all sixteen coping items converted to a proportion (TOTPOSSIT score divided by ten).
PNNGSIB	All negative inferences made about the participant's situation within the coping items classified as behavior (items 1, 4, 7, 9, 12, 15) converted to a proportion (NEGSITB score divided by ten).
PNNGSITE	All negative inferences made about the participant's situation within the coping items classified as emotion (items 2, 3, 6, 10, 11, 14) converted to a proportion (NEGSITE score divided by ten).
PNNGSIAV	All negative inferences made about the participant's situation within the coping items classified as attitude/ value (items 5, 8, 13, 16) converted to a proportion (NEGSITAV score divided by ten).
PNTTNGSI	All negative inferences made about the participant's situation across all sixteen coping items converted to a proportion (TOTNEGSIT score divided by ten).

D. Other Variables used in Phase II

PosIII	Positive illusion variable. Additive total score of optimism, internal control, vulnerability (scores reversed prior to adding) and self-perception.
TEMDIS	Number of days between when the participant signed the consent form for Phase I and their participation in Phase II.
LS	Level of stress score recorded in Phase I pertaining to how stressful the participant perceived their narrative to be at that time.
OPT1	Score for optimism taken from the Life Orientation Test (Scheier & Carver, 1985) in Phase I.
INTC1	Score for internal control taken from Locus of Control Scale (Levenson, 1974) in Phase I.

INVUL1	Score for invulnerability taken from the Perceived Vulnerability Scale (Perloff and Fetzer, 1986) in Phase I.
SP1	Score for self-perception taken from the Self-Perception Questionnaire (Taylor and Gollwitzer, 1995) in Phase I.
OPT2	Score for optimism taken from the Life Orientation Test (Scheier & Carver, 1985) in Phase II.
INTC2	Score for internal control taken from Locus of Control (Levenson, 1974) Scale in Phase II.
INVUL2	Score for invulnerability taken from the Perceived Vulnerability Scale (Perloff and Fetzer, 1986) in Phase II.
SP2	Score for self-perception taken from the Self-Perception Questionnaire (Taylor and Gollwitzer, 1995) in Phase II.