Appraisal and Coping Processes: Relation to Symptoms of Depression

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Abstract

It has frequently been observed that stressful events precede the onset of variety psychopathologies including depression and anxiety-related disorders. Given the presumed relationship between appraisal processes, coping and depressive symptoms, a series of studies was conducted to evaluate the relationship between aspects of coping (e.g., profiles and strategies endorsed, flexibility of coping) and symptoms of depression. In addition, development of a novel measure of appraisal, the Appraisal of Ambiguous Situations Questionnaire (AASQ), was undertaken to help determine whether appraisal processes were related to depressive affect. Finally, increased levels of circulating cortisol resulting from stressors may represent a risk-factor for the development of several physical and psychological pathologies. Thus, salivary glucocorticoid levels were determined over the course of a day and in response to acute laboratory challenges to determine whether hormone levels varied with the severity of reported depressive symptoms, traumatic experiences and cognitive processes. As expected, heightened symptoms of depression were related to greater endorsement of emotion-focused strategies. Contrary to expectations, however, variability in coping and appraisals was positively associated with depressive affect. Finally, while symptoms of depression, as well as coping and appraisal processes were not associated with variations of neuroendocrine reactivity, individuals reporting six or more traumas exhibited markedly lower levels of cortisol shortly after awakening. These data suggest that the endorsement of certain coping strategies, in tandem with a disposition to appraise ambiguous events in a negative light may comprise a risk factor for the development of depressive states. While the significance of increased variability in coping and appraisals among

individuals displaying elevated symptoms of depression is unclear, it is possible that variable appraisals and endorsement of coping strategies in response to events with similar characteristics may favour the development of depressive symptoms. In effect, appraisals and coping variability in those with depressed mood may reflect an inconsistent, non-systematic response to stressors, rather than one that is thoughtful and planned. Finally, the present findings suggest that repeated encounters with traumatic events may evoke the down-regulation of neuroendocrine activity, possibly as an adaptive response to preclude potential adverse effects of chronically elevated levels of circulating glucocorticoids.

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General Introduction

Stressful events have been associated with a variety of behavioural and physiological pathologies. These have involved immune and cardiovascular disturbances (Cohen, Miller & Rabin, 2001; Sapolsky, 2001) as well as mood and anxiety-related disorders (Abramson, Seligman & Teasdale, 1978; Billings & Moos, 1982, 1985; Brown & Harris, 1978, 1989; Cui & Vaillant, 1996; Daley, Hammen & Rao, 2000; Dura, Stukenberg & Kiecolt-Glaser, 1990; Hammen, Mayol, deMayo & Marks, 1986, 1992; Monroe, Bellack, Hersen & Himmelhoch, 1983; Monroe & Depue, 1991; 1992; Monroe & Simons, 1991; Mundt, Reck, Backenstrass, Kronmuller & Fiedler, 2000; Paykel, 2001). In the case of severe trauma, symptoms of posttraumatic stress disorder (PTSD) may emerge (Anisman & Merali, 1999; Yehuda, 2002). While it is generally acknowledged that stressful life events (e.g., divorce, unemployment) can evoke episodes of major depression, the cumulative effects of day-to-day minor stressors may also contribute in this regard (Kanner, Coyne, Schaefer & Lazarus 1981; Monroe & Simons, 1991). Moreover, it should be considered that the impact of stressors may be contingent upon the characteristics of the stressor itself (e.g., severity, chronicity, predictability), the individual's ability to cope with the stressor, and experiential factors (e.g., previous trauma, early-life events) (e.g. Bifulco, Bernazzani, Moran, & Ball, 2000; Billings & Moos, 1985; Brown & Harris, 1989; Hammen, Davila, Brown, Ellicott & Gitlin, 1992; Kendler, Neale, Kessler, Heath & Eaves, 1992; Roy, 1985). In many instances, of course, stressors may not give rise to clinically significant illness, but may promote subsyndromal levels of these disorders (i.e., two or more depressive symptoms below the diagnostic criteria of minor depression, dysthymia or major depressive disorder) (Judd,

Akiskal & Paulus, 1997). Despite the absence of clinical levels of illness, subsyndromal pathology is not a benign condition as it may either reflect inherent vulnerability to pathology or it may contribute to the instigation of later pathology given recurrence of stressor events (sensitization) (Matheson & Anisman, 2003).

This investigation assessed the influence of appraisal and coping processes in the development of depressive symptoms. Specifically, it was of interest to explore the coping profiles and strategies associated with symptoms of depression and whether these coping profiles remained stable from general to specific situations. Furthermore, it was evaluated whether the coping strategies endorsed in a general context would be predictive of those endorsed in response to specific, hypothetical situations. In addition, this investigation assessed whether variability of coping (a potential indicator of coping flexibility) was related to symptoms of depression. As appraisal processes are fundamental to the perception of stressful events, the influence of this factor in response to a variety of scenarios was also assessed to determine whether such processes were related to depressive affect. Further, as appraisal and coping processes are intrinsically linked to one another, it was determined whether coping mediated the relationship between appraisals and depressive affect. Given that the endorsement of a particular coping strategy or combination of strategies generally follows the appraisal of an event, a fundamental determinant of flexibility in coping may be cognitive flexibility with respect to the appraisal of potentially stressful events. Accordingly, it was investigated whether flexibility in terms of appraisal was related to depressive affect, as well as whether variability of appraisals was related to variability of the endorsement of coping strategies. Finally, as heightened neuroendocrine activity may represent a risk-factor for the

development of a number of physical and psychological pathologies, glucocorticoid release was determined over the course of a day and in response to acute laboratory challenges (e.g., stressful images) to determine whether the hormone levels varied as a function of depressive affect, the number of traumas experienced by participants, as well as appraisal and coping processes.

Stressor Appraisal and Coping Processes

Coping

Coping has been conceptualized as those adaptive actions or cognitions which are undertaken to manage or eliminate stressful situations (Moos & Holahan, 2003). Embedded within this general construct, however, is the notion coping strategies can be classified into two general coping types; problem-focused and emotion-focused coping (Lazarus & Folkman, 1984). While problem-focused coping generally concerns those behaviours and thoughts aimed at altering the stressor itself, emotion-focused coping is geared towards reducing the emotional distress evoked by a stressor (Carver, Scheier & Weintraub, 1989; Folkman & Lazurus, 1980). Although most stressors frequently evoke both types of coping, stressors that are perceived as being controllable may be more likely to elicit problem-focused strategies, whereas stressors perceived as being outside of the individuals control are more likely to elicit emotion-focused coping strategies, including emotional expression, emotional containment, blame, withdrawal, denial, or passive resignation (Billings & Moos, 1982; Folkman & Lazarus, 1980). In addition to these two general coping categories, it seems that other strategies may be used to contend with stressors. Specifically, individuals may employ rumination, cognitive restructuring (re-evaluating the relation between the person and the threat), positive activity

(constructive or recreational activities), social support seeking (as a buffer or venting outlet), religion, and humor (Carver et al., 1989; Endler & Parker, 1994; Nolen-Hoeksema, Parker, & Larson, 1994; O'Brien & DeLongis, 1996). As will be discussed in ensuing sections, it may be important to consider that different coping strategies are used concurrently and/or sequentially, and the specific strategies endorsed may serve in an adaptive capacity.

Coping Styles and Strategies

Just as a distinction can be made between problem and emotion-focused coping strategies, it has been suggested that coping can be considered in terms of coping *styles,* which encompass an individuals preferred set of coping strategies for dealing with a wide range of stressors, and situational coping *strategies* that reflect an individual's preferred coping strategies for dealing with specific types of stressors (Carver et al., 1989; Carver & Scheier, 1994). To this end, while situational coping strategies are transient in nature and are influenced by contextual factors, coping dispositions ought to remain stable over time, reflecting long-standing personality, attitudinal and cognitive characteristics of the individual (Carver et al., 1989; Carver & Scheier, 1994; Moos & Holahan, 2003).

These divergent perspectives regarding coping have given rise to number of measures for assessing coping from several different perspectives. For example, instruments have been developed to assess coping in relation to specific variables (Quality of Social Support Scale, Goodenow, Reisine & Grady, 1990), particular illnesses (Mental Adjustment to HIV Scale, Ross, Hunder, Condon, Collins, & Begley, 1994; Mental Adjustment to Cancer scale, Osborne, Elsworth, Kissane, Burke & Hopper, 1999), discrete events (Folkman & Lazarus, 1988), or coping within specific subgroups

of individuals (Patterson & McCubbin, 1987). Moreover, as will be elaborated on shortly, other measures have been developed to assess general response styles (rumination, Nolen-Hoeksema & Morrow, 1991), or the full range of strategies that could be employed to deal stressful events (Amirkhan, 1990; Carver et al., 1989; Endler & Parker, 1990; Folkman & Lazarus, 1988; Moos, 1988).

Aligned with the suggestion that the individual's coping style or disposition provides the most valuable index of coping, Carver et al., (1989) developed the Coping Orientation to Problem Experience (COPE) inventory to determine how individuals generally approach stressful events. This measure comprises 15 strategies which are typically organized into problem-focused coping (e.g., planning), adaptive emotion-focused coping (e.g., humour) and finally, maladaptive emotion-focused coping (e.g., denial) (Moos & Holahan, 2003). In a similar manner, the Coping Inventory for Stressful Situations (CISS) (which was preceded by the Multidimensional Coping Inventory (MCI)) was developed Endler and Parker (1990; 1994) to assess the frequency with which individuals endorse particular coping strategies for dealing with stressful events. In general, the CISS yields a factor structure that reflects task-oriented, emotion-oriented and avoidance-oriented coping styles (Endler & Parker 1990; 1994; Moos & Holahan, 2003). Finally, Beckham and Adams (1984) developed the Coping Strategies Scale (COSTS) for assessing coping strategies among depressed individuals. This questionnaire asks participants whether or not they have performed a particular behavior or had a particular thought in the last 2 weeks, and how they felt afterwards (Beckham & Adams, 1984). Typically, the COSTS is comprised of nine subscales (e.g., problem-solving, cognitive restructuring, rumination) which can subsequently be reduced to the

following factors; emotional expression, emotional containment and general activity (Beckham & Adams, 1984).

As already alluded to, coping may also be approached from a contextual or situational perspective. Prime among the contextual approach to coping is the transactional model of stress and coping proposed by Lazarus and Folkman (1984). According to this model the impact of environmental challenges may be related to the individual's appraisal of a stressor, and the perceived availability of coping methods. Ordinarily, upon being confronted by an environmental challenge, an individual engages in appraisal or risk assessment, which entails an evaluation of the coping resources and options available, and hence the possibility of successfully contending with the insult. A given situation is perceived as stressful when the risk to well-being exceeds the available resources. Importantly, it is generally thought that appraisal, and the coping styles endorsed reflect dynamic and perpetually changing processes (Tennen, Affleck, Armeli, & Carney, 2000). An analysis of these processes is thus made difficult, and is hampered yet again as events perceived as stressful by one individual may not be appraised similarly by a second. Thus, one can imagine that the emotional and physiological responses elicited by a given stressor may likewise vary across individuals, as well as over time (Anisman & Merali, 1999).

Following from this theory of coping is the Ways of Coping Questionnaire (WOC) (Folkman & Lazarus, 1988), which assess the degree to which individuals endorse specific coping strategies in response to a specific, self-identified stressor. In general, this scale comprises eight subscales, six of which assess problem-focused coping, and two which reflect emotion-focused coping. Dissatisfaction with this

approach has been expressed (e.g., Endler & Parker, 1994), prompting the development of still other scales that not only consider a broader range of coping methods, but also focus more on situational factors. The Coping Response Inventory (CRI) developed by Moos et al., (1990) assesses the individuals appraisal of a specific stressor and then divides coping into approach and avoidance responses, as well as cognitive and behavioural coping (Moos & Holahan, 2003). As well, Carver & Scheier (1994) amended their COPE inventory to assess coping in response to specific situations. As with the dispositional version of the COPE, the situational COPE also groups coping strategies into problem-focused coping, adaptive emotion-focused coping and maladaptive emotion-focused coping (Moos & Holahan, 2003).

Primary and Secondary Appraisal

It is inappropriate to consider the relationship between coping and pathology without also considering the influence of appraisal processes. Appraisal has been defined as the cognitive interpretation or representation an individual assigns to a potentially stressful event (Lazarus & Folkman, 1984). While perceptions of a potential stressor can be aligned with specific dimensions of appraisal (e.g., threat, control, challenge, available coping resources), it has been suggested that these factors may actually reflect two fundamental interpretive processes; namely, primary and secondary appraisal (Lazarus & Folkman, 1984). Primary appraisal comprises perceptions associated with the impact of a potentially stressful event or stimulus. For example, the impact of a particular event may be perceived as benign (or even positive), and hence no immediate action may be deemed necessary (Lazarus & Folkman, 1984). Conversely, the event may be construed as stressful, and as such, additional interpretations may be evoked. These include the

potential for the event to induce harm, whether it threatens the individual, the degree of control the individual is able to exert over the stressor, and finally, whether it comprises a challenge (Lazarus & Folkman, 1984).

While primary appraisal is concerned mainly with the perceived impact of a stressful event, secondary appraisal encompasses those thoughts related to the resources available for successfully eliminating or attenuating the stressor (Lazarus & Folkman, 1984). For example, when confronted with sudden unemployment (an occurrence likely to be perceived as threatening or distressing), secondary appraisal would comprise an assessment of the financial resources available to deal with the stressor (e.g., employment insurance) relative to the demands of the individual's environment (e.g., mortgage payments). Thus, the apparent stressfulness of the event will depend, in part, on the degree to which the individual's perceived resources are able to meet these demands. Finally, it should be noted that primary and secondary appraisals may not always relate to one another in a consistent temporal manner (Lazarus & Folkman, 1984). Using the preceding example, if an individual is well-informed as to their financial resources prior to being laid-off and has made preparations for dealing with such an event, then the primary appraisal of the situation ought to be different than if they had not made such plans. Conversely, should the individual's preparations prove less-effective then anticipated, then primary appraisal of the situation may change once again.

Controllability

As indicated earlier, the perceived controllability of a stressor may influence both the appraisal of the stressor and the behavioural responses that are elicited (Lazarus & Folkman, 1984). Interestingly, most individuals overestimate the degree to which they are

able to exert control over otherwise chance events (Endler, Speer, Johnson & Flett, 2000). Indeed, levels of perceived control can vary greatly from that of objective control or the actual amount of control that the individual is able to apply to the stressor (Lazarus & Folkman, 1984). This "illusion of control" suggests that individuals are strongly motivated to believe that they are able to control aspects of their environment (Rodin, 1990). Given that individuals who perceive events as controllable are generally better able to deal with stressors through the adoption of problem-focused coping strategies, it should be considered that this illusory sense of control may reflect an adaptive process for dealing with challenges (Endler et al., 2000).

Perceived control can also be differentiated into a variety of subtypes. For example, behavioural control comprises the ability to affect a stressful situation through the initiation of some sort of action, whereas cognitive control can be conceptualized as the ability to affect the situation by using some sort of mental strategy (Cohen, Evans, Stokols & Krantz, 1986). Moreover, while decisional control entails some degree of choice over the coping strategies available for dealing with a stressor, informational control reflects the degree to which the individuals is able to predict and prepare for stressful events (Cohen et al., 1986). While each type of control appears to be effective in reducing distress arising from stressful events, cognitive control appears to promote the most beneficial outcomes (Cohen et al., 1986).

An individual's perceived *locus of control* may also have a profound impact upon coping and appraisal processes. For example, individuals who exhibit an internal locus of control may believe that they are endowed with primary control over events within the environment, and may be more apt to endorse the use of problem-focused strategies

(Fleishman, 1984). In contrast, an individual who subscribes to an external locus of control may be inclined to believe that it is primarily the environment itself or other individuals who wield control over events, and as such, emotion-focused strategies may be preferred (Fleishman, 1984). Importantly, when an individual's actions or coping responses do not result in the expected outcome, they may come to believe that they are unable to exert control or are helpless in the face of stressful events. As will be discussed shortly, perceived helplessness may have important ramifications for the pathogenesis of affective disorders, including depression.

Stress-Related Mental Illness

As indicated earlier, stressful events have been associated with a variety of pathological states. In this regard, the most often studied pathologies have been those of a psychological nature and have largely focused on depressive illness, anxiety disorders, and PTSD. Of course, it is difficult to disentangle these from one another as depression is often co-morbid with anxiety, and likewise, PTSD is often accompanied by both depression and anxiety. Moreover, PTSD shares some common neurochemical features with depression (e.g., elevated CRH levels) (Newport & Nemeroff, 2000;Yehuda, 2002), and successful treatment of PTSD has been realized using antidepressant medications (Davidson, 2003; Schwartz & Rothbaum, 2002) As will be seen in the ensuing section, several variants of stress-related disorders exist, and in some instances the symptom profile may comprise very different characteristics. Thus, it is difficult to determine the neurochemical processes that underlie these disorders. Conversely, different disorders may share underlying neurochemical processes making it difficult to discern what factors are most important in promoting the emergence of a particular pathological state.

Depression

As outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IVR, 1994), major depression is characterized by either a depressed mood or anhedonia that occurs in tandem with a variety of related symptoms including changes in body weight (increase or decrease), sleep disturbance (insomnia or hypersomnia), psychomotor retardation or agitation, fatigue, feelings of worthlessness or guilt, diminished cognitive functioning and recurrent thoughts of death. Importantly, however, major depression can be divided into two discrete subtypes; typical and atypical depression. While these depressive subtypes share common attributes (e.g., anhedonia and decreased affect), individuals affected by atypical depression exhibit characteristics distinct from that of the typical depressive profile. Specifically, unlike typical depression, atypical depression is characterized by heightened mood reactivity, reversed neurovegetative symptoms (hyperphagia, significant weight gain, hypersomnia), profound fatigue and heightened sensitivity to social rejection (Matza, Revicki, Davidson & Stewart, 2003).

Although a number of factors may facilitate the emergence of depressive symptoms, gender appears to be particularly important in this respect. Specifically, in comparison to men, women exhibit a two-fold increase in the risk for developing typical depression and a three-fold increase in the risk for developing atypical depression (Eaton et al., 1997). While the precise nature of the relationship between gender and depression remains to be fully elucidated, it has been suggested the hormonal differences, reactivity to psychosocial stress and coping responses (in particular, ruminative coping) may be important contributing factors (Eaton et al., 1997; Kendler, Thornton & Prescott, 2001; Nolen-Hoeksema, 1991).

Dysthymia, a subtype of depression, is characterized by persistent, low-grade depression that is accompanied by pronounced social-motivational deficits (Akiskal, 1990; Friedman, 1993). Although dysthymia is similar to major depression in a number of ways, neurovegetative and psychomotor symptoms are often attenuated (or even absent) among dysthymic individuals (Akiskal, 1990). It should be noted that in many instances, dysthymia may herald the emergence of major depression (double depression), or may appear following the resolution of a preexisting episode of depression (Akiskal, 1990; Keller & Sessa, 1990). Akin to major depression, dysthymia may also be differentiated into two subtypes; one which is tied to personality variables (character spectrum group) and one that is more closely tied to experiential and neurochemical processes (subaffective group) (Akiskal, 1990; Griffiths, 1999; Ravindran, Bialik & Lapierre, 1994). Pharmacological interventions used for major depression (e.g., SSRIs) also appear to be effective in treating dysthymia.

Posttraumatic Stress Disorder

Following exposure to a traumatic event (e.g., motor vehicle accident, rape, combat) a subset of individuals may develop symptoms of PTSD. In order to be diagnosed with PTSD, an individual must have been exposed to an event that evoked fear, helplessness or horror in response to the threat of injury or death (DSM-IVR, 1994). In addition, the individual must display three different types of symptoms, including reexperiencing the event (e.g., unwanted flashbacks or recollections of the event), avoidance of reminders of the event (e.g., avoiding where the event took place) and finally, hyperarousal (e.g., insomnia, hypervigilance) (Yehuda, 2002). While symptoms of distress immediately following a traumatic event may be aligned with diagnostic

criteria for acute stress disorder (i.e., peritraumtic stress), PTSD is characterized by symptoms that last for at least one month following the event (Yehuda, 2002). As with other psychopathologies, PTSD may be differentiated into a number of distinct subtypes; acute PTSD (symptoms which resolve in less than three months), chronic PTSD (symptoms which last in excess of three months), and delayed-onset PTSD (symptoms that begin at least six months after the traumatic event) (DSM-IV, 1994).

The development of PTSD may be influenced by a variety of factors. A key variable in this respect is exposure to a previous traumatic event, which may sensitize the individual to subsequent stressors (Yehuda, 2004). In addition, the perceived controllability, predictability and threat of the event, the intensity of the response to acute trauma, the extent to which attempts to avoid injury were successful, and finally the amount of actual loss following the event may also be important in this regard (Foa, Zinbarg & Rothbaum, 1992; Lane & Hobfoll, 1992; Yehuda, 2004). The nature of the stressor itself may also impact upon the development of symptoms of PTSD. Indeed, events that involve interpersonal violence appear to be more effective in eliciting PTSD than other types of trauma (e.g., natural disasters) (Yehuda, 2002). In addition, given that females demonstrate an increased prevalence of PTSD, gender may represent a risk-factor for the development of PTSD. Importantly, however, it is unclear whether this observation reflects a heightened genetic vulnerability to the development of PTSD or simply divergent appraisals of similar traumatic events among men and woman (Yehuda, 2002). Finally, while the risk for developing PTSD is greatest among those individuals who have experienced a traumatic event first hand, in certain instances indirect exposure (e.g., witnessing a traumatic event) may be sufficient to evoke symptoms of PTSD

(Green, 1995), and it was reported that institutional memory passed through generations may further act as a sensitizing agent that favours exaggerated behavioural and neurochemical responses to relevant stressor stimuli (e.g., Jews who are children of Holocaust survivors are themselves at increased risk for PTSD) (Baranowsky, Young, Johnson-Douglas, Williams-Keeler & McCarry, 1998; Yehuda et al., 2000, 2001).

Stress and Depression

A large body of evidence suggests that stressful events promote and prolong depressive episodes (Abramson et al., 1978; Billings & Moos, 1982, 1985; Brown & Harris, 1978, 1989; Cui & Vaillant, 1996; Daley et al., 2000; Dura et al., 1990; Hammen et al., 1986, 1992; Monroe & Depue, 1991; Monroe et al., 1983, 1992; Monroe & Simons, 1991; Mundt et al., 2000; Paykel, 2001). Importantly, several variables may impact upon the ability of stressful events to evoke symptoms of depression, including severity, duration, predictability and perceived controllability appear to be important in this respect. Similarly, events which are construed as representing a loss or withdrawal from the individual's social network or events that are perceived as humiliating and that devalue the individual's core characteristics appear to be particularly likely to trigger depressive episodes (Brown et al., 1987; Monroe & Depue, 1991; Roy, 1983, 1985; Kendler, Hettema, Butera, Gardner & Prescott, 2003). In contrast, however, events associated with anticipatory stressors appear to facilitate anxious states (Reno & Hillaris, 1990). Numerous studies suggest that experiential factors, including early life trauma, may also render an individual more vulnerable to negative outcomes following stressful events (e.g. Bifulco et al., 2000; Billings & Moos, 1985; Brown & Harris, 1989; Hammen et al., 1992.; Kendler et al., 1992; Roy, 1985). Finally, genetic factors may confer

increased susceptibility to depression following stressful events through both direct (e.g., receptor expression) and indirect (e.g., behaviour) means (Kendler et al., 1995; Kendler, Karkowski & Prescott, 1999). For example, it is well established that in rodents the parental style adopted by the dam can profoundly influence her offspring's reactivity to stressors in adulthood (Meaney & Francis, 1999). Essentially, behavioural changes evoked in the mother by environmental demands can elicit physiological changes in her off-spring, thereby affecting their later behaviors in response to stressors in an indirect or non-hereditary manner (Meaney, 2001).

While it is generally acknowledged that stressful events precipitate episodes of depression, the dynamics that govern this relationship are unclear (Monroe & Simons, 1991). It has been suggested that only those individuals who exhibit a marked vulnerability (genetic, experiential or otherwise) will be impacted negatively by stressful occurrences (Abramson, Alloy & Hogan, 1997). Conversely, it may be the case that low-stressor events are sufficient to evoke symptoms of depression in high-risk individuals, whereas high stressor events are necessary to promote depression in low-risk individuals (Abramson et al., 1997). Moreover, the stress generation model proposes that individuals who are vulnerable to depression make choices that expose them to an increased number of stressors, which in turn precipitates depressive symptoms (Daley et al., 1997; Monroe & Simons 1991). Alternatively, depressed individuals may not experience stressors with a greater frequency, but rather, they react more strongly (both physiologically and behaviourally) to these events. In this regard, the continual activation of allostatic processes (adaptive biological changes that attenuate adverse stressor reactions) may result in excessive wear and tear on these biological systems (allostatic overload),

culminating in the provocation of depressive episodes or a worsening of a preexisting condition through the deleterious actions of stress mediators (e.g., cortisol) (McEwen, 2000). Finally, depression itself may cause negative life events (Davidson et al., 2002). For example, difficulties which arise from the maladaptive interpersonal behaviour of the depressed individual may in itself lead to the dissolution of a marriage or the loss of employment.

Of particular interest is the notion that different processes may underlie the relationship between stressful events and early versus later episodes of depression (Lewinsohn, Allen, Seeley & Gotlib, 1999). It was proposed that the depressed individual becomes sensitized (both behaviourally and neurochemically) to the effects of stressful events and to bouts of depression (Lewinsohn et al., 1999; Post, 1992; 1996). In this "kindling" model of depression, it is suggested that with successive stressor experiences (or with repeated depressive occurrences), neurochemical disturbances are more readily instigated, thus favouring the recurrence of depressive episodes (Post, 1992, 1996). Ultimately, occurrences of depression are less contingent on the presence of psychosocial (and other) stressors or are elicited by events that would not ordinarily be interpreted as being stressful. Consistent with this notion, it was observed that early depressive episodes were preceded by stressful events, whereas later episodes appeared to evolve independently of any such events (Kendler et al., 2000; Kessler, 1997; Lewinsohn et al., 1999; Solomon et al., 2000). These data suggest that the sensitization of the stress-sensitive neurochemical systems following an initial stressful event or depressive episode may allow even relatively benign events to evoke symptoms of depression.

Stress, Appraisal and Depression

Not unexpectedly, negative appraisal biases have been implicated in depressive illness, as has the use of ineffectual coping strategies. In particular, cognitive models of depression suggest that vulnerability to depression and other affective disorders may be attributed to an interpretive bias that favours negative attributions and outcomes (Alloy, Abramson, Metalsky & Hartlage 1988; Beck, 1967; Lawson & MacLeod, 1999; Lawson, MacLeod & Hammond, 2002). The apparent controllability of a stressor may be especially important in this respect. For instance, it is well known that among infrahumans, uncontrollable stressors evoke behavioural disturbances (reminiscent of depressive states) that are not as readily induced by controllable stressors (Anisman & Merali, 1999). Some investigators have interpreted these differences to reflect the provocation of "learned helplessness" as animals learn that they have no control over their environment (Seligman & Maier, 1967). Following from this research, Alloy et al., (1988) proposed a Helplessness/Hopelessness model of depression and anxiety, in which the evolution of these emotional states is strongly influenced by the degree to which the individual perceives the outcome of the event to be within their control. In this context, anxiety and depression arise when a sense of helplessness predominates, such that the individual has an expectation that should further negative events occur, they will be uncontrollable (Swendsen, 1997).

It should also be considered that the attributions assigned to stressors (especially those which are deemed uncontrollable) might affect psychological well-being. Attributions for negative events have been characterized along three orthogonal dimensions; internal-external (e.g., is the stressful event due my own actions, or the

actions of others?), stable-unstable (e.g., are the effects of the stressful event long-lasting or temporary?) and finally, global-specific (e.g., can the effects of the event be generalized to a variety of contexts or simply to a narrow range of circumstances) (Abramson et al., 1978). It was suggested that the construal of negative, uncontrollable events as internal, stable and global may facilitate the development of depressive symptoms (Abramson et al., 1978). Interestingly, however, the effects of attributions regarding the internal causes of negative events can be differentiated into those of a characterological nature and those which are behavioural in origin (Brown & Siegel, 1982; 1988; Janoff-Bulman, 1979). For instance, while characterological self-blame (e.g., this happened to me because I'm a bad person) for a negative event was associated with an increase in depressive symptoms, behavioural self-blame (e.g., this wouldn't have happened had I been more careful) was negatively associated with depression (Janoff-Bulman, 1979; 1982; Peterson, Schwartz & Seligman, 1981).

As with depression, cognitive models have posited that anxiety is elicited when stimuli are appraised as being a threat to the individual (Lazarus & Folkman, 1984). It should be considered, however, that anxious mood states themselves (e.g., among those with high trait anxiety levels) might facilitate or prime the processing of environmental cues such that salience of potentially threatening information is further enhanced (MacLeod & Campbell, 1992). Finally, it may also be the case that these two processes act in concert with one another such that anxiety elicited by primary appraisals may provoke further anxiety through enhanced interpretational bias of subsequent information (Clark, 1986).

Stress, Coping and Depression

It will be recalled that the initial response to a stressor involves an appraisal process constituting, among other things, the assessment of whether the individual has the resources available to cope effectively with the stressor. From this perspective the controllability, or more correctly, the perceived controllability of a stressful experience will influence the nature of the coping strategies endorsed (e.g., problem-focused strategies in response to controllable stressors and emotion-focused strategies for uncontrollable stressors). Consistent with this hypothesis, affective disorders have frequently been associated with a reduction in the endorsement of problem-focused coping strategies, coupled with an increase in the use of emotion-focused coping strategies, as well as reduced cognitive restructuring and social support seeking (Endler & Parker, 1994; Holohan, Moos, Holahan & Cronkite, 1999; Matheson & Anisman, 2003; Ravindran et al., 1999, 2002; Zlotnick, Kohn, Keitner &Della-Grotta, 2000).

Similarly, we have observed comparable coping profiles in two recent investigations undertaken in our laboratory. In the first, which comprised a sample of 309 male and 421 female university students, it was observed that those with heightened symptoms of depression exhibited lower endorsement of a number of problem-focused strategies, including problem solving, cognitive restructuring, active distraction and avoidance. In contrast, greater severity of depressive symptoms was also associated with more frequent endorsement a variety of emotion-focused strategies that included rumination, emotional expression, other-blame, self-blame, emotional containment and passive resignation.

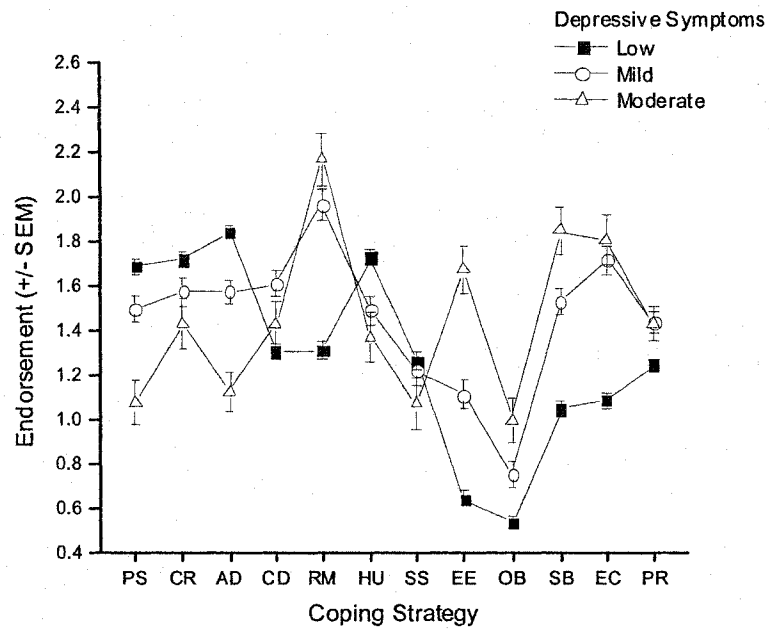


Figure 1. Coping profiles (*M* ±*SEM* of each strategy) of male and female participants reporting low, mild or moderate symptoms of depression. *Note.* PS = Problem-Solving, CR = Cognitive Restructuring, AD = Active Distraction, CD = Cognitive Distraction, RM = Rumination, HU = Humor, SS = Social Support Seeking, EE = Emotional Expression, OB = Other-Blame, SB = Self-Blame, EC = Emotional Containment, PR = Passive Resignation.

In the second study (Kelly, Matheson, Ravindran, Merali & Anisman, 2004) coping profiles were assessed in chronically depressed (dysthymic disorder) individuals (n = 56) versus nondepressed controls (n = 55), both before and after treatment with the antidepressant sertraline. The coping profiles of the dysthymic patients prior to treatment (i.e., in both those patients who were to receive placebo and those who were to receive sertraline) were markedly different from the comparison (non-dysthymic) group (see Figure 2). Specifically, as in the student population, the dysthymic patients endorsed significantly more rumination and emotion-focused coping, including emotional expression, other-blame, self-blame, and emotional containment. In addition, although

these participants were more likely to endorse cognitive efforts to distract themselves, they demonstrated less active behavioural distraction.

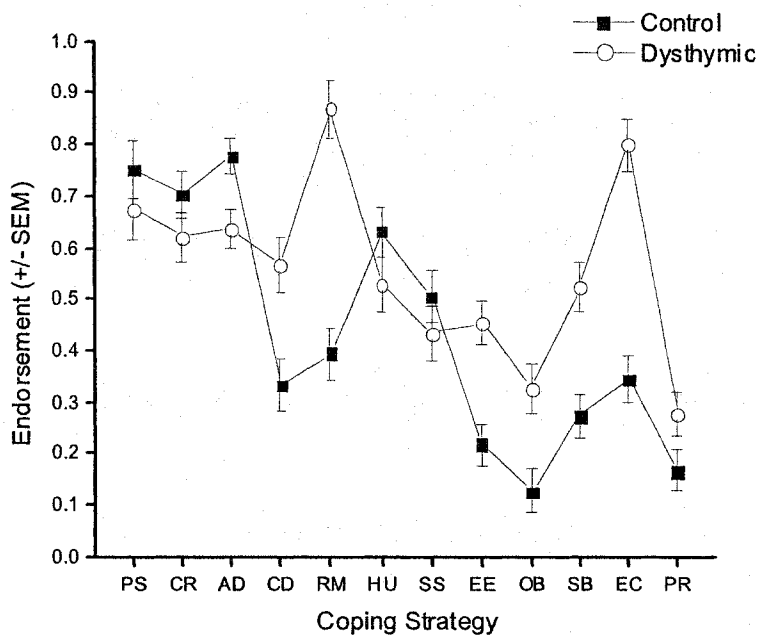


Figure 2. The coping strategies endorsed (*M* ±*SEM* of each strategy) among dysthymic patients prior to treatment relative to a non-depressed comparison group.

Following the 12-week treatment period, the profile of coping strategies endorsed by participants in the control group remained unchanged, suggesting that despite any life changes that may have occurred among these individuals, their coping methods were stable. The coping profiles among dysthymic patients who received placebo treatment likewise did not vary significantly over time. However, drug-treated patients demonstrated a significant change of coping profiles. Namely, as seen in Figure 3, following treatment, the levels of rumination declined markedly in these patients. They also showed significant reductions of emotion-focused strategies, including emotional expression, self-blame, and emotional containment.

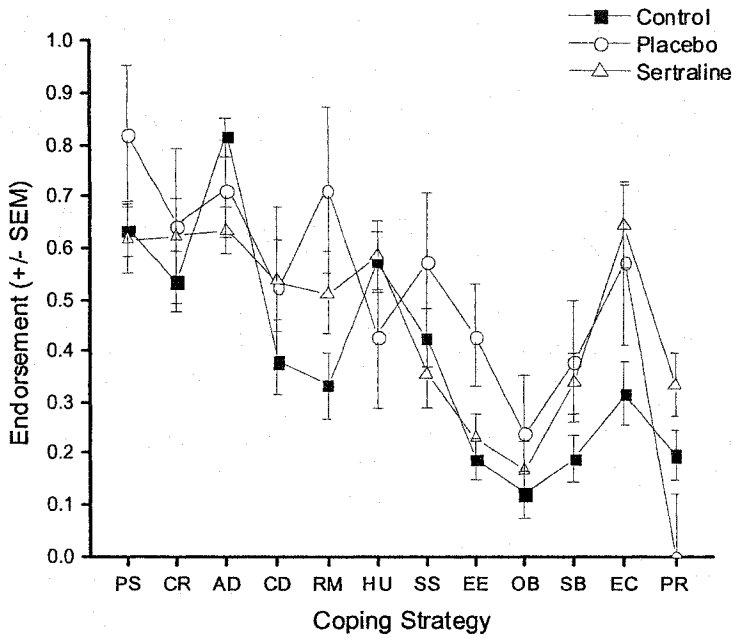


Figure 3. The coping strategies endorsed (*M* ±*SEM* of each strategy) among dysthymic patients following treatment with either sertraline or placebo for 12 weeks, relative to a non-depressed comparison group.

To further assess the effects of the treatment, coping changes were analyzed according to whether or not patients exhibited a positive treatment response (as defined earlier). In the main, where changes occurred they were common to both those who did or did not improve, in that, over time reduced levels of emotional expression, self-blame, and emotional containment were evident among both treatment responders and non-responders. Importantly, however, unique to the patients who showed an improvement was a substantial decline in the endorsement of rumination, along with an increase in cognitive restructuring (see Figure 4)

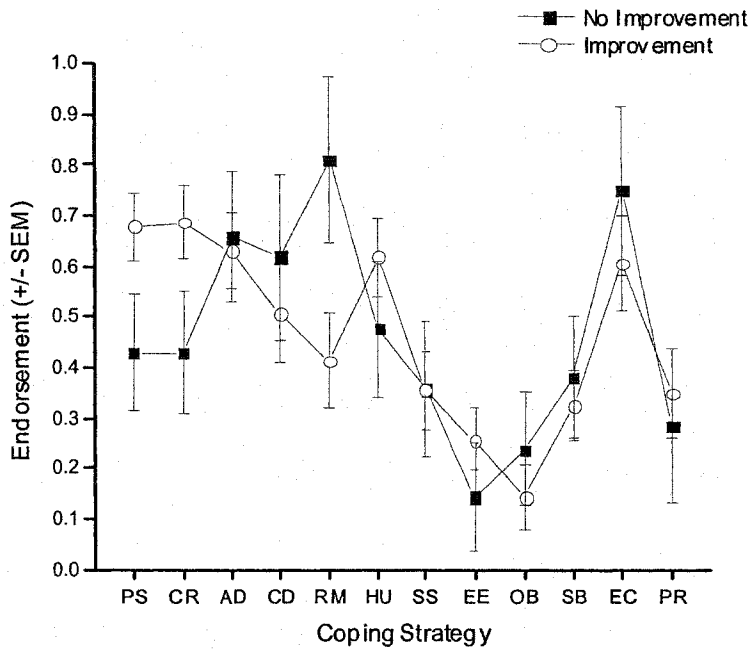


Figure 4. The coping strategies endorsed (*M* ±*SEM* of each strategy) among dysthymic patients demonstrating an improvement versus no improvement in depressive symptoms following treatment with sertraline for 12 weeks.

Ruminative coping (e.g., passively and repetitively focusing on both the level and meaning of the distress elicited by a stressful situation) appears to be fundamental in the provocation and preservation of depressive symptoms. Individuals who engage in ruminative coping worry excessively about their depression (Nolen-Hoeksema et al., 1994). For example, ruminative coping may include thinking excessively about one's symptoms (e.g., "I feel so lethargic and unmotivated"), the implications of one's depression (e.g., "What does this mean?") and finally, the consequences of one's mood ("What if I can't snap out of it?") (Nolen-Hoeksema et al., 1994). Importantly, ruminative coping may stem from uncertainty as to the perceived controllability of stressor (Lyubomirsky, Tucker, Caldwell & Berg, 1999). Generally, ruminators were more uncertain than non-ruminators about the solutions they generated for complex

problems (Ward, Lyubomirksly, Sousa & Nolen-Hoeksema, 1999). In effect, uncertainty may cause the ruminator to engage in a perpetual (as well as unproductive) analysis of factors within their environment (Nolen-Hoeksema, 1991). Finally, it has recently been suggested that ruminative coping may be differentiated into two functional subtypes; reflective pondering and brooding (Treynor, Gonzalez & Nolen-Hoeksema, 2003). While reflective pondering comprises a determined effort to employ cognitive problem-solving in hopes of reducing the negative effects of the stressor, brooding reflects a passive comparison of the individual's situation with an imagined normative state (Treynor et al., 2003). Importantly, these factors appear to differentially predict depressive symptoms, as well as mediate gender differences (Treynor et al., 2003).

Rumination may promote and prolong depressed and anxious mood states through a variety of means (Lam, Schuck, Smith, Farmer & Checkley, 2003; Nolen-Hoeksema & Davis, 1999; Nolen-Hoeksema, Morrow & Fredrickson, 1993; Young & Nolen-Hoeksema, 2000). For example, rumination may perpetuate symptoms of depression by facilitating negative thinking about the past, present and future (Lyubomirsky et al., 1993, 1998). Moreover, rumination may reduce the availability of social support to the depressed individual as friends and family grow tired of listening to ruminations (Nolen-Hoeksema & Davis, 1999). An important caveat, however, is that negative effects of rumination on mood states may be contingent on the types of coping strategies employed in conjunction with rumination. For example, while rumination in combination with self-blame may not be particularly helpful in resolving a stressful situation, rumination in conjunction with problem-solving strategies could, in fact, facilitate a positive-outcome (Matheson & Anisman, 2003).

Coping Flexibility

When exposed to a stressor, it is not uncommon for animals to narrow their range of defensive responses, such that species-specific defensive styles predominate (Bolles, 1970). Likewise, humans may also exhibit a decrease in the range of coping or adaptive responses elicited when confronted with a stressor. The coping strategy selected may also be based on past experiences in which it has proven to be successful, regardless of whether it is appropriate in the current situation (Anisman et al., 1991). Of course, if a particular strategy proves ineffective in adaptively responding to a challenge, then it would obviously be advantageous for the individual to adopt an alternative coping strategy or combination of strategies. However, under certain stressor conditions, cognitive functioning may be impaired, limiting the adoption of new responses (McEwen, 2000). Furthermore, stressors may preferentially evoke those coping strategies that are most salient to the individual (regardless of their efficacy), particularly as ambiguity or uncontrollability of the threat increases (Anisman & Waller, 1973; Bolles, 1970). Thus, it was suggested that flexibility in the use of coping strategies may be an important factor in the reducing the negative effects of stressors (Matheson & Anisman, 2003; Mattlin, Wethington & Kessler, 1990).

As the endorsement of a particular coping strategy or combination of strategies generally follows the primary appraisal of an event, a fundamental determinant of 'coping flexibility' ought to involve cognitive flexibility pertaining to the appraisal of potential stressors. For example, while some individuals may appraise certain situations as controllable and others as uncontrollable, there are those individuals who may be more rigid in their interpretations (e.g., "stressful events are always uncontrollable") (Cheng,

2001). As the apparent controllability of a stressor impacts upon the types of coping strategies adopted, cognitive flexibility may buffer against the negative impact of stressors. For instance, if an individual continually appraises stressful events as uncontrollable, they may frequently employ potentially maladaptive coping strategies (e.g., emotion-focused coping). Conversely, if an individual is able to demonstrate flexibility with respect to the perception of stressors (i.e., "not all stressors are uncontrollable") more adaptive coping strategies (e.g., problem-focused coping) may be utilized.

As with cognitive appraisals, individuals may exhibit flexibility with respect to coping strategies or groups of strategies endorsed (Matheson & Anisman, 2003). For example, it was demonstrated that among chronically ill individuals, coping profiles varied as a function of the stage of the disease (Affleck, Tennen, Pfeiffer & Fifield, 1987; Collins, Taylor & Skokan, 1990; Thompson, Sobolew-Shubin, Galbraith, Schwankovsky & Cruzen, 1993). Specifically, as patients came to discover that their original coping strategies provided little control over the progression of their illness, their coping efforts were shifted towards more controllable aspects of their condition (e.g., dealing with symptoms) (Aspinwall & Taylor, 1997). Similarly, different coping strategies were preferentially salient prior to an academic exam, in comparison to following the exam (Folkman & Lazarus, 1985). While problem-focused coping predominated in the period leading up the exam, the use of avoidant or emotion-focused strategies was favoured following the exam.

Given that coping strategies likely operate in tandem with one another, and that their relative efficacy may be influenced by their co-occurrence with other strategies, it

may be advantageous to consider the combination of coping strategies endorsed, as opposed to individual strategies (Tennen et al., 2000; Matheson & Anisman, 2003). As mentioned earlier, while the combination of particular strategies (e.g., rumination and self-blame) may not be particularly helpful in resolving a stressful situation, other combinations (e.g., rumination in conjunction with problem-solving) could be potentially beneficial., Similarly, while it may be advantageous to initially utilize a particular coping strategy (e.g., social support seeking) to assuage psychological distress, it may later prove advantageous to combine this strategy with other types of coping methods (Matheson & Anisman, 2003). Thus, individuals with a relatively broad range of coping strategies, who are able to use strategies in combination with one another, and who are able to modify these strategies as the situations demand, may be better suited to deal with stressful events. Conversely, among individuals with a narrow range of coping strategies, or in those who continue to utilize ineffective strategies, the negative impact of stressors may be more apparent (Matheson & Anisman, 2003).

However, it ought to be considered that under certain circumstances, reduced coping flexibility might reflect an adaptive pattern of coping. For instance, if an individual encounters a series of stressful events with similar characteristics, it may, in fact, be advantageous to continue to employ the same coping strategies if they had previously facilitated positive outcomes. Indeed, simply using a variety of coping strategies may not automatically confer resiliency in the face of stressors, as it is possible that the haphazard or inconsistent use of coping strategies across similar situations may lead to unexpected (and perhaps even negative) outcomes (Doering et al., 2001; Kohlmann, 1993)

Finally, it should be noted that many of the inventories employed to assess the endorsement of coping strategies are insensitive to the temporal relationship between coping strategies (Aspinwall & Taylor, 1997). Indeed, as the majority of these inventories simply ask participants to endorse all those coping strategies they have recently employed in relation to a stressor, scant information is available regarding the order in which these strategies were employed. Moreover, practical constraints make it difficult to assess the dynamics of strategy selection in response to stressors in a laboratory setting (Aspinwall & Taylor, 1997).

Neuroendocrine Response to Stressors

Hypothalamic-Pituitary-Adrenal (HPA) Axis

When confronted with an event or a stimulus appraised as stressful, a series of adaptive biological and behavioural responses are initiated in an effort to reduce or attenuate the potentially negative effects of the stressor (allostasis). These biological changes may be essential in order that the organism be prepared to respond effectively to impending as well as ongoing stressors, to react with appropriate emotional and behavioural responses, initiate and maintain effective defensive strategies, initiate processes that protect the organism from pathogenic stimuli, limit overreaction of other neurochemical systems that might themselves lead to pathology, as well as minimize the physical and psychological impact of the aversive stimuli (Anisman & Merali, 1999; Sapolsky et al., 2000).

A central and frequently examined aspect of the physiological response evoked by stressors is activation of the hypothalamic-pituitary-adrenal (HPA) axis. While this adaptive system responds to a host of stimuli, including psychological (e.g., predator),

physical (e.g., pain) and systemic (e.g., immune activation) stressors, they may do so through the activation of divergent neural pathways (Herman & Cullinan, 1997). Importantly, different psychogenic stressors may evoke the activation of highly specific neural circuits in a manner contingent on the nature of the stressor itself (Herman & Cullinan, 1997). The former (termed processive stressors) involve appraisal of the stimulus and the context in which this stimulus is presented, whereas systemic stressors may not involve similar appraisals (Anisman & Matheson, 2004; Herman & Cullinan, 1997).

Ordinarily, when a processive stressor is encountered, various brain regions may be activated. Some regions may subserve the development or elicitation of fear and/or anxiety (e.g., central amygdala and bed nucleus of the stria terminalis) (Davis & Shi, 1999), whereas others may be more important in the appraisal of the stressor (medial prefrontal cortex) (Davidson, 2002). Ultimately, likely through influences of the locus coeruleus being stimulated by forebrain structures, the paraventricular nucleus (PVN) of the hypothalamus is activated, giving rise to the release of corticotropin releasing hormone (CRH) from terminals located at the median eminence. This hormone stimulates the anterior pituitary, promoting the release of ACTH into circulation, which in turn provokes the release of cortisol (or corticosterone in rodents) from the adrenal cortex (Sapolsky et al., 2000). Cortisol is thought to play an integral role in facilitating adequate responses to stressful events, and may serve to prevent overshoot of immune reactions (Anisman & Merali, 1999, Sapolsky et al., 2000). Once corticoids are released into circulation, they may activate type 2, low-affinity glucocorticoid receptors (GR) which mediate glucocorticoid function under conditions of stress, as well as type 1, high-

affinity mineralcorticoid receptors (MR) on hippocampal neurons that mediate glucocorticoid function under basal conditions, or may directly influence hypothalamic activity at the level of the PVN, to restrict further glucocorticoid release (Sapolsky et al., 2000). Of course, HPA activity is influenced by multiple processes, including input from the amygdala nuclei and prefrontal cortex, which are sensitive to various attributes of stressor experiences (Herman & Cullinan, 1997; Sapolsky et al., 2000).

Glucocorticoids

Glucocorticoids are synthesized via enzymatic modification of cholesterol by cells in the zona fasciculata of the adrenal cortex (Funder, 1992). Once glucocorticoid synthesis has taken place, cortisol (or corticosterone) is rapidly secreted from the adrenal cortex in a pulsatile manner (Schmidt-Reinwald et al., 1999; Windle, Wood, Lightman & Ingram, 1998). Under non-stressor conditions, cortisol release follows a well-defined diurnal rhythm. In humans, glucocorticoid release, already high at awakening, rises during the ensuing 30-60 minutes, and decreases slowly thereafter (Linkowski et al., 1993; Schmidt-Reinwald et al., 1999). While this pattern appears to be independent of an individual's age, time of awakening, quality of sleep, physical activity or morning routine, it has been noted that factors including food-intake, gender and use of oral contraceptives may influence free cortisol levels (de Kloet, 1991; Schmidt-Reinwald et al., 1999).

Although it is well established that acute stressors generally provoke a transient increase of glucocorticoid release, the relationship between traumatic experiences and the diurnal pattern of cortisol release seems inconsistent in some regards. While it was observed that individuals who reported childhood maltreatment (Hart et al., 1996), poor-

relationship functioning (Adam & Gunnar, 2001), and increased workload (Caplan, Cobb & French, 1979) exhibited a flattened diurnal pattern of glucocorticoid release (i.e., lower levels of cortisol shortly after awakening and higher levels in the evening), other investigators reported more varied diurnal patterns in response to stressful events. For example, while it was reported that individuals who were chronically unemployed exhibited higher levels of cortisol following awakening, and lower levels of cortisol in the evening (Ockenfels, 1995), individuals suffering from burnout exhibited increased cortisol levels in both the morning and afternoon (Melamed et al., 1999). In contrast, however, teachers who reported high levels of burnout demonstrated lowered cortisol secretion upon awakening (Pruessner, Hellhammer & Kirschbaum, 1999). Finally, although financial strain was associated with low levels of cortisol in the evening (Grossi, Perski, Lundberg & Soares, 2001), analysis of the effects of job strain on diurnal cortisol yielded opposite results (Steptoe et al., 2000).

If appraisal processes are taken to be fundamental to the corticoid response to stressors, then it might seem intuitive that personality factors are important in moderating this response. Few studies, however, have examined this possibility, and in the main the findings have not provided unequivocal support for such a conclusion. In assessing the relationship between individual differences and the diurnal cycle of cortisol Smyth et al., (1997) found that individuals with a flattened cycle did not differ from those with a normal cycle or inconsistent cycle on a number of demographic, psychological and experiential variables. Similarly, Schommer, Kudielka, Hellhammer & Kirschbaum, (1999) found that free-cortisol patterns across a single day of measurement were

unrelated to high or low scores on scales which assessed extraversion, neuroticism or psychoticism.

Glucocorticoids and Depression

It has repeatedly been reported that major depression is associated with a marked increase of neuroendocrine activity (Plotsky, Owens & Nemeroff, 1998). This apparent up-regulation in the release of cortisol is often accompanied by increased levels of CRH, ACTH and enlargement of the adrenal gland (Holsboer, Gerken, Stalla & Muller, 1987; Parker, Schatzberg & Lyons, 2003; Plotsky et al., 1998; Rubin, Phillips, Sadow & McCracken, 1995). In addition, depressed individuals exhibit altered neuroendocrine activity when administered diagnostic tests to assess specific aspects of HPA axis activity. Among the most frequently employed in this context is the dexamethasone suppression test (DST). In brief, the DST involves an initial baseline cortisol sample being taken on the morning of the test, followed by administration of the synthetic corticoid, dexamethasone, in the late evening. The following morning, blood or urine is collected to assess cortisol levels and additional samples are obtained at various intervals thereafter. While non-depressed individuals typically exhibit reduced levels of cortisol following a dexamethasone challenge, presumably because negative feedback causes suppression of CRH activity and hence cortisol release, depressed individuals either fail to suppress cortisol levels or escape from suppression abnormally early (Rush et al., 1996). A variant of this test, the dexamethasone-CRH stimulation test, has also been employed in a similar manner. Essentially, this test involves combining the dexamethasone-induced suppression of HPA axis functioning with the stimulating action of CRH. Interestingly, despite pretreatment with dexamethasone, depressed individuals

often exhibit a marked increase in cortisol levels following CRH administration that is not evident among controls (Zwanzger et al., 2003). Finally, following administration of exogenous ACTH, depressed individuals demonstrate enhanced corticoid release (Holsboer, 2000). Together, these findings suggest that major depression may be characterized by a marked hypersensitivity of the HPA axis.

Underlying the neuroendocrine dysregulation associated with depression may be a reduction in both the number and efficacy of type 2, low affinity GRs, as well as type 1, high-affinity MRs in the hippocampus (Plotsky et al., 1998). Studies in rodents have indicated that long-term treatment with antidepressants increases both the number and functional capacity of hippocampal corticoid receptors (Holsboer, 2000; Pariante & Miller, 2001). Indeed, successful antidepressant treatment is associated with normalization of altered neuroendocrine activity in patients with major depression, as assessed by either the dexamethasone suppression test (DST) or dexamethasone-CRH stimulation test (Holsboer, 2000; Pariante & Miller, 2001).

Glucocorticoids may also precipitate symptoms of depression by impacting directly upon components of the central nervous system (CNS). For example, it has been demonstrated that glucocorticoids may shape serotonergic function by upregulating levels of the 5-HT autoreceptors (Tafet, Toister-Achituv, & Shinitzky, 2001). This, of course, may ultimately lead to a decrease in the amount of 5-HT available to cope with both current and future stressors. Moreover, chronically elevated levels of cortisol may have deleterious effects on brain regions involved in the regulation of the HPA activation. For instance, it has been demonstrated that elevated levels of glucocorticoids produce dendritic atrophy and cell death in hippocampal neurons (Brown, Rush & McEwen,

1999; McEwen, 1999; Sapolsky et al., 2000). Moreover, glucocorticoids can alter cellular processes rendering neurons (particularly those in the CA3 regions of the hippocampus) more vulnerable to the adverse effects of other insults, including ischemia, hypoglycemia and amino acid toxicity (Sapolsky et al., 2000). Finally, it has been suggested that glucocorticoids may attenuate neurogenesis in the adult brain, possibly by disrupting the actions of various neurotrophic factors (e.g., BDNF) (Manji, Drevets & Charney, 2001). Indeed, chronically depressed individuals (who often display increased glucocorticoid release) may display a marked decrease in hippocampal volume that can persist following successful resolution of the depressive episode (Sapolsky et al., 2001). Indeed, treatment with antidepressants has been demonstrated to increase the expression of neurotrophic factors (e.g., BDNF and neurotrophin-3), increase hippocampal neurogenesis and finally, to prevent glucocorticoid induced hippocampal atrophy (Manji et al., 2001). Although it is not clear whether the reduction in hippocampal volume observed in major depression precedes depressive symptoms or whether it follows the disorder, it has been proposed that glucocorticoid-induced atrophy erodes the ability of the hippocampus to regulate neuroendocrine activity, and hence, buffer against the negative effects of increased cortisol on depression (e.g., altered serotonergic function) (Lee, Ogle & Sapolsky, 2002).

Glucocorticoids and Traumatic Experiences

Individuals presenting with PTSD exhibit a distinct neuroendocrine profile, which can be readily differentiated from that observed in healthy individuals, as well as persons affected by major depressive illness (Yehuda et al., 1993). Specifically, although acute stressors typically provoke a marked increase of glucocorticoid levels, it has been noted

that levels of cortisol are reduced among individuals diagnosed with PTSD (Anisman, Griffiths, Matheson, Ravindran & Merali, 2001; Boscarino, 1996; Goenjian, et al., 1996; Gurvits et al., 2000; Kellner, Baker & Yehuda, 1997; Yehuda et al., 1993; Yehuda et al., 1996; Yehuda et al., 1998; Wang, 1997). In addition to attenuated basal cortisol levels, PTSD has been associated with enhanced dexamethasone suppression of plasma cortisol (Goenjian et al., 1996; Stein, Yehuda, Koverola, & Hanna, 1997; Yehuda et al., 1995) and elevated CSF levels of corticotropin releasing hormone (CRH) (Baker et al., 1999; Bremner et al., 1997). Interestingly, however, in response to a CRH challenge, PTSD patients displayed a blunted ACTH response (Smith et al., 1989). Taken together, these results suggest that for certain individuals, severe or prolonged traumatic events (e.g., war, rape) may culminate in a profound down-regulation of neuroendocrine function at the level of the pituitary, coupled with disturbed negative feedback to the hypothalamus to keep CRH release in check (Yehuda et al., 1996). Hence, the neuroendocrine profile in PTSD may reflect, in part, an adaptive process to protect the body from deleterious effects arising from sustained cortisol release. Specifically, there is evidence (Heim et al., 2001) that limbic and other cortical circuits may become sensitized following exposure to traumatic events, and hence down-regulation of the HPA axis may be necessary to ensure that these pathways do not continually evoke neuroendocrine activity in response to mild stressor events.

Importantly, however, it is possible that the neuroendocrine profile observed in PTSD may be attributable to preexisting, low levels of circulating glucocorticoids in affected individuals. For instance, Delahanty, Raimonde and Spoonster (2000; 2003) observed that accident victims who subsequently developed PTSD exhibited significantly

lower levels of urinary cortisol upon admission to hospital, in comparison to non-affected accident victims. Moreover, urinary levels of cortisol at admission to hospital predicted a significant proportion of variance in PTSD intrusive and avoidant thoughts 1 month following the accident (Delahanty et al., 2000; 2003). In contrast to these findings, however, it was reported that among a sample of motor-vehicle accident survivors, plasma cortisol at 1 week following the accident did not predict subsequent development of PTSD (Bonne et al., 2003). Thus, the relationship between preexisting levels of cortisol and vulnerability to trauma-related PTSD remains unresolved, likely awaiting large scale prospective studies or an approach like that taken to assess the relationship between PTSD and hippocampal volume. Specifically, several studies employing magnetic resonance imaging (MRI) demonstrated reduced hippocampal volume among individuals with chronic PTSD (Bremner et al., 1995; Bremner et al., 1997; Gilbertson, 2002; Gurvits, 1996). However, as in the case of cortisol, there has been much debate as to whether this apparent decrease in hippocampal volume reflects a vulnerability factor to maladaptive reactions following traumatic events or a result of exposure to the trauma itself (Bremner, 2001; McEwen, 2001; Pitman, 2001). Recently, however, Gilbertson et al., (2002) indicated that relative to combat veterans suffering from PTSD, the identical twin who was not exposed to combat demonstrated hippocampal volumes that were similar to their combat-exposed brothers. Moreover, hippocampal volumes in the nonexposed co-twin were significantly smaller than those of combat veterans without PTSD and their non-combat–exposed twins (Gilbertson et al., 2002). These results suggest that reduced hippocampal volume may, in fact, represent an antecedent condition for the development of PTSD following a severe traumatic event.

Finally, there is some indication that the neuroendocrine profile associated with stressor-related pathological states, including PTSD, may, in fact, be attributed to variations in the diurnal HPA rhythmicity, as opposed to elevations or reductions in glucocorticoid release. For instance, Brunet and Meaney (personal communication, May 2003) observed that among individuals that had encountered a trauma (motor vehicle accident) and then developed PTSD, the normal circadian cortisol changes were not evident. Instead, these individuals exhibited a relatively flat profile over the course of the day, essentially showing cortisol below control levels in the morning, but higher than those of control participants in the afternoon (recall that cortisol levels ordinarily decline over the day in non-distressed individuals). It will be recognized that this profile of diurnal cortisol levels is, in some respects, reminiscent of that associated with chronic stressor experiences as described earlier.

Prospective Statement

In light of the presumed relationships between appraisal processes, coping and depressive symptoms, a series of studies was conducted to the test the hypotheses that:

a) heightened symptoms of depression would be accompanied by an increase of the endorsement of emotion-focused coping strategies and a decrease of problem-focused coping strategies.

b) the endorsement of particular coping strategies would vary from general to specific contexts, and that variations in coping profiles would be related to symptoms of depression.

c) the negative construal of a series of ambiguous events would be positively associated with symptoms of depression.

d) the coping strategies endorsed would mediate the relationship between appraisals and depressive affect.

e) variability (a potential index of flexibility) of coping and appraisals across a series of hypothetical situations would be negatively associated with symptoms of depression, and that variability of appraisals would be positively associated with variability of the endorsement of coping strategies.

f) glucocorticoid release over the course of a day and in response to acute laboratory challenges (e.g., stressful images) would be increased among those demonstrating elevated symptoms of depression, negative appraisals and increased endorsement of emotion-focused coping strategies, but reduced among those reporting increased numbers of previous traumatic experiences.

Study 1

It will be recalled that although numerous variables (e.g., biological and experiential factors) may influence the impact of a potential stressor, it has been suggested that both appraisal and coping process may be fundamental in this respect. As indicated earlier, Lazarus and Folkman's (1984) transactional model of stress suggests that the impact of environmental challenges is related to the individual's appraisal of a stressor, in concert with the perceived availability of coping methods. While most stressors frequently evoke both problem- and emotion-focused coping, stressors that are perceived as being controllable may elicit problem-focused strategies (e.g., problem solving, cognitive restructuring), whereas stressors perceived as being outside of the individual's control are more likely to elicit emotion-focused coping strategies, including emotional expression, emotional containment, blame, withdrawal, denial or passive resignation (Billings & Moos, 1981; Folkman & Lazarus, 1980). Of course, individual coping strategies may be used in either capacity depending on the context in which they are employed (Lazarus & Folkman, 1984).

In general, coping can be defined in terms of coping *styles,* which comprise an individual's favoured coping strategies for dealing with stressors irrespective of the context, as well as situational coping *strategies* that reflect an individual's preferred coping strategies for dealing with specific types of stressful situations (Carver et al., 1989; 1994). In this respect, while the endorsement of situational coping strategies may vary from one situation to another, it has been suggested that coping dispositions remain stable over time and reflect enduring personality, attitudinal and cognitive characteristics of the individual (Moos & Holahan, 2003; Carver, et al., 1989; 1994).

Investigators have frequently regarded the relative "adaptiveness" of stressors either across situations or in general, based on, among other things, the relative use of each strategy within a given context. However, as described earlier, the varied coping strategies are not used in isolation of one another (e.g., rumination may be coupled with problem-solving or emotion-focused strategies), and their use may change over time and across situations. It has been argued that the efficacy of coping methods ought to be considered from the perspective of the individual's flexibility in endorsing one or another method as the situations demand (Matheson & Anisman, 2003; Mattlin et al., 1990). Those individuals with a relatively broad range of coping strategies and who are able to modify these strategies as necessary, may be better suited to deal with stressful events (Matheson & Anisman, 2003).

In the present investigation, it was of interest to assess whether the endorsement of specific coping strategies varied in relation to symptoms of depression among a sample of first-year university students. Based on earlier reports (Endler & Parker, 1994; Holohan et al., 1999; Matheson & Anisman, 2003; Ravindran et al., 1999, 2002; Zlotnick et al., 2000), it was hypothesized that individuals presenting elevated symptoms of depression would exhibit higher levels of emotion-focused coping (e.g., rumination, self-blame, other-blame) and lower levels of problem-focused coping (e.g., problem-solving, cognitive restructuring) relative to those who demonstrated low levels of depressive symptoms. In addition, however, a central goal of this study was to examine how depressive affect was related to the pattern (profile) of coping strategies across specific situations. In particular, it was determined whether the endorsement of particular coping strategies varied from general to specific contexts, and whether variations in these

patterns were related to symptoms of depression. Moreover, it was of interest to assess whether coping strategies endorsed in a general context would be predictive of those endorsed in response to specific, hypothetical situations. Finally, as indicated earlier, flexibility with respect to both the combination and utilization of coping strategies may confer an adaptive advantage in the face of certain stressors. Accordingly, it was predicted that variability (a potential index of flexibility) in the endorsement of coping strategies across a variety of situations would be diminished in those individuals presenting with relatively high levels of depressed affect.

Neuroendocrine activity

Stressful events may evoke a variety of physiological processes that are thought to be adaptive in the face of stressors (Anisman & Merali, 1999; McEwen, 2000). Although transient activation of these systems may have beneficial short-term effects, prolonged activation of some of these systems may have deleterious consequences. Indeed, chronic stressful events have frequently been associated with a variety of behavioural and physiological pathologies, including immune and cardiovascular disturbances (Cohen et al., 2001; Sapolsky et al., 2000) as well as mood and anxiety-related disorders (Anisman & Merali, 1999).

Ordinarily, stressors promote activation of HPA functioning as reflected by elevated circulating cortisol levels. However, considerable interindividual variability exists in this respect. In the present investigation, it was determined whether a psychogenic laboratory challenge (i.e., asking participants to imagine themselves in 5 potentially stressful situations) would be effective in eliciting activation of the HPA axis. It was hypothesized that individuals who reported increased symptoms of depression

would exhibit a heightened neuroendocrine response to the laboratory stressor when compared to those exhibiting low symptoms of depression. Similarly, it was anticipated that individuals who reported increased numbers of previous traumas would demonstrate an altered neuroendocrine response to the laboratory stressor when compared to non-exposed individuals. In this regard, however, it was expected that those individuals that had encountered multiple traumatic experiences would exhibit diminished cortisol reactivity, much as seen among individuals presenting with PTSD symptoms (Yehuda, 2002).

Method

Participants and Procedure

Participants were contacted through sign-up sheets, phoned or emailed, and invited to participate in a study concerning traumatic events, coping and psychological well-being. Participants comprised 196 females (*M* age = 20.37, *SD* = 4.50) and 104 males (*M* age = 21.11, *SD* = 5.24) and based on the responses of those reporting racial background, this sample was 69.5% (*n* = 194) Caucasian, 7.5% Middle-Eastern (*n* = 21), 9.0% Black (*n* = 25), 6.1% Asian (n = 17), and 1.6% East Asian (*n* = 5). After written informed consent was obtained, participants were asked to relax for 10 minutes to permit habituation to the environment. Once this relaxation period had elapsed, they completed the Beck Depression Inventory (BDI) (Beck & Beck, 1972), the Survey of Coping Endorsements (SCOPE) (Matheson & Anisman 2003) and the Traumatic Life Events Questionnaire (TLEQ) (Kubany et al., 2000).

After they had completed the questionnaires, participants were told that they would be viewing and answering some questions in relation to a series of photographs.

Using a laptop monitor, they viewed a series of five images obtained from the International Affective Picture System (IAPS), each of which portrayed a potentially traumatic event (e.g., elderly male whose spouse appears to be terminally ill (#2205); a woman who has been severely beaten (#3181); a child who has been seriously injured (#3301); a couple grieving in front of a gravestone (#9220); and finally, a serious motor vehicle accident (#9910). Each image was viewed for 2 minutes, for a total of 10 viewing minutes. To better assess the impact of the images on neuroendocrine activity, a subset of participants (n = 20) were not presented the images and were asked to relax for an equivalent amount of time. While viewing each picture, participants were asked to imagine themselves in that situation and to specify which coping strategies they would use using an abbreviated version of the SCOPE (SCOPE-A) (Matheson & Anisman, 2003). Once this was completed, all participants were asked to relax for 30 minutes, after which, they were invited to view a series of 5 positive images in order to attenuate any negative feelings arising from the manipulation. Finally, participants were provided with both written and verbal debriefing.

Salivary Cortisol

Saliva samples were obtained by having participants place a piece of dental cotton in their cheek for a 2 min period. The cotton was then removed and placed in a plastic test tube (Salivette™). This was done on five occasions; following the initial relaxation period, just prior to presentation of the images (i.e. following completion of the questionnaires described earlier), immediately following presentation of the images (or equivalent relaxation period), and again 15 and 30 minutes later.

Measures

Beck Depression Inventory (BDI) (21-item version, Beck & Beck, 1972) is a widely used psychometrically sound self-administered questionnaire to assess the intensity of depression in clinical and normal individuals. It has a moderate correlation with both the Hamilton Depression Rating Scale (HAM-D) and Montgomery-Asberg Depression Rating Scale (MADRS). On the basis of the total score obtained on the BDI, participants can be classified into the following categories[1]; moderate depressive symptoms (19 and above), mild depressive symptoms (10 to 18) and finally, low depressive symptoms (9 and below) (Beck & Steer, 1987). Means scores on the BDI for each of these groups are presented in Table 1.

Table 1

Mean Scores on the BDI for Each Category of Depressive Symptoms for Study 1

Severity of Depressive Symptoms	Mean (*SD*)
Low	4.41 (2.37)
Mild	12.49 (2.66)
Moderate	25.55 (6.13)

Note. BDI = Beck Depression Inventory

Survey of Coping Profile Endorsement (SCOPE) (Matheson & Anisman, 2003) was developed in our laboratory. Characteristics and scale development is described in Matheson & Anisman (2003). The scale comprises 12 coping strategies including problem-solving, cognitive restructuring, active distraction, cognitive distraction,

[1]The terms moderate, mild and low (rather than high, medium/moderate and low) are used as these are consistent with the severity of the depressive symptoms actually detected. Unfortunately, the term moderate creates some confusion within the present context as it is actually the highest level of depression in the study.

rumination, humor, social support seeking, emotional expression, other-blame, self-blame, emotional containment, and passive resignation. Respondents indicate their endorsement of whether they had demonstrated each of the behaviors as a way of dealing with stressors in general using a scale of 0 (Never) to 3 (Frequently). Scores for each of the 12 strategies are obtained by taking the average score of the items that comprise each strategy.

Survey of Coping Profile Endorsement - Abbreviated (SCOPE-A) (Matheson & Anisman, 2003) is a shortened version of the original SCOPE that assesses each of 12 coping strategies using a single item per strategy. The abbreviated version was developed in order to facilitate the ability of participants to respond to multiple situations without unduly taxing them. The 12 items that comprise the SCOPE-A were selected on the basis of a principal components analysis of the total scales using the responses of an independent student sample ($N = 1011$). Those items demonstrating the highest factor loadings for each coping dimension following a varimax rotation were selected for the abbreviated version. Using a rating scale of 0 (Never) to 4 (Frequently), respondents indicated their endorsement of whether they had demonstrated each of the behaviors as a way of dealing with the stressors depicted in the five images. Scores for each of the 12 strategies were calculated by taking the average score for the five items (i.e., one item per image) that comprised each strategy. Variability in the endorsement of coping strategies across the five images was obtained by calculating the standard deviation of participants' mean response (across the 5 images) for each strategy.

The Traumatic Life Events Questionnaire (TLEQ) (Kubany et al., 2000) is a 23-item self-report questionnaire that assesses exposure to a broad spectrum of potentially

traumatic events, ranging from natural disasters, accidents, assaults, and childhood abuses. Events are described in behaviourally descriptive terms (consistent with the DSM-IV stressor criterion A1). The frequency of occurrence of each event was assessed using a 7-point scale on which participants indicated whether each event occurred from never (0) to more than five times (6). When events were endorsed, respondents were asked if they experienced intense fear, helplessness, or horror (the PTSD stressor criterion A2 in the DSM-IV), and how long ago the event occurred. The total number of traumatic events reported by participants was calculated by summing the number of items to which they had indicated experiencing intense fear, helplessness, or horror.

Results

For all analyses, it was verified that each of the variables employed was normally distributed by viewing a histogram of frequencies, as well as by examining measures of distribution, namely skewness and kurtosis. In addition, significant univariate outliers were identified and removed from each analysis by examining participants' standardized scores for each variable. Participants with a standard score equal or greater to +/- 3 standard deviations on a given variable were considered outliers and removed from the analyses, except for cortisol measures, in which a more liberal criterion of +/- 4 standard deviations was utilized owing to the high degree of natural variability in neuroendocrine activity.

Before proceeding with the analysis of the relation between symptoms of depression and coping in specific contexts, analyses were undertaken, using the current set of participants, to verify that the 12 items used in the SCOPE-A provided analogous information to that yielded by the full SCOPE. To explore whether responses on the 12

items comprising the SCOPE-A and the full SCOPE were similarly correlated with scores on the BDI, two standard regression analyses were conducted. First, however, linearity of the relationship between the dependent and independent variables was assessed by plotting and noting whether the observed versus predicted values were distributed symmetrically about the diagonal regression line. The assumption of homoscedasticity (i.e., constant variance) of the errors was verified by plotting standardized residuals values against standardized predicted values and observing whether the residuals became more spread-out as a function of the predicted value. Finally, violation of the assumption of normality of the error distribution was determined by plotting a normal probability plot of the residuals and observing whether they fell along the diagonal line.

In the first analysis, BDI scores were regressed onto scores for each of the 12 coping strategies comprising the 48-item SCOPE, while in the second, BDI scores were regressed onto the 12 items representing each coping category on the SCOPE-A. These analyses indicated that symptoms of depression were related to the 12 coping strategies endorsed on both the general SCOPE, $R^2 = .33$, $F(12, 288) = 12.05$, $p < .001$, and SCOPE-A, $R^2 = .23$, $F(12, 278) = 7.09$, $p < .001$. As illustrated in Table 2, in each case, problem-focused strategies were generally negatively correlated with heightened symptoms of depression, while emotion-focused strategies were positively associated with severity of depressive symptoms[2]. With respect to the general SCOPE, reduced

[2]To ensure that the similarity of patterns of correlation between BDI scores and coping strategies for the items comprising the SCOPE-A and SCOPE was not attributable to the inclusion of the 12 items in both scales (recall that these 12 items comprising the SCOPE-A are also included in the calculation of the 12 subscale means) an identical analysis was undertaken in which those items comprising the SCOPE-A were removed from the calculation of the subscale means. As before, the coping subscales of the SCOPE significantly predicted symptoms of depression, $R^2 = 36$, $F(12, 288) = 13.26$, $p < .001$. The pattern of correlation was essentially identical to that observed when the 12-items comprising the SCOPE-A were included in the calculation of the subscale means.

endorsement of cognitive restructuring and active distraction, and increased endorsement of humor, emotional expression, other-blame and self blame were uniquely related to symptoms of depression (see Table 2). Similarly, in the context of the SCOPE-A, reduced endorsement of cognitive restructuring, active distraction and social support and greater endorsement of rumination, emotional expression and self blame accounted for unique variance in BDI scores (see Table 2). Taken together, these data suggest that the 12 subscales that comprise the general SCOPE and the 12 items representing each coping category on the SCOPE-A share a similar (although not identical) pattern of correlations with scores obtained using the BDI.

Table 2

Regression Analysis Assessing Relations Between BDI Scores and Coping (SCOPE & SCOPE-A) in Study 1

	r^a	r^b	β^a	β^b	R^{2a}	R^{2b}
Coping Strategies					$.33^{***}$	$.23^{***}$
Problem Solving	$-.16^{**}$	-.07	.01	-.03		
Cognitive Restructuring	$-.16^{**}$	$-.11^{**}$	$-.18^{**}$	$-.14^{**}$		
Active Distraction	$-.23^{***}$	$-.18^{***}$	$-.18^{**}$	$-.12^{*}$		
Cognitive Avoidance	.05	.00	.01	.02		
Rumination	$.35^{***}$	$.27^{***}$	.10	$.16^{*}$		
Humour	.01	.03	$.11^{*}$	.10		
Social Support	-.08	$-.14^{**}$	-.09	$-.18^{**}$		
Emotional Expression	$.31^{***}$	$.23^{***}$	$.18^{**}$	.14		
Other-Blame	$.32^{***}$	$.20^{***}$	$.12^{*}$	.06		
Self-Blame	$.41^{***}$	$.32^{***}$	$.27^{***}$	$.24^{***}$		
Emotional Containment	$.25^{***}$	$.17^{**}$	.06	.01		
Passive Resignation	$.13^{*}$	-.01	.01	-.01		

Note. *p<.05; ** p <.01; *** p <.001; BDI = Beck Depression Inventory; SCOPE = Survey of Coping Endorsement; SCOPE-A = Survey of Coping Endorsement – Abbreviated; a = SCOPE; b = SCOPE –A

In the previous analysis, coping was evaluated in relation to symptoms of depression by treating participants' scores on the BDI as a continuous variable. This technique is favourable in that it avoids many of the negative consequences associated with dichotomization and trichotomization of a continuous dependent variable. These include loss of information about individual differences, loss of effect size and power,

spurious significant main effects or interactions, risks of overlooking nonlinear effects, and problems in comparing and aggregating findings across studies (McCallum, Zhang, Preacher & Rucker, 2002). Nevertheless, under certain circumstances, useful information may also be gained by examining the endorsement of coping strategies in relation to discrete, clinically relevant groups that are defined by pre-existing cut-offs on a particular dependent variable. As mentioned, in the current investigation, participants were classified into the following categories based on the total score obtained on the BDI; moderate depressive symptoms (19 and above), mild depressive symptoms (10 to 18) and finally, low depressive symptoms (9 and below) (Beck & Steer, 1987). This approach was taken to allow for better visualization of the absolute levels of endorsement of particular coping strategies both between and within groups exhibiting varying levels of depressive symptoms.

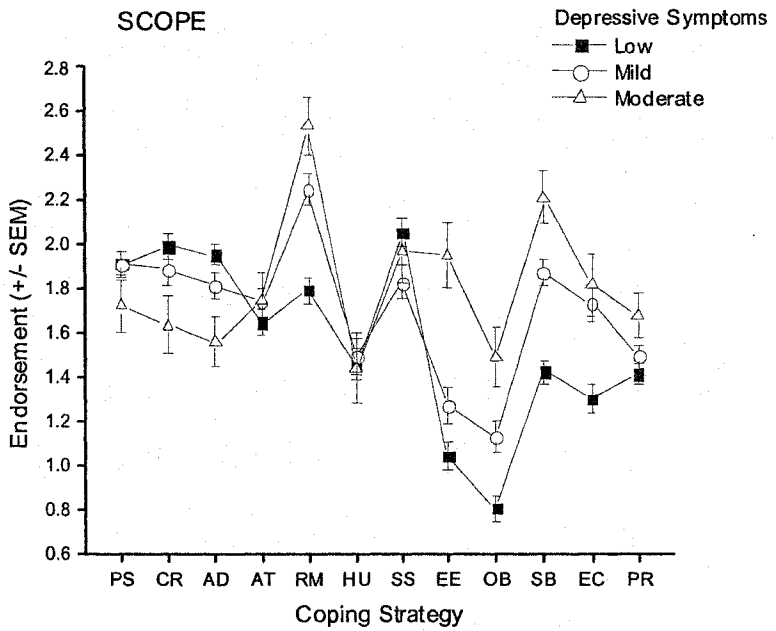
To this end, an ANOVA was conducted in which depression severity functioned as a between-subjects variable and Type of Coping (general vs. specific item) and the 12 coping strategies as within-subject factors in order to determine whether the SCOPE-A yielded similar coping profiles as the full SCOPE when examined among individuals exhibiting comparable levels of depression

To assess whether the assumption of sphericity (the difference between the estimated means for any pair of groups is the same as for any other pair) had been met, Mauchley's test of Sphericity (Mauchley's W) was employed. As this assumption was violated for each of the mixed-measures ANOVAs described in the results section (as denoted by a significant Mauchley's W), a Huynh-Feldt epsilon correction was applied to the degrees of freedom for both the effect and error term in each analysis with a within-

subjects component. In addition, for all pairwise comparisons presented, a Bonferroni adjustment was utilized in which the experiment-wise error rate ($\alpha = .05$) was divided by the total number of comparisons to control for Type I error.

As outlined in Figure 5, the coping profiles exhibited by individuals with differing levels of depression did not vary as a function of whether the full or abbreviated scale items were employed, $F < 1$. This suggests that within a general context, the 12 item SCOPE-A and the full SCOPE provided similar profiles of the endorsement of coping strategies across varying levels of depressive symptomatology[3]. Thus, any subsequent variations in the endorsement of these items is likely context-driven.

[3]In this analysis, the coping profiles obtained using the 12 items comprising the SCOPE-A was compared to those yielded using the 12 SCOPE subscales. As scores for each of the 12 strategies were obtained by taking the average score of the items that comprised each strategy (including those used in the SCOPE-A), it was possible that the similarity between the coping profiles obtained using the items comprising the SCOPE-A and full SCOPE was attributable to inclusion of the 12 items in both scales. As such, a separate analysis was undertaken in which those items comprising the SCOPE-A were removed from the calculation of the subscale means. As before, the coping profiles exhibited by individuals with differing levels of depression did not vary as function of whether the full or abbreviated scale items were employed, $F < 1$



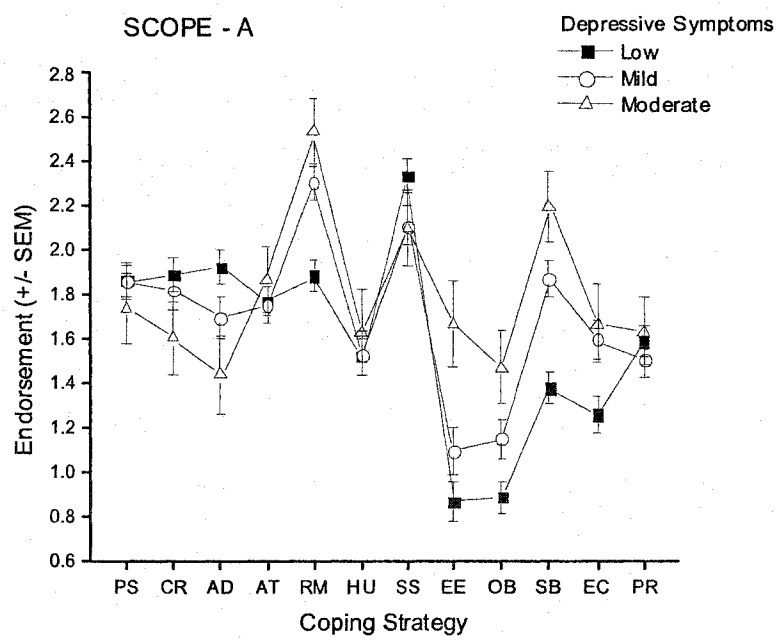


Figure 5. Coping profiles ($M \pm SEM$ of each strategy) of male and female participants reporting low, mild or moderate symptoms of depression as measured by the SCOPE (top-panel) and items comprising the SCOPE-A (bottom-panel) in Study 1.

Coping Profiles in a General Context: Relation to Depression

It will be recalled that symptoms of depression have frequently been associated with a reduction in the endorsement of problem-focused coping strategies, coupled with an increase in the use of emotion-focused coping strategies. As such, it was of interest to determine whether the profile of endorsement of particular coping strategies in *general* varied in relation to symptoms of depression. To this end, a mixed measures ANOVA was employed, in which the 12 coping strategies derived from the SCOPE were treated as within-subjects variables and level of depression (Moderate, Mild and Low) as a between-subjects factor. While the main effect for coping, $F(11, 3278) = 34.04, p < .001$, $\eta^2 = .10$ was significant, as illustrated in Figure 6, these responses were moderated by depressive symptomatology[4], $F(22, 3278) = 8.46, p < .001$, $\eta^2 = .05$.

To determine whether individuals reporting heightened symptoms of depression demonstrated greater endorsement of emotion-focused coping strategies and decreased endorsement of problem-focused coping strategies, pairwise comparisons were conducted for each coping strategy.

[4]Items comprising the *emotional expression* subscale of the SCOPE could be construed as both coping strategies and symptoms of depression. As such, separate analyses were conducted in which items 40 ("Found yourself crying more than usual") and 48 ("Told others that you were depressed or emotionally upset") were omitted to ensure that the association between coping and depression was not an attributable to a redundancy between items contained within the SCOPE and the BDI. A mixed measures ANOVA (which did not include items 40 and 48) indicated that while a main of effect of coping was evident $F(11, 3278) = 30.75, p < .001$, $\eta^2 = .094$, the endorsement of coping strategies was moderated by symptoms of depression, $F(22, 3278) = 8.14, p < .001$, $\eta^2 = .052$. Participants exhibiting moderate symptoms of depression continued to demonstrate significantly greater endorsement of emotional expression than those reporting either mild or low levels of depressive symptoms ($ps < .01$). Similarly, a standard regression analysis indicated that symptoms of depression continued to be related to the coping strategies endorsed, $R^2 = .33$, $F(12, 288) = 12.05, p < .001$ with these items removed. In addition to a significant zero order correlation ($R = .280, p < .001$), increased endorsement of *emotional expression* ($B = .17, p < .001$) accounted for unique variance in symptoms of depression.

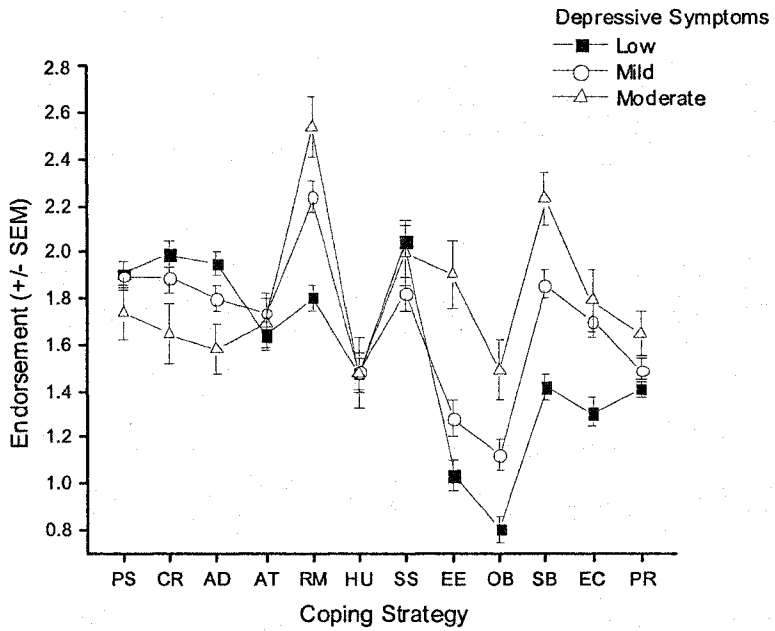


Figure 6. Coping profiles (*M* ±*SEM* of each strategy) of male and female participants reporting low, mild or moderate symptoms of depression in Study 1.

As expected, these comparisons indicated that the endorsement of emotion-focused strategies was aligned with heightened symptoms of depression, while the endorsement of problem-focused strategies was associated with reduced depressive symptoms. Specifically, individuals exhibiting moderate symptoms of depression indicated significantly lower endorsement of problem-solving and active distractions relative to those reporting low symptoms of depression (*ps* < .05). In addition, individuals reporting either moderate or mild symptoms of depression reported greater endorsement of emotion-focused strategies, including rumination, emotional expression, other-blame, self-blame and emotional containment than participants demonstrating low symptoms of depression (*ps* < .01). Finally, the endorsement of emotional expression, other-blame, and self-blame was greater among participants reporting moderate symptoms of depression than individuals exhibiting mild symptoms (*ps* < .01).

Coping Styles: General versus Specific Contexts

It has been suggested that coping can be considered in terms of coping styles, which encompass an individuals preferred set of coping strategies for dealing with a wide range of stressors, and situational coping strategies that reflect an individual's preferred coping strategies for dealing with specific types of stressors. Accordingly, participants' coping profiles were examined to determine whether these varied from general to specific situations, and whether any apparent differences were related to symptoms of depression. A mixed measures ANOVA was performed in which the 12 coping strategies derived from the SCOPE and the SCOPE-A (averaged across the five specific situations) and Context (General and Specific) were treated as within-subjects variables and level of depressive symptomatology as a between subjects variable. As the response scale differed for the two coping measures, standardized means for each coping subscale were utilized in this analysis. The analysis revealed that the endorsement of coping strategies varied as a function of the context (general vs. specific) and that this difference was moderated by symptoms of depression, $F(22, 3058) = 4.00, p < .001, \eta^2 = .03$ (see Figure 7).

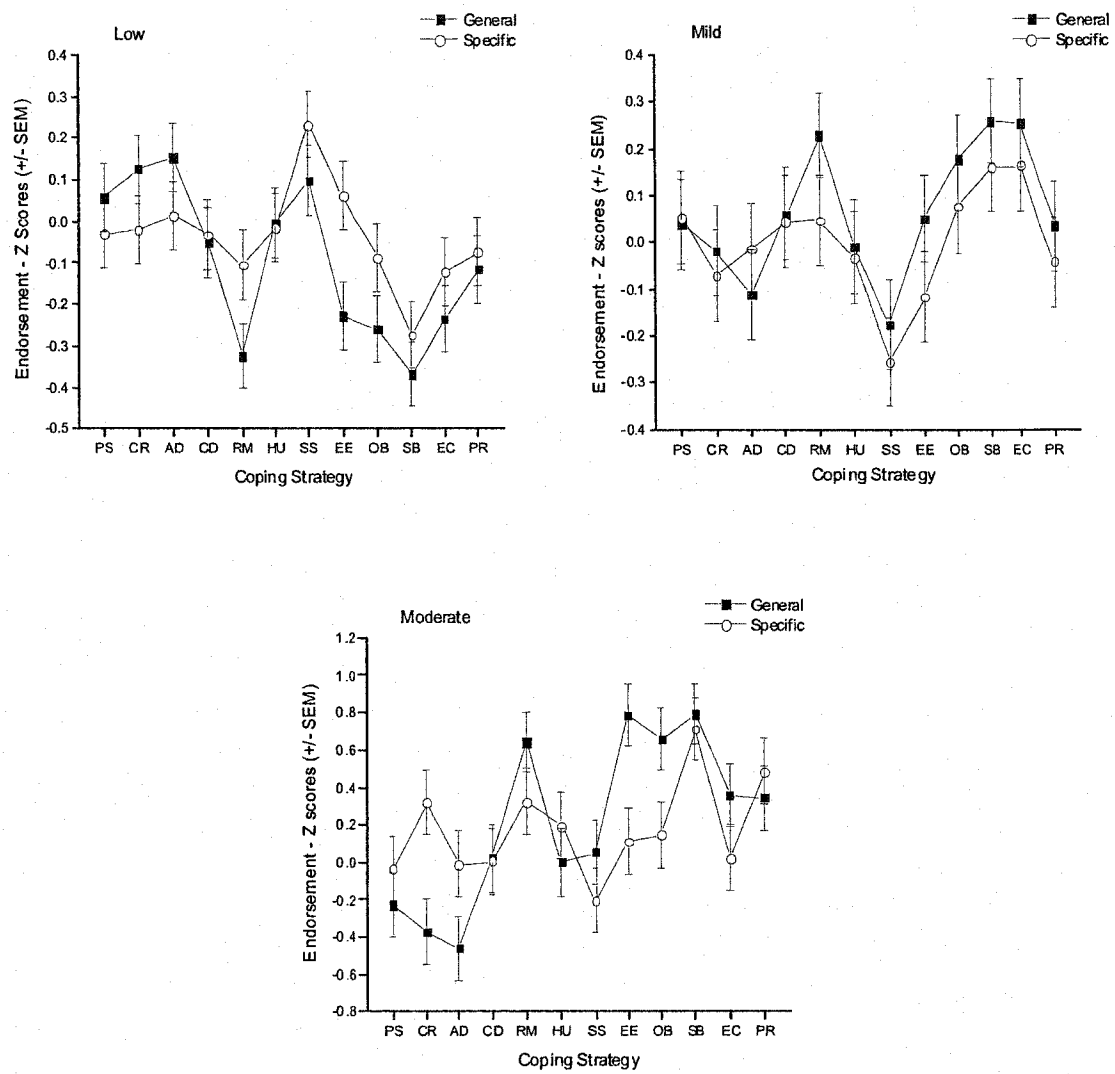


Figure 7. General versus specific context coping profiles (*M* ±*SEM* of each strategy) of male and female participants reporting low (top-left panel), mild (top-right panel) or moderate depressive systems (bottom-center panel) in Study 1.

To better assesses how variations in the endorsement of coping strategies from the general to specific context related to symptoms of depression, pairwise comparisons were conducted in which the endorsement of specific strategies by each group in the general context were contrasted with those endorsed (by the same group) in the specific context. These comparisons indicated that variations in the endorsement of coping strategies in general versus specific contexts were most evident among participants exhibiting

moderate symptoms of depression, $F(11, 341) = 4.37, p < .001, \eta^2 = .12$ Specifically, relative to the endorsement of coping strategies in the general context, moderately depressed individuals demonstrated greater endorsement of cognitive restructuring and activities (*ps* < .05) and lower endorsement of emotional expression and other-blame ($p <$ .01) when coping was assessed in the situation-specific contexts. Differences were also apparent among participants exhibiting low symptoms of depression, $F(11, 1573) = 2.71$, $p < .01$, $\eta^2 = .02$. Specifically, pair-wise comparisons revealed an elevation in the endorsement of rumination, emotional expression and other blame (*ps* < .05) in the specific contexts, relative to those provided in the general context. No statistically significant differences in the endorsement of coping strategies between the general and specific situations were evident among individuals displaying mild symptoms of depression, $F < 1$.

Coping Styles: Relationship Between General and Specific Contexts

It has been suggested (Cohen & Lazarus, 1973; Lazarus & Folkman, 1984) that it may be difficult to predict situational coping responses from an individual's general coping disposition. Conversely, others hypothesized (Carver & Scheier, 1989; 1994) that the endorsement of specific types of coping strategies may be influenced by the individual's propensity or predisposition to employ specific types of coping strategies (i.e., from their coping style). As such, it was of interest to evaluate whether individual coping strategies endorsed in a general context would be predictive of these same strategies in response to the specific situations. To this end, analyses were conducted in which the endorsement of a given strategy in the general context was correlated with that of the same strategy in the context of the specific, hypothetical situations. As seen in

Tables 3 - 5, among individuals reporting low and mild symptoms of depression, the coping strategies endorsed in the general context were predictive of those endorsed in response to the hypothetical situations; however, this association was not as robust among individuals exhibiting moderate symptoms of depression. Of course, owing to the small number of individuals (n = 32) that comprised this group (and the likely homogeneity of participants based on grouping by depressive symptoms), insufficient variability may have precluded significant correlations between coping strategies in a general and specific context.

Table 3

Correlations Between Coping Strategies Endorsed in a General Context (SCOPE) and the Identical Coping Strategy Endorsed in Response to Specific Situations (SCOPE-A) (n=156) in Study 1 Among Participants Exhibiting Low Symptoms of Depression

	Situation					
	Combined (1-5)	1	2	3	4	5
	r	*r*	*r*	*r*	*r*	*r*
Coping Strategy						
Problem Solving	.10	.16*	-.03	.09	.09	.10
Cognitive Restructuring	.44***	.36***	.25*	.31***	.33***	.32**
Active Distraction	.34***	.28*	.21**	.24**	.31***	.19*
Cognitive Avoidance	.40***	.30***	.32***	.26**	.41***	.14
Rumination	.48***	.33***	.32**	.41***	.34***	.39***
Humour	.48***	.38***	.41**	.30***	.39***	.36**
Social Support	.58***	.54***	.39***	.38***	.51***	.47***
Emotional Expression	.32***	.37***	.26**	.30***	.26***	.25**
Other-Blame	.44***	.25**	.30***	.28*	.35***	.36***
Self-Blame	.22**	.13	.20*	.05	.17*	.17*
Emotional Containment	.62***	.57***	.49***	.51**	.49***	.44***
Passive Resignation	.29**	.22**	.18	.17**	.17*	.29***

Note. *p<.05; ** p <.01; *** p <.001; SCOPE = Survey of Coping Endorsement; SCOPE-A = Survey of Coping Endorsement – Abbreviated; 1 = Terminally Ill Spouse; 2 = Abused Woman; 3 = Injured Child; 4 = Grieving Couple; 5 = Car Accident

Table 4

Correlations Between Coping Strategies Endorsed in a General Context (SCOPE) and the Identical Coping Strategy Endorsed in Response to Specific Situations (SCOPE-A) (n=113) in Study 1 Among Participants Exhibiting Mild Symptoms of Depression

	Situation					
	Combined (1-5)	1	2	3	4	5
	r	*r*	*r*	*r*	*r*	*r*
Coping Strategy						
Problem Solving	.30**	.33***	.12	.14	.31***	.15
Cognitive Restructuring	.48***	.47***	.23*	.29**	.34***	.26**
Active Distraction	.21**	.24*	.07	.16	.16	.19
Cognitive Avoidance	.41***	.32***	.42***	.26**	.29**	.21*
Rumination	.42***	.48***	.26**	.19	.35**	.29**
Humour	.47***	.53***	.26**	.23*	.47**	.30**
Social Support	.60***	.61***	.44***	.47***	.25**	.45***
Emotional Expression	.56***	.50***	.37***	.52***	.50***	.54**
Other-Blame	.36***	.36***	.20*	.10	.20*	.24**
Self-Blame	.40	.38***	.31***	.23***	.18	.24**
Emotional Containment	.62***	.62***	.51**	.42***	.44***	.38***
Passive Resignation	.32**	.18	.18	.17	.22*	.20*

Note. *p<.05; ** p <.01; *** p <.001; SCOPE = Survey of Coping Endorsement; SCOPE-A = Survey of Coping Endorsement – Abbreviated; 1 = Terminally Ill Spouse; 2 = Abused Woman; 3 = Injured Child; 4 = Grieving Couple; 5 = Car Accident

Table 5

Correlations Between Coping Strategies Endorsed in a General Context (SCOPE) and the Identical Coping Strategy Endorsed in Response to Specific Situations (SCOPE-A) (n=32) in Study 1 Among Participants Exhibiting Moderate Symptoms of Depression

	Situation					
	Combined (1-5)	1	2	3	4	5
	r	*r*	*r*	*r*	*r*	*r*
Coping Strategy						
Problem Solving	.34	.26	.39*	.27	-.26	.37*
Cognitive Restructuring	.34	.38*	.41*	.21	.02	.17
Active Distraction	.23	.38	-.01	.26	.25	.01
Cognitive Avoidance	.41*	.38*	.15	.07	.60**	.31
Rumination	.30	.06	.31	-.12	.51**	.16
Humour	.57*	.60**	.34	.45*	.47**	.50**
Social Support	.36*	.34*	.37*	.14	.16	.36*
Emotional Expression	.46*	.50**	.48*	.18	.18	.56**
Other-Blame	.12	.32	.09	-.21	.18	.04
Self-Blame	.34	.20	.37*	.25	.11	.11
Emotional Containment	.36*	.38*	.37*	.16	.03	.23
Passive Resignation	.27	.13	.01	-.07	.42**	.34*

Note. *p<.05; ** p <.01; *** p <.001; SCOPE = Survey of Coping Endorsement; SCOPE-A = Survey of Coping Endorsement – Abbreviated; 1 = Terminally Ill Spouse; 2 = Abused Woman; 3 = Injured Child; 4 = Grieving Couple; 5 = Car Accident

Variability in the Endorsement of Coping Strategies Across Situations: Relation to Depression

Flexibility or variability with respect to utilization of coping strategies may be advantageous in the face of certain stressors. To explore how variability in the endorsement of specific coping strategies may be related to depressive affect, an index of variability (standard deviation) with respect to the individual coping strategies across the five pictorial representations (situations) was calculated. A mixed measures ANOVA was then performed, in which the standard deviation of participants' responses to the 12 coping dimensions across the 5 pictures served as a within-subjects variable and depressive symptoms as the between-subjects variable. The main effect of depressive symptoms was significant, $F(2, 278) = 4.44, p < .05, \eta^2 = .03$, but was qualified by the coping strategy being endorsed, $F(22, 3058) = 1.70, p < .05, \eta^2 = .01$ (see Figure 8).

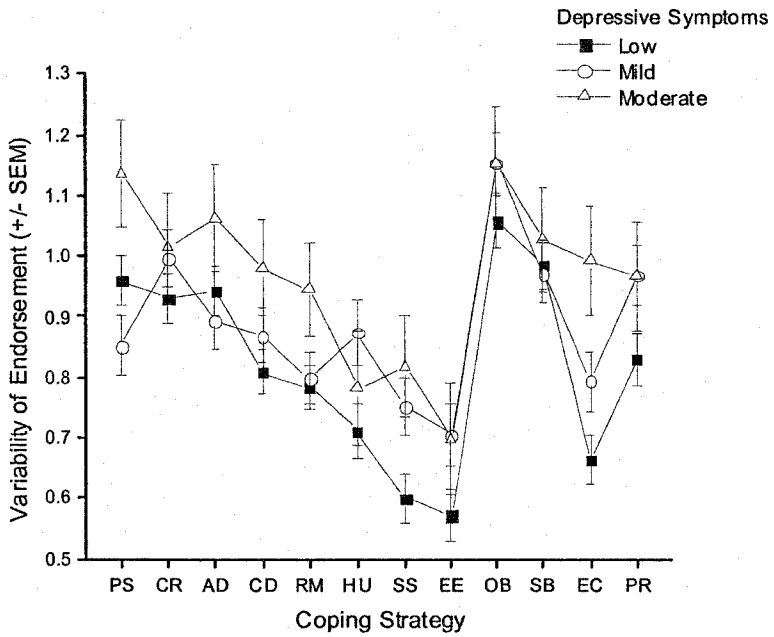


Figure 8. Variability of endorsement of coping strategies (*M* ±*SEM* of each strategy) of male and female participants reporting low, mild or moderate symptoms of depression in Study 1.

Subsequent pairwise comparisons were used to determine whether individuals reporting increased depressive symptomatology demonstrated decreased variability in the endorsement of coping strategies across the five situations presented. Contrary to prediction, where differences existed, heightened symptoms of depression were associated with *greater* variability in the endorsement of specific coping strategies. Pairwise comparisons indicated that individuals reporting moderate symptoms of depression exhibited greater variability in the endorsement of problem-solving than did individuals exhibiting mild or low symptoms of depression ($p < .01$). In addition, participants reporting mild depression demonstrated greater variability in the endorsement of social support than individuals in which depressive symptoms were absent ($p < .05$). Thus, in those instances where there were differences in the variability

of coping responses as a function of depressive symptoms, the presence of these symptoms was associated with higher, rather than lower variability.

Neuroendocrine Activity following a Laboratory Challenge: Relation to Symptoms of Depression

It has frequently been reported that major depression is associated with an increase of HPA activity. Accordingly, it was determined whether exposure to the five images of traumatic events evoked an increase of salivary cortisol and whether this was dependent on severity of depressive symptoms. A mixed measures ANOVA was employed, in which the 5 cortisol measures obtained over the experimental session (baseline, immediately before viewing the images, immediately after viewing the images and 15 and 30 minutes later) were treated as a within-subjects variable and depressive symptoms and picture condition (no images or images) as between-subjects factors. Although cortisol levels varied significantly over the experimental session, $F(4, 1116) = 41.56, p < .001$, $\eta^2 = .13$, this pattern was not moderated by either symptoms of depression, $Fs < 1$, or having viewed the images, $Fs < 1$. Moreover, overall cortisol levels did not vary as function of level of depressive affect, $F(2, 179) = 2.26, p = .11$, $\eta^2 = .02$. To better characterize variation of cortisol levels across the experimental session, polynomial within-subjects contrasts were conducted for the 5 cortisol measures. As illustrated in Figure 9, these within-subject contrasts indicated that cortisol release over the course of experimental session was characterized by a significant downward linear, $F(1, 279) = 90.08, p < .001$, $\eta^2 = .24$, as well as a modest cubic trend, $F(1, 279) = 16.29, p < .001$, $\eta^2 = .06$. The latter was attributable to a brief plateau that occurred

during an overall declining pattern of cortisol levels. This plateau occurred with the cortisol measure taken after viewing the images.

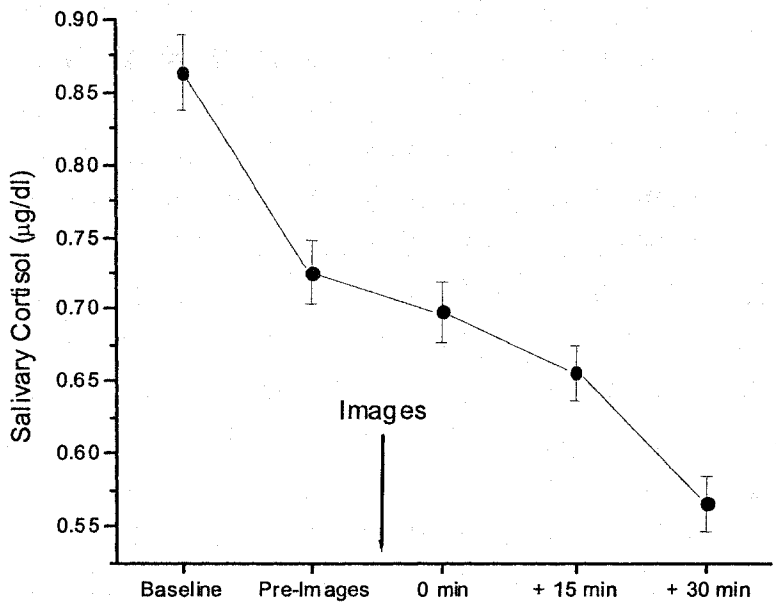


Figure 9. Salivary cortisol levels (*M* ±*SEM* of each sample) among all participants before and after viewing a series of images depicting potentially traumatic events in Study 1.

Neuroendocrine Activity following a Laboratory Challenge: Relation to Previous Traumatic Experience

Although acute stressors usually provoke a marked increase of the release of cortisol, glucocorticoid activity is attenuated in individuals experiencing posttraumatic stress. To evaluate whether glucocorticoid release following presentation of the images was reduced as a function of the number of traumatic events reported by participants, a mixed measures ANOVA was employed in which cortisol levels over the same 5 time points were treated as a within-subjects variable and the number of previous traumatic experiences reported by participants (0, 1-2, 3-5, 6 and above) as a between-subjects

factor. These intervals represented 11%, 36%, 42% and 11% of participants, respectively[5]. The pattern of cortisol release across the experimental session was not found to vary over the course of the experimental session as a function of the number of previous traumas, either directly or as a moderating effect, *Fs* < 1 (see Figure 10).

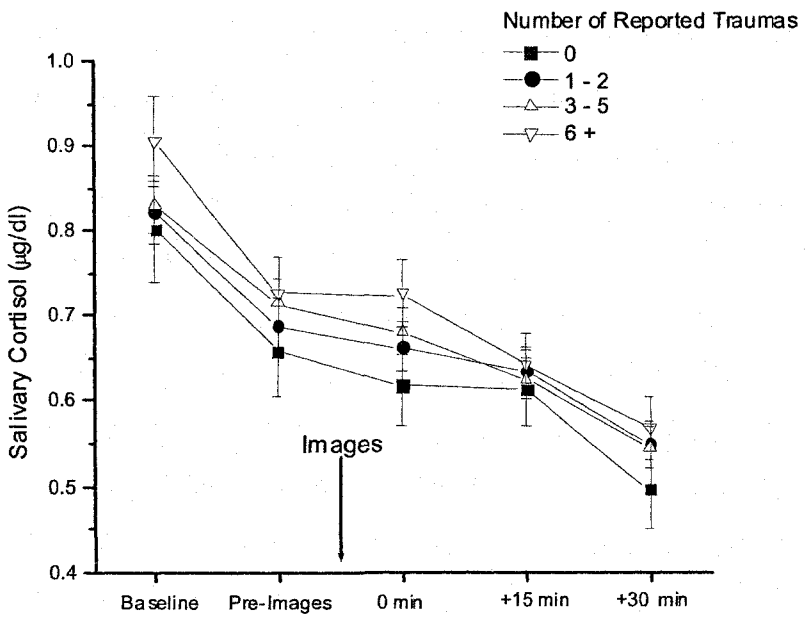


Figure 10. Salivary cortisol levels (*M* ±*SEM* of each sample) among male and female participants reporting varying numbers of traumas before and after viewing a series of images depicting potentially traumatic events in Study 1.

[5]It would have been preferable to divide the number of trauma's experienced into 15%, 35, 35 and 15%, thereby approximating a normal distribution. However, when the data were examined it was discovered that this was not possible based on the number of participants reporting a given number of traumas. For example, amending the grouping of participants reporting 1 to 2 traumas to reflect those participants reporting 1 to 3 traumas would have resulted in a single category representing 51% of participants.

Discussion

Study 1 was conducted, in part, to explore the relationship between depressive symptomatology and the endorsement of specific coping strategies. It had previously been reported (Endler & Parker, 1994; Holohan et al., 1999; Matheson & Anisman, 2003; Ravindran et al., 1999, 2002; Zlotnick et al., 2000), that depressive affect is associated with an increase in the endorsement of emotion-focused strategies and a decrease in the use of problem-focused strategies. It was likewise observed that individuals reporting heightened symptoms of depression (as distinct from clinical levels of the illness) demonstrated greater endorsement of a number of emotion-focused coping strategies (e.g., rumination, emotional containment, emotional expression, and self-blame) and decreased endorsement of problem-focused coping efforts (e.g., problem-solving and active distraction), relative to participants with low levels of depressive symptoms. While most previous studies focused on coping strategies apparent among individuals presenting relatively high versus low symptoms of depression, in the present investigation the elevated endorsement of certain emotion-focused strategies was even apparent among participants reporting mild symptoms of depression. In effect, it seems that altered coping profiles were exquisitely sensitive to variations of mood, and the possibility ought to be considered that the use of such coping styles might, in fact, be a contributing factor in the deterioration of depressive symptoms over time and across adverse situations (see Matheson & Anisman, 2003).

In addition, a central goal of this study was to evaluate whether the endorsement of particular coping strategies varied from general to specific contexts, and whether variations in these patterns were related to symptoms of depression. Indeed, when

dispositional and situation-specific coping profiles were compared directly, it was observed that the endorsement of coping strategies varied between the general and specific contexts and that the coping methods under these conditions were differentially related to symptoms of depression. For instance, relative to the endorsement of coping strategies in the general context, within the situation-specific contexts the moderately depressed individuals demonstrated greater endorsement of cognitive restructuring and activities and lower endorsement of emotional expression, emotional containment and other-blame. Among participants demonstrating low symptoms of depression, endorsement of both rumination and emotional expression was elevated in the specific contexts, when compared those responses provided in the general context. Interestingly, however, individuals displaying mild symptoms of depression exhibited little difference in dispositional and situational coping. Thus, while the profile exhibited by each group in the general context was evident when they were confronted with adverse stimuli (i.e., within the specific context), among moderately depressed individuals adverse stimuli were associated with a decrease of emotion-focused coping was elicited, whereas among individuals reporting low levels of depressive symptoms an increase in certain emotion-focused strategies was apparent. These data suggest that under certain circumstances (e.g., stressors such as those portrayed in the images), the range of coping strategies evoked across individuals may be truncated, at least to some degree. Nevertheless, in agreement with the suggestion that dispositional coping styles predict the endorsement of specific strategies (e.g., Carver & Scheier, 1989, 1994; Endler, Kantor & Parker, 1994; Hudek-Kne evic, & Kardum, 1996; Miller, 1987; Rutherford & Endler, 1999), coping

styles in the present investigation were generally predictive of those endorsed in response to the specific contexts.

As flexibility with respect to both the combination and utilization of coping strategies may be advantageous in the face of certain stressors, it was of interest to explore how variability in the endorsement of specific coping strategies related to depressive affect. Although it was anticipated that individuals reporting increased symptoms of depression would demonstrate increased variability (i.e., flexibility) with respect to the endorsement of individual coping strategies across the five pictorial representations (situations), heightened symptoms of depression were associated with *greater* overall variability in the endorsement of specific coping strategies, particularly with respect to problem solving and social support.

Although these findings are inconsistent with those of other studies (Cheng, Hui & Lam, 2004; Compas, Forsythe & Wagner, 1988; Kato, 2001; Lester, Smart & Baum, 1994; Watanabe, Iwanaga, & Ozeki, 2002), which report a positive association between flexibility in coping and psychological well-being, there are several explanations that could account for these findings. For instance, individuals reporting symptoms of depression may exhibit reduced variability in some contexts (e.g., social stressors) and not others, and as such, the stressful events presented (e.g., potentially traumatic events) may not have been conducive to measuring inflexibility in depressed individuals. Moreover, as it has been suggested (Doering et al., 2001; Kohlmann, 1993) that fluctuations of coping patterns across a given stressor may be related to a decrease in psychological well-being, these data may simply reflect *increased instability* in the endorsement of coping strategies among depressed individuals, rather than actual coping

flexibility. That said, given the highly individual and contextual nature of coping, it may be imprudent to render conclusions concerning the apparent purposefulness (e.g., erratic vs. systematic) of the endorsement of coping strategies, as well as their relative efficacy (e.g., adaptive vs. non-adaptive). In a similar fashion, it remains unclear as to the functional significance of differences between participants in terms of standard deviation units. For instance, although participants may have been significantly more variable than one another from a statistical perspective, it is uncertain whether this measurement strategy highlights meaningful, functional differences in the endorsement of specific coping strategies across situations.

Neuroendocrine Activity

Finally, in addition to evaluating coping processes and variability in coping processes, we determined whether a psychogenic laboratory challenge (i.e., asking participants to imagine themselves in 5 potentially stressful situations) would be effective in eliciting neuroendocrine activity. Although we had hypothesized that participants reporting increased symptoms of depression would exhibit a heightened neuroendocrine response to the laboratory stressor relative to individuals exhibiting low symptoms of depression, such an effect was not apparent. Moreover, given that the images portrayed situations that could be construed as traumatic, we had anticipated that individuals reporting a greater number of previous traumas would demonstrate an altered neuroendocrine response to the laboratory stressor when compared to non-exposed individuals. However, as with symptoms of depression, the number of traumas reported by participants did not influence the pattern of neuroendocrine activity across the experimental session.

Although it has been demonstrated that pictures comprising the IAPS are effective in modulating appraisals (Patrick & Lavoro, 1997), the startle reflex (Allen, Trinder & Brennan, 1999), cardiovascular activity (Cobos, Sanchez, Garcia, Vera & Vila, 2002), electrophysiological (Kawasaki et al., 2001) and functional changes in brain activity (Hariri, Mattay, Tessitore, Fera & Weinberger, 2003; Lee et al., 2004; Shapira et al., 2003) there are limited data concerning the efficacy of these images in evoking neuroendocrine activity. In similar types of experiments in which emotional films or images were presented to participants, some studies reported increased neuroendocrine activity (Codispoti et al., 2003; Gerra et al., 1996; Zakowski, 1992), while others demonstrated no effect on cortisol release (Ackerl, Atzmueller, & Grammer, 2002; Huber & de Jong-Meyer, 1992; Vingehoets et al., 1996). Furthermore, in a recent meta-analysis (Dickerson & Kemeny, 2004) it was demonstrated that tasks containing both uncontrollable and social-evaluative elements (e.g., public speaking in front of an audience) were associated with large cortisol changes and the long recovery times , while passive tasks (such as viewing images or films) were associated with relatively modest increases of neuroendocrine activity. Hence, it may have been the case that the task used in the present investigation was not conducive to eliciting increases of neuroendocrine activity, regardless of depressive symptoms or previous traumatic experience.

Study 2

A fundamental component of the transactional model of stress is that when confronted with a challenge, individuals will make *appraisals* concerning the stressor. Essentially, appraisal has been defined as the cognitive interpretation or representation an individual assigns to a potentially stressful event and comprises two fundamental interpretive processes; primary and secondary appraisal (Lazarus & Folkman, 1984). While primary appraisal consists of perceptions associated with the impact of a potentially stressful event or stimulus ("Is this a threat to me?"), secondary appraisal encompasses those thoughts related to the resources available for successfully eliminating or attenuating the stressor ("Do I have the financial resources to deal with being laid-off?") (Lazarus & Folkman, 1984). Importantly, primary and secondary appraisals may not always relate to one another in a consistent temporal manner (Lazarus & Folkman, 1984). For instance, an individual's primary appraisal may be influenced by prior knowledge of the coping resources available to them.

Cognitive models of depression suggest that affective disorders may be characterized by negative biases of appraisal processes (Beck, 1967; Alloy & Clements, 1988; Lawson & MacLeod, 1999; Lawson et al., 2002). For instance, Alloy et al., (1988) proposed a Helplessness/Hopelessness model of depression, in which the development of these emotional states is tied to the extent to which the individual perceives the outcome of a given event to be within their control. In this way, symptoms of depression are brought about when feelings of hopelessness predominate, such that the individual believes that ensuing negative events will be uncontrollable (Beck, 1967; Seligman, 1976; Swendsen, 1997). In an effort to account for the individual factors that contribute

to depression, Abramson et al., (1978) suggested that the attributions assigned to stressors might affect psychological well-being. In this regard, it was suggested that individuals' propensity to perceive negative, uncontrollable events as internal (e.g., caused by them), stable (e.g., chronic in nature) and global (e.g., broad implications) may favour the development of symptoms of depression (Abramson et al., 1978).

In addition to these individual characteristics, there is a body of evidence that suggests that depressed individuals display a negative cognitive bias when confronted with *ambiguous* information (Beck, 1967; Lawson et al., 1999, 2002). When presented with ambiguous textual scenarios, clinically depressed participants provided more negative interpretations than neutral or positive interpretations (Butler & Matthews, 1983). Further, participants who presented with high levels of depressive symptomatology displayed an increased likelihood of appraising a social performance (a taped speech) in a negative manner (Cane & Gotlib, 1985), and displayed a greater eye blink reflex (a potential index of negative appraisal) in response to ambiguous stimuli than did individuals with relatively low levels of depression (Lawson et al., 2002)

As the endorsement of a particular coping strategy or combination of strategies generally follows the appraisal of an event, a fundamental determinant of coping flexibility may comprise individuals' cognitive mobility with respect to the appraisal of potentially stressful events. For example, although some individuals may appraise certain situations as controllable and others as uncontrollable, there are individuals who may be less flexible in this regard (Cheng, 2001). As the perceived controllability of a stressor impacts upon secondary appraisal processes and the types of coping strategies adopted, ultimately it needs to be recognized that characteristics of the event (or

alternatively, the individual's perception of that event) may influence the impact of stressors.

Measuring Appraisal

Given the importance of appraisal processes in governing stress reactions, it is essential that appropriate instruments be available to gauge appraisal processes. To be sure, several different approaches have been used in an effort to determine appraisal., In assessing appraisal, numerous scales have been developed to measure negative affect (a potential outcome of negative appraisal) including the Nowlis Mood Adjective Checklist (NACL) (Nowlis & Green, 1965), the Multiple Affect Adjective Checklist (MAACL) (Zuckerman & Lubin, 1965), the Profile of Moods States (POMS) (McNair, Lorr & Droppleman., 1971), and finally, the Positive Affect-Negative Affect Schedule (PANAS) (Watson, Clark & Tellegen, 1988). These measures, however, are more a reflection of the mood consequences of an event than a measure of appraisal, and there is some question concerning the individual's accuracy in perceiving and interpreting their mood (Stone, 1997). Moreover, biases may influence reported mood, such as the participants' motivation to appear socially desirable (e.g., rating an image of a dying elderly patient as negative when they really believe the person is better off). It has also been observed that participants may be predisposed to endorse extreme responses on mood questionnaires (Stone, 1997). A second approach to evaluate appraisal has been to use measures such as the Perceived Stress Scale (PSS) (Cohen, Kamarck & Mermelstein, 1983; Cohen & Williamson, 1988), which measures the degree to which participants feel events are unpredictable and uncontrollable. A related procedure that is more attune with appraisal processes is the Stress Appraisal Measure (SAM) which was developed to assess the

dimensions of primary appraisal (threat, challenge, & centrality) for a specific anticipated stressor (Peacock & Wong, 1990).

Despite these efforts to evaluate appraisal, its accurate determination remains a difficult task. For example, when asked to retrospectively (or prospectively) identify a stressful event, some participants may cite a particularly severe stressor (e.g., the death of a parent), while others may point to a comparatively mild stressor (e.g., unexpected car repairs). In a similar fashion, while some individuals may choose to report an on-going stressor (e.g., a problematic long-term relationship), others may choose to list stressors that are acute in nature (e.g., losing a calculator before an exam). Thus, in this context, potential variability in the types of stressors reported by participants may preclude analysis of appraisal processes beyond the level of the individual., However, it may be equally difficult to assess appraisal processes when identical situations are presented to each participant. For example, presentation of severely stressful events that leave little doubt as to the potential threat to the individual (e.g., terminal illness, serious physical assault) may not evoke as wide a range of appraisals as those in which the potential for harm to the individual is unclear (e.g., the possibility of a terrorist act).

Given these difficulties, a novel questionnaire was developed to gain additional insight into the appraisal of potentially stressful events by individuals exhibiting varying degrees of depressive affect. This questionnaire was developed with the belief that some individuals would be flexible in their coping and appraisals across situations, whereas others would be more rigid, typically seeing a broad range of events from a narrow perspective. Indeed, it is our contention that ambiguous events may be particularly useful for detecting differences in appraisal processes among individuals, as the meaning and

potential outcome of these events is often unclear, and as such, may highlight interpretative processes more so than other types of events. Thus, a unique aspect of this questionnaire was the use of a series of ambiguous situations to gauge differences in appraisal propensities across situations. In this regard, a primary goal of Study 2 was to investigate the efficacy and factor structure of a questionnaire designed to measure participants' appraisals of a series of ambiguous situations. As well, we assessed whether the negative appraisals of the ambiguous situations presented in the questionnaire would be positively related to symptoms of depression, and whether variability in appraisals across situations would be associated with depressive affect.

Method

Participants and Procedure

Participants were contacted through sign-up sheets, phoned or emailed, and invited to participate in a study concerning appraisal and coping processes[6]. Participants comprised 175 females (*M* age = 19.67, *SD* = 3.24) and 94 males (*M* age = 19.73, *SD* = 3.68), and based on the responses of participants reporting racial background, this sample was 65.1% (n = 175) Caucasian, 3.7% Middle-Eastern (n = 10), 6.7% Black (n = 18), 6.3% Asian (n = 17), and 7.1% East Asian (n = 19).

After completing an informed consent, participants were administered a questionnaire package that included the Beck Depression Inventory (BDI) Beck & Beck, 1972), and the Appraisal of Ambiguous Situation Questionnaire (AASQ) (Kelly,

[6]Participants were originally pre-selected on the basis of high and low loneliness reflected by scores on the UCLA Loneliness Scale Version 3 (Russell, 1996). However, as scores on the 21-Item Beck Depression Inventory were distributed in a manner similar to that which we have found in previous studies, the two groups were combined into a single sample.

Matheson & Anisman, 2003). Following completion of these questionnaires, participants were debriefed.

Measures

Consistent with the previous study, the 21-item Beck Depression Inventory (BDI; Beck & Beck, 1972) (see Table 6 for group means) was used to measure depressive symptoms.

Table 6

Mean Scores on the BDI for Each Category of Depressive Symptoms in Study 2

Severity of Depressive Symptoms	Mean (*SD*)
Low	4.60 (2.81)
Mild	13.58 (2.55)
Moderate	25.23 (5.49)

Note. BDI = Beck Depression Inventory

Appraisal of Ambiguous Situations (AASQ; Kelly, Matheson & Anisman, 2003)

Participants' appraisals of a series of ambiguous events were first evaluated by administering a 33-item version of the AASQ to a pilot sample of approximately 50 Carleton University students. This measure included items to assess participants' perception of a variety of commonly encountered ambiguous situations, including (a) interpersonal or relationship difficulties (e.g., "You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you"), (b) financial worries (e.g., "You go to take money out of your account, but your grant/scholarship/student loan check has not been processed by the bank / deposited by the university. Everyone else has his or hers"), (c) academic

difficulties (e.g., "Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.), (d) health concerns (e.g., You are at health services for what you think is something minor. After the initial exam you glimpse the nurse who just examined you speaking with your physician. They both appear to be concerned") and finally, (e) potentially traumatic events (e.g., "There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random)".

Participants were asked to appraise each event along three dimensions; *threat* ("How threatening would this situation be for you?"), *distress* ("How distressing would this situation be for you?" and *outcome* ("What do you think would be most likely to happen in this situation?"). Both the threat and distress items were each answered using a likert scale that ranged from "Not at All" (1) to "Extremely" (5), while the outcome scale comprised 5 possible outcomes that ranged from a "positive" outcome (1) to a "negative" outcome (5). In an effort to identify those items with the greatest degree of ambiguity, variability in participants' responses for each dimension of appraisal (threat, distress & outcome) was evaluated using frequency histograms for each dimension of appraisal, for each item. Those items that were relatively invariable (i.e., the items were generally perceived as being either quite stressful or benign by most individuals across each dimension of appraisal) were removed from the scale. In total, 24 of the original 33 ambiguous situations were retained for use in subsequent studies (see Appendix B)

Results

Factor Structure: 24-Item AASQ

As certain types of stressful events (e.g., social loss or humiliation) appear to be particularly effective in triggering the onset of depressive episodes, a factor analysis was conducted to determine whether the ambiguous situations presented in the AASQ could be differentiated into categories of stressors on the basis of participants' perceptions. In order for a factor analysis to yield a viable factor structure, the items of interest must be sufficiently interrelated to one another (i.e., a substantial number of correlations greater than .30). To verify that this was the case for items comprising the AASQ, correlation matrices were constructed for each dimension of appraisal (threat, distress and outcome), using each of the 24 items. As well, as principal components factor analysis is a linear procedure, it is assumed that the relationship between the items is linear. This was verified by examining scatter plots of standardized residuals against standardized estimates for a given pair of items. The factor structure of each dimension (threat, distress and outcome) was determined independently using a principal components analysis with a varimax rotation.

Examination of the scree plots for principle components analyses of the threat, distress and outcome dimensions revealed two factors in each case, which explained 42.57 %, 39.48% and 31.30% of the total variance, respectively. Items which loaded less than .40 on one of the factors, or that loaded on both factors were removed and the factor solution re-extracted. This process was repeated until each of the remaining items loaded greater than .40 on only a single factor (see Tables 1 – 3 in Appendix A). To create a single, cohesive factor structure that could be employed concurrently across the threat,

distress and outcome dimensions, a single "common" factor structure was constructed. This consisted of creating "common" versions of the two factors that had been derived from the independent principle components analysis for each of the three dimensions of appraisal., This was completed using only those items that loaded on the same factor, in *each* of the independent principle component analyses for the three dimensions of appraisal., The two factors were subsequently labeled as *Personal* (9 items) (i.e., ambiguous situations aligned with interpersonal interactions or personally relevant events) (Threat, Cronbach's $\alpha = .83$; Distress, Cronbach's $\alpha = .80$; Outcome, Cronbach's $\alpha = .75$) and *Traumatic* stressors (5 items) (i.e., ambiguous situations of a traumatic nature) (Threat, Cronbach's $\alpha = .78$; Distress, Cronbach's $\alpha = .80$; Outcome, Cronbach's $\alpha = .60$) (see Table 7).

Table 7

Common Factor Structure for the AASQ in Study 2

Personal Factor
Items
2. Imagine that you get home from class and there is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you.
4. Most of your friends have left town to attend other universities.
6. While doing a presentation, you notice a couple of students at the back of the class laughing.
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.

9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.
12. Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.
19. You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.
23. You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard.

Traumatic Factor
Items
5. There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town.
11. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.
12. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly.

13. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking lot.

Note. AASQ = Appraisal of Ambiguous Situations Questionnaire

Although the threat, distress and outcome dimensions were highly correlated with one another for both the *Personal* and *Traumatic* factors (see Table 8), these two dimensions were retained in order to more precisely evaluate participants' appraisals of the ambiguous events. For example, while the *threat* dimension may have been more relevant for perceptions regarding the *potential* for the event to cause harm (i.e., anticipatory aspects of the situations presented), the *distress* and *outcome* dimensions may have been more relevant to perceptions related to consequences had the event had actually taken place.

Table 8

Correlations among AASQ Appraisal Subscales (N = 269) in Study 2

Factor	1	2	3	4	5	6
Personal						
1. Threat	-					
2. Distress	.81***	-				
3. Outcome	.62***	.70***	-			
Traumatic						
4. Threat	.46***	.44***	.32***	-		
5. Distress	.44***	.59***	.36***	.91***	-	
6. Outcome	.28***	.35***	.41***	.74***	.73***	-

Note. *p<.05; ** p <.01; *** p <.001; AASQ = Appraisal of Ambiguous Situations Questionnaire

Like exploratory factor analysis (EFA), confirmatory factor analysis (CFA) assumes a linear relationship between each of the variables of interest. This was verified using the same plots constructed for the EFA. As well, it was ensured that multiple indicators (three or more) were used to measure each latent variable in the model and that in accordance with recommendations by Stevens (2001), at least 15 cases (i.e., participants) were employed per measured variable or indicator. Finally, it was verified that the CFA model tested were overidentified. Essentially, model identification concerns whether a unique value for each and every free parameter can be obtained from the observed data. *Just-identified* models have only one possible solution for each parameter estimate; *underidentified* models have an infinite number of possible parameter

estimate values; and finally, *overidentified* models (the most desirable model) have more than one possible solution (but one best or optimal solution) for each parameter estimate.

To determine whether the common factor structure held across each of the dimensions of appraisal (i.e., threat, distress and outcome), a series of CFA were employed to assess whether the common factor structure adequately modeled the data for each dimension. For these analyses, goodness of fit was assessed using the following fit indices; Root mean square error of approximation (RMSEA) and the Comparative Fit Index, (CFI). In accordance with suggestions by Browne and Cudeck (1993), model fit was considered adequate if the RMSEA statistic was less than or equal to .08 and the CFI statistic greater than or equal to .90. As illustrated in Table 9, CFA analyses for each of the dimensions of appraisal indicated that common factor structure provided an adequate model for the sample data (the standardized factor loadings and standardized residuals for these analyses are displayed in Tables 4 - 6 in Appendix A). As such, the common factor structure was retained and employed in subsequent analyses. Scores for the *Personal* and *Traumatic* dimensions were constructed using participants' mean score on each of the items comprising each factor.

Table 9

Fit Indices for Confirmatory Factor Analysis Evaluating the Common Factor Structure in Study 2

Dimension of Appraisal	RMSEA	CFI
Threat	.05	.95
Distress	.04	.97
Outcome	.05	.90

Note. RMSEA = Root mean square error of approximation; CFI = Comparative Fit Index

Appraisal of "Personal" Ambiguous Events: Relation to Depression

To determine whether participants' appraisals of the *Personal* ambiguous events were related to symptoms of depression, a standard regression analysis was conducted in which scores on the BDI were regressed onto the threat, distress and outcome dimensions of appraisal., As expected, participants' appraisals of the *Personal* ambiguous situations were predictive of depressive symptoms, $R^2 = .35$, $F(3, 265) = 46.70$, $p < .001$. While each of the three dimensions of appraisal were positively correlated with depressive affect (see Table 10), only increased anticipation of a negative *outcome* accounted for unique variance in BDI scores; however, it should be noted that the intercorrelation between each of the dimensions of appraisal may have precluded unique effects for the *threat* and *distress* dimensions.

Appraisal of Traumatic Ambiguous Events: Relation to Depression

Similarly, to assess whether participants' perceptions of the *Traumatic* ambiguous events were associated with symptoms of depression, a standard regression analysis was carried out in which scores on the BDI were again regressed onto the threat, distress and outcome dimensions of appraisal., As with the *Personal* ambiguous situations, participants' appraisals of the *Traumatic* ambiguous situations were related to symptoms of depression, $R^2 = .06$, $F(3, 265) = 5.70$, $p \leq .001$. Although each of the three dimensions of appraisal exhibited positive zero-correlations with depressive affect (see Table 10), neither perceived threat, distress nor outcome accounted for unique variance in BDI scores. However, as in the previous analysis, the marked intecorrelations between each of the dimensions of appraisal may have prevented any one dimension from explaining unique variance of BDI scores.

Table 10

Regression Analysis Assessing Relations Between BDI Scores and Appraisals of Personal and Traumatic Situations of the AASQ in Study 2

Factor	*r*	β	R^2
Personal			.35***
Threat	.42***	.01	
Distress	.48***	.16	
Outcome	.58***	.46***	
Traumatic			.06***
Threat	.20***	-.08	
Distress	.23***	.20	
Outcome	.22***	.13	

Note. *p<.05; ** p <.01; *** p <.001; BDI = Beck Depression Inventory; AASQ = Appraisal of Ambiguous Situations Questionnaire

Variability of the Appraisal of Personal Ambiguous Events: Relation to Depression

Given that the endorsement of a particular coping strategy or combination of strategies generally follows the primary appraisal of an event, variability of the endorsement of coping strategies (which may be adaptive in dealing with a various stressors) ought to involve elevated variability with respect to the appraisal of potential stressors. Thus, variability in the appraisals of the Personal ambiguous events was evaluated in relation to depressive symptom severity.

To this end, a standard regression analysis was conducted in which scores on the BDI were regressed onto standard deviation for participants' combined score on each of the dimensions of appraisal for the situations comprising the *Personal* factor dimensions

of appraisal., Contrary to our hypothesis, variability of participants' appraisals of the *Personal* ambiguous situations was positively associated with depressive symptoms, $R^2 = .06$, $F(3, 265) = 6.06$, $p \leq .001$. While variability of appraisals for each of the three dimensions of appraisal were positively correlated with severity of depressive symptoms (see Table 11), only variability in appraisals related to *distress* explained unique variance in BDI scores.

Variability in the Appraisal of Traumatic Ambiguous Events: Relation to Depression

A similar regression was performed in which scores on the BDI were regressed onto standard deviation for participants' combined score on each of the dimensions of appraisal for the situations comprising the *Traumatic* factor. This analysis revealed that variability in participants' appraisals of the *Traumatic* items were not related to depressive symptomatology, $R^2 = .004$, $F < 1$ (see Table 11).

Table 11

Regression Analysis Assessing Relations Between BDI Scores and Variability of Appraisals of Personal and Traumatic Situations of the AASQ in Study 2

Factor	r	β	R^2
Personal			.06**
Threat	.22***	.07	
Distress	.25***	.18*	
Outcome	.11*	.04	
Traumatic			.004
Threat	-.03	-.10	
Distress	.02	.09	
Outcome	-.01	-.01	

Note. *p<.05; ** p <.01; *** p <.001; BDI = Beck Depression Inventory; AASQ = Appraisal of Ambiguous Situations Questionnaire

Discussion

A primary goal of the Study 2 was to investigate the factor structure and efficacy of a novel questionnaire designed to measure participants' appraisal of a series of ambiguous situations. Based on participants' appraisals, the situations comprising the AASQ could be differentiated into those of either a *Personal* (e.g., social rejection) or of a *Traumatic* (e.g., terrorist attack) nature. It will be recalled that different types of stressors are aligned with the development of specific psychopathologies. For instance, it has been suggested that events characterized by loss or social embarrassment appear to facilitate the onset of depressive episodes (Brown et al., 1987; Kendler et al., 2003; Monroe & Depue, 1991; Roy, 1983, 1985), whereas anticipatory or traumatic events

seem to facilitate anxious states and PTSD, respectively (Reno & Hillaris, 1990). In this regard, the underlying factor structure of the AASQ may be useful for assessing the relationship between appraisals of different types or categories of stressors (such as those comprising the *Personal* and *Traumatic* factors) and the development of specific types of mental illness.

In the course of constructing the common factor structure a number of potentially viable items were omitted as they did not load uniformly for each factor across the *threat, distress* and *outcome* dimensions of appraisal., As such, the "common" factor structure employed may have been biased to some degree through the inclusion of only those items that loaded across *each* of the dimensions of appraisal., Indeed, different results may have been obtained had a different subset of items been utilized in the creation of the *Personal* and *Traumatic* factors, using different selection criterion. Nevertheless, it is our contention that the factor structure presented represents a compromise that allows for meaningful comparisons across the *threat, distress* and *outcome* dimensions of appraisal, for each factor.

Consistent with our hypothesis, we observed that negative appraisals of the *Personal,* and to a lesser extent *Traumatic* ambiguous situations, were positively associated with symptoms of depression. These results are consistent with earlier studies (Alison & Burgess, 2003; Bouhuys et al., 1999; Lawson & MacLeod, 1999; Lawson et al.,, 2002; Nunn et al., 1997) which indicated that depressed individuals exhibit a propensity to endorse negative interpretations of ambiguous information. Thus, these data support the notion that a tendency to impose negative rather than neutral interpretations on ambiguous situations may be associated with an individual's

vulnerability to developing depressive illness (Lawson & MacLeod, 1999). Moreover, these findings speak to the heightened importance of interpersonal (i.e., social) stressors in the evolution of depressive symptoms, relative to other types of stressors (e.g., traumatic events) (Brown et al., 1987; Monroe & Depue, 1991; Roy, 1983, 1985; Kendler et al.,, 2003).

Finally, appraisal flexibility was assessed across each of the situations presented in the questionnaire in relation to depressive affect. In contrast to the predicted outcome, but consistent with the increased coping variability observed in Study 1, participants reporting heightened symptoms of depression were generally more variable in their appraisal of the *Personal* ambiguous events than those exhibiting low levels of depressive symptoms, particularity with respect to perceptions of threat and distress. Variability in the appraisal of the Traumatic situations (both generally and for each dimension independently) did not vary with symptoms of depression.

These findings are contrary to the position that heightened variability (a potential index of flexibility) with regard to appraisal and coping would be characteristic of individuals with relatively high symptoms of depression. As in Study 1, which suggested a positive relation between variability of the endorsement of coping strategies and depressive symptoms, increased variability of appraisals may have simply reflected an inconsistent pattern of perception on the part of depressed individuals, rather than flexibility in the interpretation as the situations dictated. However, as mentioned earlier, it may be unwise to infer the underlying motivation or purposefulness behind the endorsement of appraisals in the absence of explicit confirmatory evidence. Finally, the functional significance of the increased appraisal variability evident among depressed

individuals remains unclear. As indicated earlier, although participants may have been more variable from a statistical perspective, it is difficult to infer whether these differences impact upon functional outcomes (e.g., symptoms of depression).

Study 3

As described earlier, the impact of environmental challenges may be related to both the appraisal of a stressor, and the perceived availability of coping methods (Lazarus & Folkman, 1984). Essentially, the transaction between the individual and the environment comprises an initial appraisal or risk assessment, followed by an evaluation of the coping resources and options available, and hence the possibility of successfully dealing with the stressor. In this respect, it follows that the relation between appraisal and depression is mediated by coping processes. Thus, in Study 3 it was assessed the nature of the relations among the processes associated with depression.

A second goal of Study 3 was to replicate the findings of Study 2 with respect to the efficacy and factor structure of the AASQ. As well, it was of interest to once more determine whether appraisals of ambiguous situations varied in relation to depressive affect. Finally, it was again explored whether appraisal flexibility across the situations presented in the questionnaire was related to depressive affect.

In addition to assessing the cognitive processes associated with depression, the present study also aimed at evaluating neuroendocrine correlates of depression with particular attention devoted to the possibility that even low levels of depression would be associated with elevated HPA reactivity in response to a psychological challenge. Under basal conditions glucocorticoid release ordinarily follows a well-defined diurnal rhythm. Typically, cortisol levels rapidly increase approximately 30-60 minutes following awakening, after which, levels decrease throughout the day. Although this pattern appears to be independent of a number of variables (e.g., age, time of awakening, quality of sleep, physical activity or morning routine), factors including food-intake and gender

may influence free cortisol levels (de Kloet, 1991; Schmidt-Reinwald et al., 1999). Importantly, it has been suggested that stress-related pathologies may be associated with variations in the diurnal release of cortisol. For instance, it has frequently been observed that individuals with major depression exhibit a marked increase in neuroendocrine activity across the day (Plotsky et al., 1998). Curiously, individuals exhibiting symptoms of PTSD may display a relatively flat profile over the course of the day, essentially showing cortisol below control levels in the morning, but elevated in the afternoon (Brunet & Meaney, personal communication, May 2003). In a similar fashion, individuals reporting relatively severe stressors, including childhood maltreatment (Hart et al., 1996), poor-relationship functioning (Adam & Gunnar, 2001), increased workload (Caplan et al., 1979), unemployment (Ockenfels, 1995), burnout (Melamed et al., 1999; Pruessner et al., 1999), financial strain (Grossi et al., 2001) and job strain (Steptoe et al., 2000) have all been associated with disturbances of the normal pattern of cortisol release (reviewed in Yehuda, 2002).

In the current investigation it was determined whether the individuals reporting heightened levels of depression exhibited an altered pattern of diurnal cortisol over the course of a single day. It was hypothesized that individuals exhibiting moderate to severe symptoms of depression would exhibit increased levels of awakening cortisol in comparison to those with low levels of symptoms. Furthermore, it was anticipated that diurnal neuroendocrine release would vary as a function of previous trauma encountered and particularly the number of traumatic events reported by participants. Specifically, it was anticipated that participants reporting increased numbers of traumatic events would exhibit lower levels of cortisol release following awakening. In addition to assessing

cortisol values relative to symptoms of depression and the number of traumatic experiences reported, separate analyses were conducted to determine whether the proportionate change of cortisol levels (relative to that detected at awakening) varied as a function of appraisals of the ambiguous events contained in the AASQ, as well as the coping strategies endorsed. It was expected that proportionate changes in cortisol levels 30 minutes following awakening would be greatest among individuals reporting more negative appraisals of the ambiguous events described in the AASQ and those demonstrating increased endorsement of emotion-focused coping strategies. Finally, it was expected that completion of the TLEQ, a questionnaire that acted as a reminder of previous trauma, might promote increased cortisol levels among individuals exhibiting greater depressive symptoms, as well as those reporting negative appraisals of events comprising the AASQ and endorsement of emotion-focused coping strategies. In contrast, it was hypothesized that individuals reporting a relatively high level of trauma experiences would, like those individuals affected with PTSD, display decreased reactivity to the TLEQ.

Method

Participants and Procedure

Phase 1

Participants recruited (through sign-up sheets, phone or email) for this first phase comprised 173 females (*M* age = 19.43, *SD* = 2.51) and 55 males (*M* age = 19.61, *SD* = 2.61). Based on their responses, this sample consisted of 77.4% (n = 151) Caucasian, 4.1% Middle-Eastern (n = 8), 5.5% Black (n = 11), 1.5% Asian (n = 3), and 11.3% East Asian (n = 22). After written informed consent was obtained, participants completed the

21-item Beck Depression Inventory (Beck & Beck, 1972), and the SCOPE (Matheson & Anisman 2003). This version of the SCOPE included 50 items, as several items were added to assess "wishful thinking" (a potentially maladaptive form of cognitive restructuring). Once this had been completed, students were verbally debriefed and scheduled to complete Phase 2 on a day mutually agreed upon by the participant and investigator. As this particular study required a great deal of participant cooperation, the study was conducted in two phases in an effort to avoid participant fatigue, as well as to facilitate the collection of saliva samples under relatively normal conditions (i.e. in the context of participants' normal, daily activities).

Phase 2

The majority of the second phase of the study was self-administered and depending on the availability of the participant, was completed a minimum of 1 week and maximum of 3 weeks following the completion of Phase 1. Participants recruited for this phase comprised a subset of the original sample obtained in Phase 1. All participants indicated willingness to be involved in the follow-up, but 10.8% did not actually return. Thus, the final sample comprised 155 females and 50 males (M age = 19.7, SD = 2.84) and based on the responses of participants reporting racial background, this subset was 78.5% (n = 135) Caucasian, 3.5% Middle-Eastern (n = 6), 5.8% Black (n = 10), 1.2% Asian (n = 2), and 11% East Asian (n = 19). The BDI scores of participants who did not complete the second phase of the study were significantly higher than those who continued the study (M = 12.74, SD = 9.05; M = 8.27, SD = 6.92, respectively), $F(1, 226) = 8.03$, $p < .05$. It is uncertain whether the higher depression scores among non-returnees reflects procrastination often associated with depression (or some other depression-

related characteristic), or whether there was a greater university drop-out rate among the more depressed student sample. It is noteworthy, however, that the endorsement of the 13 coping strategies contained within the SCOPE did not differ between participants who did not complete the study and those who participated in the second phase of the investigation, $F(7, 1646) = 1.75, p = .09, \eta^2 = .01$.

Participants were provided with Salivettes™ and instructed to provide saliva samples upon awakening, and again at 0.5, 1, 4 and 6 hours later. They were then asked to come to the laboratory 1 hr after the last sample was taken, where they provided 2 further saliva samples 15 min apart. Thereafter, participants were asked to complete the AASQ (Kelly et al., 2003) and the TLEQ (Kubany et al., 2000), after which 2 further saliva samples were taken (15 and 30 min after the task). This latter questionnaire served as a reminder of previous adverse experiences, and thus was considered to be a potential stressor. In addition to the saliva samples, participants were asked to record whether they had encountered any particularly stressful events on the day the saliva was taken, and they recorded the precise time of saliva collection. At the end of the study participants were debriefed verbally and in writing, and provided the appropriate contact information.

Measures

As in our previous investigations, the 21-item version of the BDI (Beck & Beck, 1972) (see Table 12 for group means) was employed to assess symptoms of depression among participants. In addition, the SCOPE (Matheson & Anisman, 2003) was utilized to assess the coping strategies endorsed by participants. As well, the AASQ and TLEQ were employed to measure participants' appraisal of a number of ambiguous events and the number of traumatic events experienced, respectively.

Table 12

Mean Scores on the BDI for Each Category of Depressive Symptoms in Study 3

Severity of Depressive Symptoms	Mean (*SD*)
Low	4.92 (2.61)
Mild	12.93 (2.36)
Moderate	25.88 (5.97)

Note. BDI = Beck Depression Inventory

Results

Confirmatory Factor Analysis

It will be recalled that in Study 2, an EFA was conducted to determine whether the ambiguous situations presented in the AASQ could be differentiated into different categories on the basis of participants' responses. This analysis yielded two factors; a *Personal* dimension that comprised items relating to interpersonal or personally relevant events and a *Traumatic* factor that included items describing potentially traumatic events. This factor structure was subsequently verified by means of a CFA. In the current investigation it was of interest to further evaluate the factor structure of the AASQ by again conducting a CFA to test the model fit of the common factor structure indicated by the EFA and CFA described in Study 2. This was accomplished using participants' responses from the current investigation in combination with responses obtained from a subset of participants tested in a follow-up component of Study 2 (n = 182). This was done to maximize the number of participants included in the analyses in order to ensure sufficient power. As in Study 2, goodness of fit was assessed using the absolute fit-index, RMSEA, and the comparative fit index, CFI. In accordance with suggestions by Browne

and Cudeck (1993), model fit was considered adequate if the RMSEA value was less than or equal to .08 and the CFI value greater than or equal to .90. As illustrated in Table 11, CFA analyses for each of the dimensions of appraisal indicated that the common factor structure derived from participants' responses in Study 2 provided an adequate model for the combined responses of participants in Phase 2 of Study 2, and of the current investigation (the standardized factor loadings and standardized residuals for these analyses are displayed in Tables 7 - 9 in Appendix A). The reliabilities for each of the appraisal dimensions (threat, distress and outcome) of the *Personal* and *Traumatic* factor for the combined samples are presented in Table 13. As in Study 2, each of the appraisal subscales (i.e., threat, distress & outcome) was highly correlated with one another (see Table 14).

Table 13

Fit Indices for Confirmatory Factor Analysis of the Common Factor Structure and Reliabilities for Each Dimension of Appraisal for the Personal Factor in Study 3

			Cronbach's α	
Dimension of Appraisal	RMSEA	CFI	Personal	Traumatic
Threat	.07	.92	.86	.79
Distress	.07	.90	.80	.78
Outcome	.04	.95	.72	.65

Note. RMSEA = Root-Mean-Square Error of Approximation; CFI = Comparative Fit Index

Table 14

Correlations among Appraisal Subscales of the AASQ (N = 387)[a] *in* Study 3

Factor	1	2	3	4	5	6
Personal						
1. Threat	-					
2. Distress	.85***	-				
3. Outcome	.59***	.69***	-			
Traumatic						
4. Threat	.62***	.58***	.41***	-		
5. Distress	.61***	.63***	.46***	.94***	-	
6. Outcome	.43***	.44***	.46***	.78***	.79***	-

Note. a. 387 represents the total number of participants obtained from both Phase 2 of Study 2 (n = 182) and participants who completed the AASQ in the current investigation (n = 205). *** p< .001; AASQ = Appraisal of Ambiguous Situations Questionnaire

Lack of Invariance Analysis

While the factor structure derived for the AASQ appeared to be adequate for describing appraisals in a normative sample in which a wide range of depressive symptoms were present, it is unclear whether the factor structure employed accurately reflects the appraisals of those individuals reporting heightened symptoms of depression. To address this question, a lack of invariance analysis was performed[7]. In brief, this comprised using a nested sequence of CFA models that tests whether variants of the

[7]In order to maximize the number of participants in each group reporting varying levels of depressive symptoms (e.g., typically, only 5 to 15% of a given student sample will report *moderate* symptoms of depression), this analysis was completed using the large participant pool available for Study 3 (i.e., combined responses from Phase 2 of Study 2 and the current investigation), as opposed to the smaller number of participants available in Phase 1 of Study 2.

original factor structure held across a specified number of groups. In this instance, measurement invariance was evaluated by constraining the factor loadings of each item to be equal to the model derived using a normative sample across 3 groups of participants. This comprised those exhibiting moderate to high symptoms of depression (BDI = 19 and above), those reporting mild symptoms of depression (BDI = 10 to18) and finally, those participants who indicated low symptoms of depression (BDI = 9 and below). This constrained model was then tested against the unconstrained model using a chi-square test to determine whether a significant difference between the original and the constrained models existed. As demonstrated in Tables 15, each model (including the constrained model) demonstrated adequate fit of the data, for each dimension of appraisal.,

Table 15

Lack of Invariance Analysis for each Dimension of Appraisal for the AASQ in Study 3

	RMSEA (90% confidence interval)	
Dimension of Appraisal	Unconstrained	Factor Loadings Constrained
Threat	.05 (.04 -.05)	.05 (.04 -.06)
Distress	.05 (.04 -.06)	.04 (.03 -.05)
Outcome	.03 (.02 -.04)	.03 (.02 -.04)

Note. RMSEA = Root-Mean-Square Error of Approximation

Moreover, for each dimension of appraisal, subsequent nested model comparisons did not yield differences between the constrained and unconstrained model (see Table

16). Taken together, these data provide robust evidence for a similar factor structure for the AASQ across groups of participants exhibiting varying levels of depression.

Table 16

Nested Model Comparisons: Assuming the Unconstrained Model to be Correct for Each Dimension of Appraisal

	Factor Loadings Constrained		
Dimension of Appraisal	χ^2	*df*	*p*
Threat	15.15	24	.92
Distress	24.32	24	.44
Outcome	20.40	24	.67

Appraisals, Coping and Depression

As indicated earlier, the transactional model of stress posits that the impact of environmental challenges may be related to the individual's appraisal of a stressor, and the perceived availability of coping methods. As such, analyses were undertaken to determine whether the coping strategies endorsed mediated the relationship between appraisals and symptoms of depression. In accordance with the methodological approach outlined by Baron and Kenny (1986), to assess this mediated model a series of relations must first be established.

To determine whether participants' appraisals of the *Personal* and *Traumatic* ambiguous events were related to symptoms of depression, two separate regression analyses were conducted in which scores on the BDI were regressed onto the threat,

distress and outcome dimensions of appraisal of the *Personal* and *Traumatic* factor. As in Study 2, participants' appraisals of the *Personal* ambiguous situations were predictive of depressive symptoms, $R^2 = .10$, $F(3, 201) = 7.47$, $p < .001$. While each of the three dimensions of appraisal was significantly correlated with depressive affect (see Table 17), only increased anticipation of a negative *outcome* accounted for unique variance of BDI scores. Of course, as in Study 2, the high intercorrelation between the items may have precluded unique effects for the threat and distress dimensions. Contrary to Study 2, as a group, the dimensions of appraisal for the *Traumatic* factor did not predict symptoms of depression $R^2 = .03$, $F(3, 201) = 2.02$, $p = .11$, and as such, the *Traumatic* factor was excluded from further analysis.

Table 17

Regression Analysis Assessing Relations Between BDI scores and Appraisals of Items Comprising the Personal Factor of the AASQ in Study 3

Factor	r	β	R^2
Personal			$.10^{***}$
Threat	$.21^{***}$	-.08	
Distress	$.27^{***}$	.21	
Outcome	$.30^{***}$	.21*	
Traumatic			.03
Threat	$.14^{*}$	-.14	
Distress	$.16^{**}$	.28	
Outcome	$.13^{*}$	.02	

Note. *p<.05; ** p <.01; *** p <.001; AASQ = Appraisal of Ambiguous Situations

To determine which coping strategies would be treated as mediating variables, three separate regression analyses were performed in which the threat, distress and outcome dimensions for the *Personal* factor were regressed onto the 13 coping strategies comprising the SCOPE. As illustrated in Table 18, the threat, $F(13, 191) = 4.13, p < .001$; distress, $F(13, 191) = 4.99, p < .001$ and outcome, $F(13, 191) = 4.72, p < .001$ dimensions of appraisal for the *Personal* factor were significantly associated with the coping. Potential mediating variables for each dimension of appraisal were selected on the basis of significant zero-order correlations between coping strategies and respective dimensions of appraisal., Specifically, only those coping dimensions that were significantly correlated with the respective dimension of appraisal were identified as potential mediating variables of the relationship between appraisal and depressive affect.

Table 18

Regression Analysis Assessing Relations Between Appraisals of the Personal Situations and Coping Styles in Study 3

	Threat			Distress			Outcome		
	r	β	R^2	*r*	β	R^2	*r*	β	R^2
Coping Strategies			.22***			.25***			.24***
Problem Solving	-.02	.06		-.09	.05		-.17**	-.01	
Cognitive Restructuring	-.07	-.08		-.12*	-.12		-.15*	-.12	
Active Distraction	.03	.07		.02	.09		-.17**	-.09	
Cognitive Distraction	.17**	.01		.14*	-.03		.09	-.02	
Rumination	.32***	.08		.35***	.08		.35***	.07	
Humour	-.16*	-.20**		-.16**	-.16*		-.16*	-.10	
Social Support Seeking	.08	.13		.01	.05		-.08	.02	
Emotional Expression	.29***	.11		.37***	.20*		.37***	.20*	
Other-Blame	.19**	.07		.21***	.07		.21***	.08	
Self-Blame	.31***	.17*		.26***	.05		.30***	.10	
Emotional Containment	.15*	.02		.18**	.03		.18**	-.01	
Passive Resignation	.09	.01		.09	.02		.15*	.09	
Wishful Thinking	.33***	.12		.39***	.21*		.33***	.13	

Note. *$p<.05$; **$p<.01$; ***$p<.001$

In addition, the relationship between symptoms of depression and coping strategies was assessed. To this end, a standard regression was performed in which participants' scores on the BDI were regressed onto the 12 coping strategies. As in Study 1, the coping strategies endorsed were predictive of depressive symptoms, R^2, = .50, $F(13, 191) = 14.94$, $p < .001$. Specifically, while the endorsement of problem-focused strategies was generally negatively associated with symptoms of depression, the endorsement of emotion-focused strategies was positively associated with depressive affect (see Table 19). Similar to the previous analysis, potential mediating variables for each dimension of appraisal were selected, in part, on the basis of significant zero-order correlations between coping strategies and BDI scores. Indeed, only those coping strategies sharing zero order correlations with a given dimension of appraisal and BDI scores were utilized as mediating variables.

Once these relations were established, the mediating role of coping strategies was assessed with respect to the relation between appraisal and symptoms of depression. To this end, three separate hierarchical regressions were conducted (one for each dimension of appraisal) in which those coping strategies sharing zero order correlations with the respective dimension of appraisal and symptoms of depression were entered on the first step, and participants appraisal for the particular appraisal dimension on the second step. These were then regressed on participants' scores on the BDI.

When those coping strategies common to threat appraisals and BDI scores were entered as potential mediating variables, threat appraisals was no longer a significant predictor of depressive symptoms, R^2=.000, $F < 1$. (see Table 19). Likewise, when coping strategies common to appraisals of distress and BDI scores were controlled for,

appraisals of distress no longer predicted symptoms of depression , R^2=.001, $F < 1$ (see Table 19). Finally, when coping strategies mutual to perceptions of outcome and BDI scores were entered as potential mediating variables, appraisals regarding potential outcome were no longer related to symptoms of depression, R^2=.000, $F < 1$. As illustrated in Table 19, the Sobel t-values calculated for each of the mediating variables individually demonstrated that the majority of coping strategies represented at least a partial path between appraisals and depressive symptoms. Thus, these findings are consistent with the suggestion that the impact of appraisals on depressive symptoms was mediated by the coping strategies endorsed.

Table 19

Regression and Sobel's Tests Assessing Mediated Relations Between Appraisal and Depressive Symptomatology in Study 3

		Threat		Distress		Outcome	
	r	β	Sobel t	β	Sobel t	β	Sobel t
Coping Strategies							
Problem-solving	-.31***	-	-	-	-	-.10	2.14*
Cognitive restructuring	-.20**	-	-	-.18**	1.38	-.14*	1.54
Active distraction	-.32***	-	-	-	-	-.18**	1.98*
Cognitive distraction	.08	-	-	-	-	-	-
Rumination	.46***	.15	3.91***	.15*	4.20***	.15*	4.08***
Humor	-.08	-	-	-	-	-	-
Social support seeking	-.35***	-	-	-	-	-	-
Emotional expression	.34***	.13	3.22***	.11	3.20***	.08	3.16**
Other-blame	.09	-	-	-	-	-	-
Self-blame	.53***	.29***	3.85***	.30***	3.33***	.26***	4.01***
Emotional containment	.47***	.26***	2.03*	.23***	2.49*	.20**	2.51*
Passive resignation	.23***	-	-	-	-	.13*	1.63
Wishful thinking	.38***	.01	3.61***	.02	2.30*	.02	3.35***
Appraisal							
Threat	.21***	-.00					
Distress	.27***			.07			
Outcome	.30***					.01	

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

Variability in the Appraisal of Personal Ambiguous Events: Relation to Depression

Although it was hypothesized that cognitive variability with respect to the appraisal of potential stressors would confer resistance to stress-related pathologies such as depression, Study 2 demonstrated that symptoms of depression were positively

associated with variability of appraisals of the events described in the AASQ. To further assess the relations between flexibility in the appraisal of the *Personal* ambiguous events and depressive affect, as in Study 2, a standard regression analysis was conducted in which scores on the BDI were regressed onto standard deviation for participants' combined score on each of the dimensions of appraisal for the situations comprising the *Personal* factor dimensions of appraisal., Consistent with Study 2, variability of participants' appraisals of the *Personal* ambiguous situations was positively associated with depressive symptoms, $R^2 = .06$, $F(3, 201) = 4.13$, $p < .01$. While variability of appraisals for each of the three dimensions of appraisal was positively correlated with participants' scores on the BDI (see Table 20), none of the appraisal dimensions explained unique variance in BDI scores.

Variability in the Appraisal of Traumatic Ambiguous Events: Relation to Depression

To determine whether variability in the appraisal of the *Traumatic* ambiguous events was related to symptoms of depression, a similar regression analysis was conducted in which scores on the BDI were regressed onto standard deviation for participants' combined score on each of the dimensions of appraisal for the situations comprising the *Traumatic* factor. In contrast to the relationship between symptoms of depression and variability in the appraisal of a series of ambiguous *Personal* events, as in Study 2, variability in participants' appraisal of the *Traumatic* items was not related to depressive symptomatology, $R^2 = .02$, $F(3, 201) = 1.14$, $p = .33$ (see Table 20)

Table 20

Regression Analysis Assessing Relations Between BDI Scores and Variability of Appraisals of Personal and Traumatic Situations of the AASQ in Study 3

Factor	*r*	β	R^2
Personal			.06**
Threat	.23***	.21	
Distress	.19**	-.01	
Outcome	.14*	.08	
Traumatic			.02
Threat	.12*	.18	
Distress	.07	-.06	
Outcome	.03	-.02	

Note. *p<.05; ** p <.01; *** p <.001; BDI = Beck Depression Inventory; AASQ = Appraisal of Ambiguous Situations Questionnaire

Diurnal Neuroendocrine Activity: Relation to Depression

Major depression, it will be recalled, is frequently associated with a marked increase of HPA neuroendocrine activity, just as stressful events provoke such an outcome. In the case of life stressors the elevated cortisol levels are particularly pronounced within the first hour of awakening. It was of interest to assess whether cortisol levels across the day varied in a similar manner to that associated with a chronic stressor or with depressive symptoms. A mixed measures ANOVA was employed, in which the 5 cortisol measures (awakening, 30 minutes following awakening, and 1, 4 and 6 hours following awakening) were treated as a within-subjects variable and level of depression as a between-subjects factor. This analysis revealed that while participants

exhibited marked variation in cortisol levels throughout the day, $F(4, 736) = 33.31, p < .001$, $\eta^2 = .15$, the diurnal pattern of cortisol release did not vary as a function of depressive symptoms, either directly or as a moderating effect over the course of the experimental session $Fs < 1$ (see Figure 11).

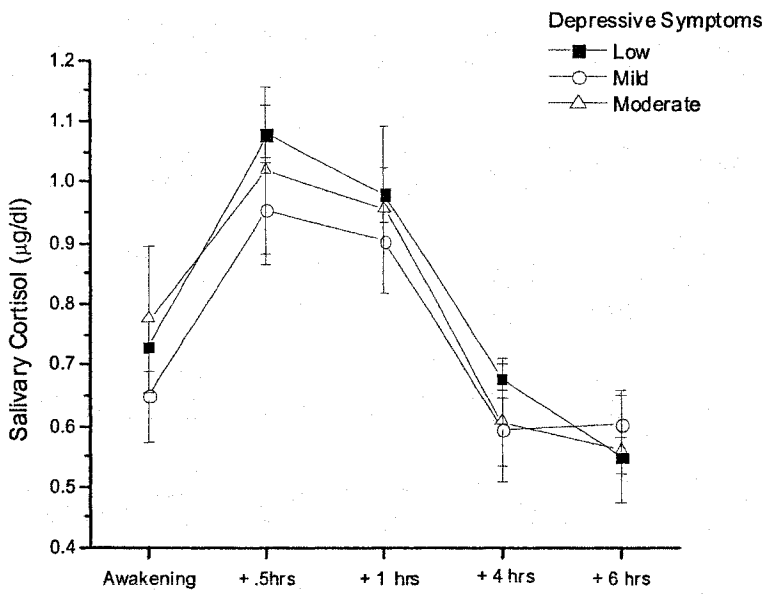


Figure 11. Salivary cortisol levels ($M \pm SEM$ of each sample) across a day of measurement among male and female participants reporting low, mild or moderate symptoms of depression in Study 3.

Polynomial within-subjects contrasts were conducted for the 5 cortisol measures to determine whether cortisol levels declined over the course of the day. These within-subject contrasts indicated that cortisol release over the course of experimental session was characterized by a significant linear, $F(1, 184) = 30.78, p < .001$, $\eta^2 = .14$, quadratic, $F(1, 184) = 45.72$, $p < .001$, $\eta^2 = .20$ and cubic, $F(1, 184) = 3.56, p < .001$, $\eta^2 = .19$ trend. Indeed, cortisol levels rose appreciably 30 minutes and 1 hour after awakening, and then declined steadily over the course of the day.

Diurnal Neuroendocrine Activity: Relation to Previous Traumatic Experiences

To determine whether glucocorticoid release varied as a function of the number of traumatic events reported, a mixed measures ANOVA was employed in which the 5 cortisol measurements were treated as within-subjects variables and the number of previous traumas reported that evoked feelings of fear, hopelessness or terror (0, 1 to 2, 3 to 5, and 6 above) as a between-subjects factor. These intervals represented 19%, 39%, 31% and 13% of participants, respectively[8]. In contrast to symptoms of depression, it was observed that in addition to a main effect of cortisol over the sampling periods, $F(4, 732) = 33.31, p < .001, \eta^2 = .23$, this effect was moderated by previous traumatic experiences reported by participants, $F(12, 732) = 1.93, p < .05, \eta^2 = .03$ (see Figure 12). Follow-up comparisons indicated limited differences between groups owing to the appreciable variance that existed. Nevertheless, as expected, orthogonal comparisons comparing cortisol level at each of the sampling intervals for those participants reporting 6 or more traumatic with the combined mean of the other groups (0, 1 to 2, 3 to 5) indicated significantly lower cortisol levels at the first three sampling intervals when compared to the combined levels for the other groups (*ps* < .05).

[8]As in Study 1, while it would have been preferable to divide the number of trauma's experienced into 15%, 35, 35 and 15% (i.e., more akin to normal distribution), this was simply not possible based on distribution of participants' responses.

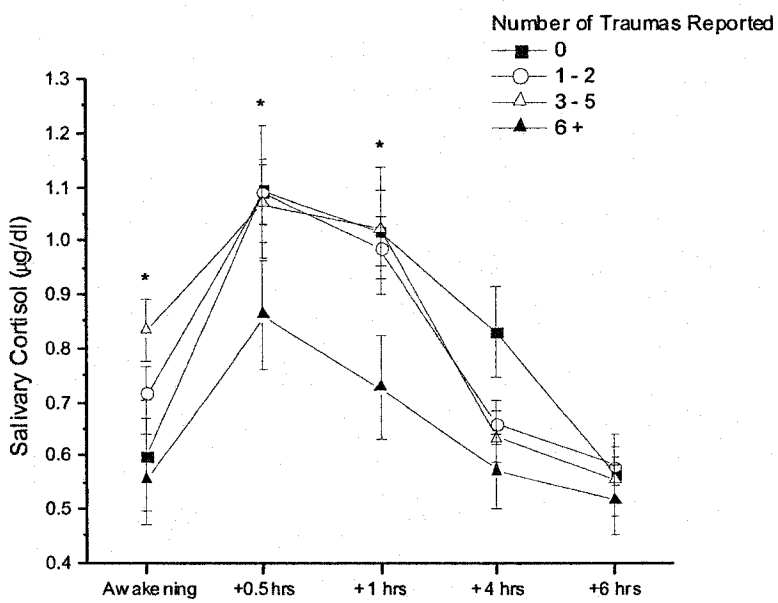


Figure 12. Salivary cortisol levels (*M* ±*SEM* of each sample) across a day of measurement among male and female participants reporting varying number of traumas in Study 3. * Significantly lower cortisol levels for participants reporting 6 or more traumas compared to the combined levels for each of the other groups (*ps* < *.05*).

Diurnal Neuroendocrine Activity: Relation to Appraisal and Coping Processes

As appraisals and coping processes may play a fundamental role in determining the impact of stressors, including modulation of stress-related physiological processes, it was of particular interest to determine whether the proportionate change of cortisol levels (relative to that detected at awakening) varied as a function of either appraisals of the ambiguous events, as well as the coping strategies endorsed. Three separate regression analyses were thus undertaken in which the percentage change of cortisol levels from awakening to 30 minutes following awakening were regressed onto the three dimensions of appraisal for the *Personal* and *Traumatic* factors of the AASQ, as well as the 13 coping strategies that comprised the SCOPE. Contrary to expectations, the percentage increase of cortisol following awaking was unrelated to either appraisal or coping processes (*Fs* < 1).

Neuroendocrine Activity following a Laboratory Stressor: Relation to Symptoms of Depression and Previous Traumatic Experiences

To evaluate whether neuroendocrine activity in response to a stressor, in this instance the completion of the TLEQ, varied in relation to symptoms of depression or previous trauma experiences, mixed measures ANOVAs were employed, in which the 4 cortisol measurements (baseline, immediately before completing the TLEQ and 15 and 30 minutes following completion of the TLEQ) were treated as within-subjects variable and symptoms of depression (or in a second analysis the number of trauma events experiences) as a between-subjects factor. These analyses indicated a significant main effect of Time of cortisol measurement, $F(3, 528) = 20.41, p = .001, \eta^2 = .10$, As illustrated in Figure 13, within-subject contrasts indicated that cortisol release over the course of experimental session was characterized by a significant downward linear trend, $F(1, 176) = 37.55, p < .001, \eta^2 = .18$, and to a lesser extent, a quadratic, $F(1, 176) = 5.46$, $p < .05, \eta^2 = .03$ and a cubic, $F(1, 176) = 7.25, p < .01, \eta^2 = .04$, trend. The pattern of cortisol release across the experimental session did not vary as a function of symptoms of depression or of trauma history, either directly or as a moderating effect over the course of the experimental session, $Fs < 1$.

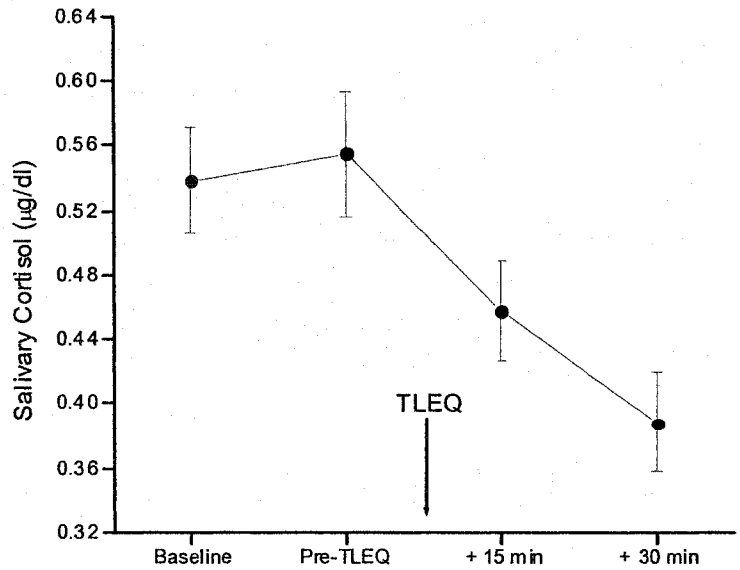


Figure 13. Salivary cortisol levels (*M* ±*SEM* of each sample) among all participants before and after administration of the TLEQ in Study 3.

Neuroendocrine Activity following a Laboratory Stressor: Relation to Appraisal and Coping Processes

Given that appraisals and coping processes may influence the physiological response to stressors, it was assessed whether the proportionate change of cortisol levels following completion of the TLEQ varied as a function of either appraisals of the ambiguous events contained in the AASQ as well as the coping strategies endorsed. Separate regression analyses were undertaken in which the percentage cortisol change 15 and 30 minutes following completion of the TLEQ relative to cortisol just prior to completion of this questionnaire were regressed onto the three dimensions of appraisal for the *Personal* and *Traumatic* factors of the AASQ and the 12 coping strategies. Once again, contrary to prediction, the percentage increase of cortisol following completion of the TLEQ was unrelated to either appraisal or coping processes ($Fs < 1$).

Discussion

It had been demonstrated in Study 2 that the ambiguous situations presented in the AASQ could be characterized as comprising two factors; a *Personal* and a *Traumatic* dimension that were subsequently validated by means of a CFA. In Study 3 the factor structure of the AASQ was again evaluated by conducting a CFA to test the model fit of the common factor structure derived from Study 2. As anticipated, this analysis confirmed that this factor structure provided an adequate model for participants' responses, and may suggest that they could be applicable to other samples with similar characteristics. In this investigation the factor structure for the AASQ appeared to be effective for modeling appraisals in a normative sample containing participants with varying levels of depressive symptoms. Indeed, non-depressed individuals (who comprised the majority of the sample) differentiated between events of a *Personal* and *Traumatic* nature, as did individuals exhibiting moderate or mild symptoms of depression. However, it is premature to assume that this factor structure is able to generalized to samples in other contexts (e.g., clinical populations) without further evaluation.

In agreement with Study 2, negative appraisals of the *Personal* ambiguous situations were positively associated with symptoms of depression. Conversely, negative appraisals of the *Traumatic* situations were not significantly predictive of depressive symptoms. In general, these results are consistent with the notion that depressed individuals exhibit a bias towards negative interpretations of ambiguous information (Alison & Burgess, 2003; Bouhuys et al., 1999; Lawson & MacLeod, 1999; Lawson et al., 2002; Nunn et al., 1997). However, these data do raise the possibility that the

negativity of appraisals may be situation specific, being more aligned with threats of a personal nature than those involving traumatic events. This is not all that surprising given that depression has been characterized as being associated with difficulties in interpersonal functioning (Nezlek, Imbrie, Shean & Glenn, 1994).

As the coping strategies endorsed and the appraisal of stressful events ought to be linked to one another, an analysis was conducted to determine whether the coping strategies endorsed mediated the relationship between appraisals and symptoms of depression. As predicted, the coping strategies endorsed, particularly those of an emotion-focused nature, fully mediated the relationship between stressor appraisal and depression. These data are in alignment with the suggestion (e.g., Bianchi, Zea, Poppen, Reisen, & Echeverry, 2004; Connor-Smith & Compas, 2002; Dempsey M., 2002; Folkman & Lazarus, 1988; Hien & Miele, 2003; Wei, Heppner & Mallinckrodt, 2003) that coping strategies can mediate the relationship between stressful events or perceptions of stressful events and psychological well-being.

Folkman and Lazarus (1988) had suggested that coping influences emotional states by diverting attention either from the source of distress, changing the subjective meaning of the encounter between the individual and the potential stressor and by impacting directly upon the transaction between the individual and the stressful event itself. Inasmuch as appraisal and coping strategies may vary from situation to situation, the efficacy of a given coping strategy in any of these situations should be considered in terms of the outcome relative to the context in which the stressor takes place, as well as characteristics of the event (stressor) itself (Matheson & Anisman, 2003).

Finally, while it was anticipated that reduced variability with respect to the appraisal of potentially stressful events would be aligned with elevated depressive symptoms, it was again demonstrated, as in Study 2, that depressive affect was associated with greater variability in the appraisal of the *Personal* events described in the AASQ. These findings, as already indicated, were contrary to our hypothesis, as well as previously reported findings concerning flexibility in coping with stressors (Cheng et al., 2004; Compas et al., 1988; Kato, 2001; Lester et al., 1994; Watanabe et al., 2002). Once again, the data may be indicative of inconsistencies in the construal of these events with increasing depressive symptoms, rather than flexibility in terms of stressor appraisal.,

Neuroendocrine Activity

Given that stressful events and major depression have been associated with a marked increase of HPA neuroendocrine activity, it was of interest to determine whether participants reporting moderate to mild symptoms of depression would exhibit a diurnal pattern of cortisol release similar to that associated with clinical depression or chronic stressors. Moreover, it was of interest to establish whether cortisol reactivity in response to modest stressors would be elevated among those participants indicating increased symptoms of depression. Although participants demonstrated the expected variation of cortisol levels over the course of the day, the diurnal pattern of cortisol release was not associated with depressive symptoms. These data clearly indicate that unlike major clinical depression, moderate and mild (essentially subsyndromal) symptoms of depression are not associated with elevated neuroendocrine activity, both over the course of the day and in response to a mild laboratory stressor (i.e., recalling prior traumatic events). With respect to the latter, it may be the case that the laboratory stressor

employed was simply ineffective in evoking increases of circulating levels of cortisol, and hence between group differences in response to a stressor were precluded.

Posttraumatic stress disorder is often accompanied by reduced levels of circulating glucocorticoids (Yehuda, 2002). While it is usually assumed that the cortisol disturbance is related to either the severity of the trauma or passage of time associated with severe trauma, it was considered that glucocorticoid release might also vary as a function of the number of traumatic events reported by participants. Consistent with previous neuroendocrine findings associated with PTSD (e.g., Boscarino, 1996; Goenjian, et.al., 1996; Gurvits et al., 2000; Kellner et al., 1997; Mason et al., 1990; Matheson et al., 2001; Yehuda et al., 1993; Yehuda et al., 1998; Yehuda et al., 1996; Wang, 1997), variation of cortisol release was moderated by traumatic experiences (that evoked feelings of fear, hopelessness or terror) reported by participants. Specifically, individuals reporting increased number of traumas exhibited lower levels of cortisol across a day of measurement. As a caveat, however, it is noteworthy that while these individuals may have experienced a high number of traumas that elicited feelings consistent with those necessary for a diagnosis of PTSD, it is uncertain whether any of these individuals would have qualified for a clinical diagnosis of clinical PTSD. Moreover, by virtue of having experienced a great number of traumatic experiences, there was also an increased likelihood of traumas being perceived as more traumatic. At this juncture it is not possible to dissociate the contribution of trauma severity and frequency from one another.

Finally, although it has been previously demonstrated that both appraisal (e.g., Gaab et al., 2003; Salvador, Suay, Gonzalez-Bono & Serrano, 2003; Weibel, Gabrion,

Aussedat & Kreutz, 2003) and coping processes (e.g., Bohnen, Nicolson, Sulon & Jolles, 2003; Schmeelk-Cone, Zimmerman, & Abelson, 2003) are associated with changes in neuroendocrine activity, in the current investigation, proportionate changes of cortisol levels from awakening to 30 minutes following awakening, as well as following a mild laboratory stressor were unrelated to appraisals of items that comprised the AASQ or the endorsement of particular coping strategies. Although these results are contrary to those expected, the changes of neuroendocrine activity relative to appraisal processes have typically been assessed in the context of actual stressors. Accordingly, these results suggest that a propensity to appraise hypothetical, ambiguous situations as stressful or to endorse potentially maladaptive (i.e., emotion-focused) coping strategies may be insufficient to translate into altered neuroendocrine activity or reactivity to a mild laboratory challenge. With respect to the latter, in that participants appraisals were completed relative to events in the AASQ-A (the majority of which were not qualitatively similar to those events described in the TLEQ) and that coping strategies were endorsed relative to stressors in general, it is entirely possible that appraisal and coping processes in these contexts may have had a weak association with participants perceptions of events described in the TLEQ, and hence, any subsequent changes in cortisol release.

Study 4

It has been argued that flexibility with respect to the endorsement of coping strategies used may be advantageous when dealing with environmental challenges (Anisman & Matheson, 2005). In addition, it has been our view that the utilization of a broad range of coping strategies and the effective combination of specific strategies may confer resilience to individuals when dealing with stressful events (Kelly et al., 2004). In Study 4 we determined whether variability (a potential indicator of flexibility) in the endorsement of coping strategies across the situations was related to depressive affect, and whether flexibility with respect to any specific strategies were particularly important in this regard. Indeed, it has been demonstrated that stressors have the effect of narrowing response repertoires (Anisman & Waller, 1973), and this canalization of responses was suggested to reflect inflexibility. Thus, under distressing circumstances, or in relation to depression, it might similarly be expected that inflexibility of response changes would occur. In a like fashion, it was expected that individuals displaying heightened symptoms of depression would exhibit reduced flexibility with respect to the endorsement of coping strategies, In addition, as in Studies 2 and 3, we assessed whether variability in these responses across each of the situations (possibly reflecting cognitive flexibility) would be associated with symptoms of depression. Moreover, as cognitive flexibility pertaining to the appraisal of potential stressors may be a fundamental determinant of coping flexibility, we assessed whether variability of appraisals would be related to variability in the endorsement of coping strategies. It was anticipated that increased variability of appraisals would be positively associated with variability of the endorsement of coping strategies.

As mentioned earlier, it has been noted that certain psychopathologies are accompanied by altered neuroendocrine activity. For example, major depression is associated with a marked increase of neuroendocrine activity (Plotsky, Owens & Nemeroff, 1998), as well as altered neuroendocrine activity in response to diagnostic tests to assess specific aspects of HPA axis activity. In contrast, individuals presenting with PTSD exhibit reduced levels of circulating cortisol, even though PTSD is frequently comorbid with depression (Anisman, Griffiths, Matheson, Ravindran & Merali, 2001; Boscarino, 1996; Goenjian et al., 1996; Gurvits et al., 2000; Kellner, Baker & Yehuda, 1997; Yehuda et al., 1993; Yehuda et al., 1996; Yehuda et al., 1998; Wang, 1997). As such, it was of interest to determine whether a mild laboratory challenge (e.g., answering questions related to prior traumatic experiences) would evoke increased neuroendocrine activity among those reporting heightened symptoms of depression, and conversely, a blunted response among individuals reporting increased numbers of previous traumatic experience. As in Study 3, analyses were undertaken to determine whether the proportionate change of cortisol levels following completion of the TLEQ varied as a function of appraisals, as well as the coping strategies endorsed. It was hypothesized that proportionate changes in cortisol levels following completion of the TLEQ would be positively associated with negative appraisals of the ambiguous events and increased endorsement of emotion-focused coping strategies

Method

Participants and Procedure

Participants, recruited as previously described, included 75 females (*M* age = 19.36, *SD* = 2.98) and 24 males (*M* age = 19.5, *SD* = 3.25). Their self-reported racial

background comprised 71% (n = 66) Caucasian, 8.6% Middle-Eastern (n = 8), 3.2% Black (n = 3), 4.3% Asian (n = 4), and 12.9% East Asian (n = 12). After written informed consent was obtained, they were asked to provide a baseline saliva sample. Thereafter, participants completed several questionnaires including background information, the Beck Depression Inventory (BDI) (Beck & Beck, 1972) and an abbreviated version of the Appraisal of Ambiguous Situations Questionnaire (AASQ-A) (Kelly, Matheson & Anisman, 2003) combined with the abbreviated version of the Survey of Coping Endorsement Scale (SCOPE-A)(Matheson & Anisman, 2003). Once these measures were completed, students relaxed for 10 minutes, following which they were asked to provide a second saliva sample. Once this was done, they completed the TLEQ (Kubany et al., 2000), after which they relaxed for 15 minutes before providing a final saliva sample. Participants were then debriefed and were provided with the appropriate contact information.

Measures

As in the preceding studies, the 21-item Beck Depression Inventory was used to assess depressive symptoms (see Table 21 for group means). In addition, the TLEQ was again used to determine the nature, frequency and timing of any life-time traumatic events participants had previously experienced.

Table 21

Mean Scores on the BDI for Each Category of Depressive Symptoms in Study 4

Severity of Depressive Symptoms	Mean (*SD*)
Low	5.19 (2.65)
Mild	13.17 (2.54)
Moderate	22.28 (4.47)

Note. BDI = Beck Depression Inventory

Appraisal of Ambiguous Situation Questionnaire – Abbreviated (AASQ-A; Kelly, Matheson & Anisman, 2003) is an abbreviated version of the original 24-item questionnaire. It comprises six ambiguous situations, which reflect the range of scenarios presented in the original questionnaire (e.g., interpersonal or relationship difficulties; financial worries; academic difficulties; health concerns and potentially traumatic events). As before, participants were asked to indicate the extent to which they would find each of the six situations threatening, distressing and what they thought the most likely outcome would be. In this instance, each scenario was combined with a 13-item version of the SCOPE-A (in which an item was added to assess wishful thinking). Owing to the small number of items, participants' scores for each of the dimensions of appraisal (i.e., threat, distress & outcome) on the AASQ-A were obtained by calculating the mean score for participants' responses across each of the 6 situations[9]. Reliabilities (Cronbach's α) for the threat, distress and outcome dimensions of appraisal were .75, .70 and .63, respectively. The correlations between the three dimensions of appraisal are

[9]The unidimensional nature of the items comprising the AASQ-A was confirmed by a means of an exploratory factor analysis for each of the dimensions of appraisal., For each dimension, examination of the Scree plot, Eigenvalues and characteristics of the items themselves strongly suggested a single factor.

presented in Table 22.

Table 22

Correlations among Appraisal Subscales of the AASQ-A (N = 98) Study 4

Dimension of Appraisal	1	2	3
1. Threat	-		
2. Distress	.62***	-	
3. Outcome	.61***	.57***	-

Note. *** p < .001; AASQ- A = Appraisal of Ambiguous Situations - Abbreviated

Results

Variability in Coping: Relation to Symptoms of Depression

While it was initially anticipated that variability with respect to the endorsement of coping strategies would be associated with positive affect, Study 1 suggested that individuals reporting increased depressive symptomatology were actually more variable in the endorsement of coping strategies across a series of potentially traumatic events. In Study 4, we assessed whether this same pattern would be evident, but in the context of a set of ambiguous circumstances. A mixed measures ANOVA was conducted wherein the standard deviation for participants' responses across the 6 scenarios was the dependent measure, and the 13 coping strategies presented in the SCOPE-A served as the within-subjects variable, and level of depression as a between-subjects factor. As in Study 1, the main effect of depressive symptoms was significant, $F(2, 96) = 4.78, p \leq .01$, $\eta^2 = .09$, which was qualified by the coping strategy being endorsed, $F(24, 1152) = 1.59, p < .05$,

$\eta^2 = .03$. Subsequent pairwise comparisons indicated that where differences existed, heightened symptoms of depression were again associated with *greater* variability in the endorsement of specific coping strategies[10]. As illustrated in Figure 14, relative to non-depressed individuals, participants reporting either moderate or mild symptoms of depression exhibited significantly greater variability with respect to the endorsement of emotional expression ($p < .001$). Similarly, when compared to low symptomatic individuals, participants indicating mild depressive symptoms demonstrated greater variability with respect to the endorsement of avoidance ($p < .05$) and other-blame ($p < .05$).

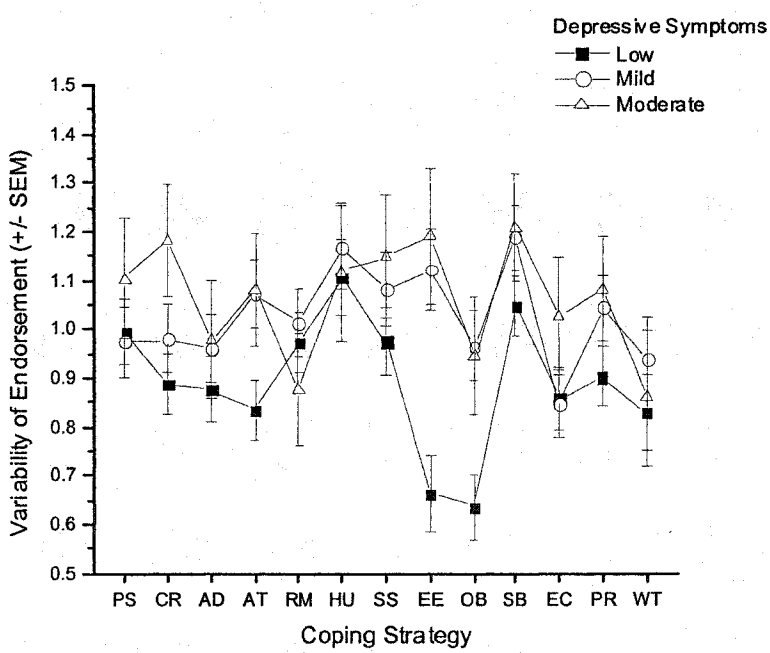


Figure 14. Variability of coping profiles ($M \pm SEM$ of each strategy) of male and female participants reporting low, mild or moderate symptoms of depression in Study 4.

[10]Similiar to Study 1, endorsement of coping strategies collapsed across the six ambiguous situations presented in the AASQ-A was moderated by depressive symptoms, $F(24, 1152) = 3.73, p < .001, \eta^2 = .07$. In general, increased depressive affect was associated with greater endorsement of emotion-focused coping strategies and decreased endorsement of problem-focused coping strategies.

Variability in the Appraisal of Ambiguous Situations: Relation to Depression

Both Studies 2 and 3 had indicated greater variability with respect to appraisal of the *Personal* events described in the AASQ among those individuals reporting heightened symptoms of depression. Accordingly, it was of interest to further assess variability in appraisals as a function of depressive affect. Thus, a standard regression analysis was completed conducted in which scores on the BDI were regressed onto standard deviation for participants' combined score on each of the dimensions of appraisal for the situations comprising AASQ-A. Unlike Studies 2 and 3, variability of participants' appraisals of the ambiguous situations was unrelated to symptoms of depression, $R^2 = .03$, $F < 1$ (see Table 23). Although this was opposite to that observed in Studies 2 and 3 with respect to the *Personal* Factor, it should be noted that this study involved a smaller number of situations, and in some cases, different scenarios from those included in the common factor structure, i.e., these situations were not comprised only of personal stressors[11].

[11]Although variability in participants' appraisals was unrelated to symptoms of depression, as in Studies 2 and 3, negative appraisals items comprising the AASQ were positively associated with symptoms of depression, $R^2 = .23$, $F(3, 97) = 9.46$, $p < .001$. While each of the three dimensions of appraisal was significantly, positively correlated with depressive affect, neither perceived threat, distress or outcome explained unique variance in BDI scores.

Table 23

Regression Analysis Assessing Relations Between BDI Scores and Variability of Appraisals of Situations of the AASQ-A in Study 4

Dimension of Appraisal	r	β	R^2
			.03
Threat	.17	.11	
Distress	.33	-.09	
Outcome	.07	.17	

Note. *p<.05; ** p <.01; *** p <.001; BDI = Beck Depression Inventory; AASQ-A = Appraisal of Ambiguous Situations Questionnaire - Abbreviated

Variability in Appraisals and Coping

As endorsement of a given coping strategy or combination of strategies generally follows the primary appraisal of an event (Lazarus & Folkman, 1984), flexibility of coping and cognitive flexibility pertaining to the appraisal of potential stressors ought to be related to one another. Accordingly, analyses were undertaken to assess the relationship between variability of participants appraisals of the situations comprising the AASQ-A and variability in the coping strategies endorsed in response to these same situations.

Three standard regression analyses were performed in which the variability of participants appraisals for each of the three dimensions of appraisal (threat, distress and outcome) were regressed on to the standard deviation for participants' responses for each of the 13 coping strategies presented in the SCOPE-A across the 6 situations. As illustrated in Table 24, variability in the endorsement of coping was associated with variability in perceptions of threat, $R^2 = .36$, $F(13, 84) = 3.58$, $p < .001$ and distress $R^2 =$

.22, $F(13, 84) = 3.09, p \leq .001$, but not outcome. $R^2 = .13, F < 1$. Interestingly, variability with respect to a number of problem and emotion-focused strategies was positively associated with variability of threat and distress appraisals, including problem-solving, cognitive restructuring, rumination, humour, emotional containment and passive resignation. Of these, increased variability in the endorsement of rumination and humour accounted for unique variance in variability of threat and distress appraisals. Increased endorsement of cognitive restructuring and decreased endorsement of self-blame explained additional unique variance in variability of distress appraisals. Taken together, these data support the notion that variability of appraisals is associated with variability in the endorsement of coping strategies. However, given that variability in appraisals and symptoms of depression were unrelated, it is difficult in this instance to speculate as to how the specific relationship between variability of appraisals and coping contributes to the development of negative psychological outcomes, including depression.

Table 24

Regression Analysis Assessing Relations Between Variability of Appraisals of the Situations comprising the AASQ-A and the Endorsement of Coping Strategies (SCOPE-A) in Study 4

	Threat			Distress			Outcome		
	r	β	R^2	*r*	β	R^2	*r*	β	R^2
Coping Strategies			.36***			.33***			.13
Problem Solving	.36***	.22		.27**	.06		.08	-.02	
Cognitive Restructuring	.31***	.17		.31***	.22*		.16	.09	
Active Distraction	.16	.09		.15	.12		-.03	-.10	
Cognitive Distraction	.11	-.08		.07	-.15		.07	-.08	
Rumination	.38***	.29**		.36***	.37***		.14	.13	
Humour	.28**	.31**		.21*	.25*		.06	.01	
Social Support Seeking	.13	-.14		.14	-.06		.03	-.06	
Emotional Expression	-.02	-.14		-.02	-.14		.23**	.24*	
Other-Blame	-.03	-.04		.08	.11		.09	.02	
Self-Blame	.07	-.10		-.02	-.21**		.01	-.08	
Emotional Containment	.34***	.16		.29**	.10		.18**	.13	
Passive Resignation	.27**	.01		.25**	.07		.14	.11	
Wishful Thinking	.15	-.03		.11	-.07		-.02	-.10	

Note. *$p<.05$; **$p<.01$; ***$p<.001$

Neuroendocrine Activity Following a Mild Laboratory Stressor: Relation to Symptoms of Depression

It was hypothesized that completion of the TLEQ would increase cortisol release and that such an outcome would be influenced by depression severity. In the mixed measures ANOVA to assess this prediction the 3 cortisol samples (baseline, immediately before completing the TLEQ and 15 minutes following administration of the TLEQ) were treated as a within-subjects variable and level of depression as a between-subjects factor. Cortisol levels varied with depressive symptoms, $F(2, 89) = 4.00, p < .05, \eta^2 = .08$, and also with the time of assessment, $F(2, 178) = 12.90, p < .001, \eta^2 = .13$, However, the pattern of cortisol release did not vary as a function of the interaction between these variables, $F < 1$.

Pairwise comparisons to assess differences in overall cortisol levels as a function of depressive symptoms, revealed that those participants reporting mild symptoms of depression exhibited significantly lower overall levels of cortisol throughout the experimental session ($p < .05$). No significant differences in overall cortisol levels were evident between those individuals reporting moderate symptoms of depression and non-depressed individuals ($p = .27$). In addition, as illustrated in Figure 15, polynomial within-subjects contrasts indicated that cortisol levels over the course of experimental session were characterized by a significant downward linear trend, $F(1, 89) = 20.18, p < .001, \eta^2 = .19$.

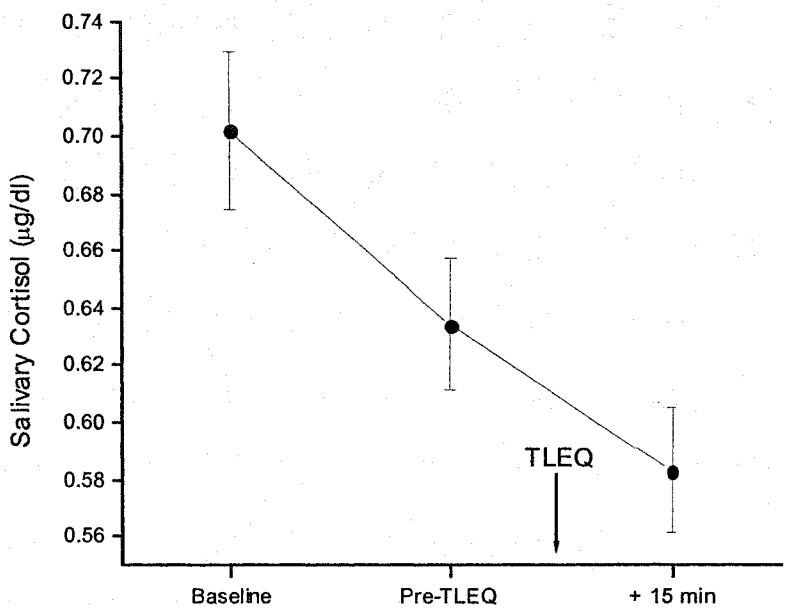


Figure 15. Salivary cortisol levels ($M \pm SEM$ for each sample) among all participants before and after administration of the TLEQ in Study 4.

Neuroendocrine Activity Following a Mild Laboratory Stressor: Relation to Previous Traumatic Experiences

Although stressors typically provoke a pronounced increase of HPA activity, circulating cortisol levels are often reduced among individuals experiencing PTSD. To determine whether neuroendocrine activity following completion of the TLEQ was related to the number of traumas reported by participants, a mixed measures ANOVA was conducted in which the 3 cortisol samples (baseline, immediately before completing the TLEQ and 15 minutes following administration of the TLEQ) were treated as within-subjects variables and number of traumas reported (0, 1-2, 3-5, 6 and above) as a between-subjects factor. This analysis revealed that the pattern of cortisol release across the experimental session was, in fact, related to the number of traumas reported by participants, $F(6, 176) = 2.63, p < .05, \eta^2 = .08$. Pairwise group comparisons indicated

that individuals who had experienced 6 or more traumas exhibited significantly lower cortisol levels at baseline than those who had reported no traumas ($p < .05$) (see Figure 16). In addition, individuals who had reported 1 to 2 traumas or no traumas exhibited significantly higher cortisol levels 15 minutes following completion of the TLEQ relative to individuals who reported 3 to 5 traumas ($p < .05$).

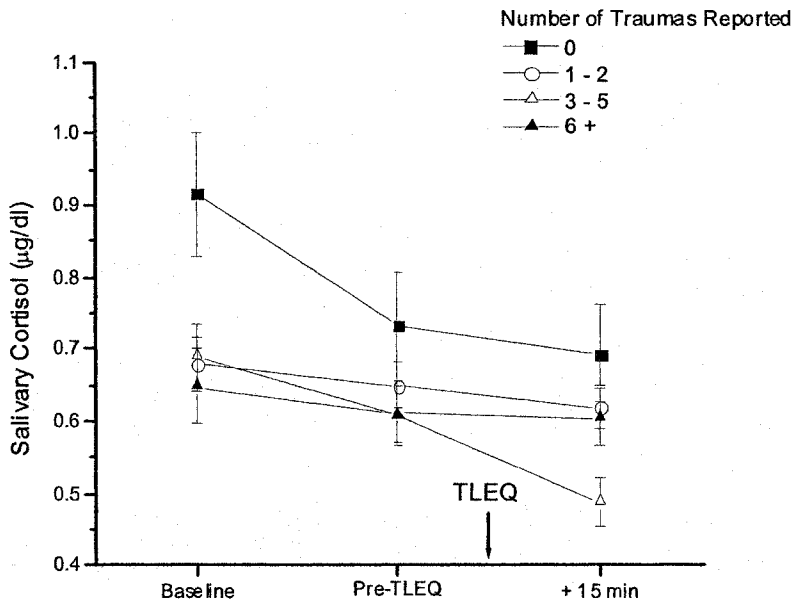


Figure 16. Salivary cortisol levels ($M \pm SEM$ for each sample) across an experimental session among participants who reported varying numbers of traumatic experiences in Study 4.

Neuroendocrine Activity following a Mild Laboratory Stressor: Relation to Appraisal and Coping Processes

As appraisals and coping processes may impact upon the physiological response to stressors, it was assessed whether the proportionate change of cortisol levels following completion of the TLEQ varied as a function of appraisals of the ambiguous events contained in the AASQ-A, as well as the coping strategies endorsed. Separate regression analyses were undertaken in which the percentage change of cortisol levels from

immediately before completing the TLEQ to 15 minutes post-completion was regressed onto the three dimensions of appraisal for the AASQ-A, as well as the 13 coping strategies that comprised the SCOPE. Contrary to expectations, it was again found that the percentage increase of cortisol following completion of the TLEQ was unrelated to either appraisal or coping processes ($Fs < 1$).

Discussion

While it was initially anticipated that variability with respect to the endorsement of coping strategies would be associated with positive affect (e.g., Cheng, 2001), Study 1 had suggested that individuals reporting increased depressive symptomatology were actually more variable in the endorsement of coping strategies across a series of potentially traumatic events. In Study 4 it was again observed that where differences existed, heightened symptoms of depression were associated with *greater* variability in the endorsement of specific coping strategies. However, as indicated earlier, it may be difficult to determine whether variability in coping translates into adaptive coping flexibility .

As in the case of the variability of coping strategies endorsed, individuals reporting heightened symptoms of depression were more variable in their appraisal of the events described in the AASQ. Accordingly, it was of interest to further assess the relationship between appraisal variability across each of the six situations presented in AASQ-A and depressive affect. Unlike Studies 2 and 3, this analysis indicated that variability of participants responses for each of the dimensions of appraisal did not differ significantly from one another, and that symptoms of depression had neither a direct nor moderating effect on variability of participants appraisals.

Although aspects of the findings were inconsistent with those observed in Studies 2 and 3, several factors deserve consideration. First, the current investigation employed fewer situations, and in some cases, the scenarios were different from those included in the common factor structure. Moreover, as a factor analysis of the 6 ambiguous situations presented with the AASQ yielded only a single factor, no differentiation was made between situations of a personal and traumatic nature. In addition, it is possible that the relatively low number of participants employed in the study may have precluded a significant difference between the groups.

As mentioned earlier, the selection of a given coping strategy or combination of strategies generally follows the primary appraisal of an event, in which the individual discerns whether a particular event possess a threat (Lazarus & Folkman, 1984). As such, it follows that the underlying determinant of an individual's flexibility in the utilization of coping strategies should involve cognitive factors pertaining to the appraisal of potential stressors. For example, while some individuals may appraise certain situations as controllable and others as uncontrollable, there are those individuals who may be more rigid in their interpretations (e.g., "stressful events are always uncontrollable") (Cheng, 2001). In the current investigation it was confirmed that variability with respect to the appraisal of a series of ambiguous was positively associated with variability of the endorsement of coping strategies in response to these same events. Of note, variability in the endorsement of both emotion *and* problem-focused coping strategies was positively associated with variability in the appraisal of events which comprised the AASQ. However, as symptoms of depression were not associated with variability of appraisals, it is difficult in the current context to speculate as to the

functional impact of this relationship between variability of appraisal and variability of coping on the evolution of depressive states.

Neuroendocrine Activity

Cortisol levels in our studies have consistently been found to decline over the experimental session (see also Matheson & Cole, 2004), and this pattern was apparent in Study 4. Presumably, the decline of cortisol levels reflects the relaxation experienced by participants over time after arrival in the laboratory. Contrary to prediction, individuals with higher levels of depressive symptoms (and typically with elevated anxiety) did not exhibit elevated cortisol levels, nor did depressive symptoms moderate the course of the cortisol decline ordinarily observed. These data suggest that in the context of depressive symptoms, at least within the range examined in the present investigation, the distress associated with completing the TLEQ may not be effective in evoking increased circulating levels of cortisol. Although participants reporting mild symptoms of depression exhibited significantly lower overall levels throughout the experimental session, it is unclear what significance (if any) this may have.

Consistent with previous findings (e.g., Boscarino, 1996; Goenjian et al., 1996; Gurvits et al., 2000; Kellner et al., 1997; Mason et al., 1990; Matheson et al., 2001;Yehuda et al., 1993; Yehuda et al., 1998; Yehuda et al., 1996; Wang, 1997) the pattern of cortisol release across the experimental session was, in fact, related to the number of traumas reported by participants and was generally characterized by lower cortisol levels among individuals reporting elevated numbers of traumatic experiences. Currently, however, it is unclear whether these reduced cortisol levels reflect a blunting

of cortisol reactivity in response to the TLEQ (a potential stressor) or whether these results are indicative of reduced basal levels of cortisol.

Finally, although it has previously been demonstrated that both appraisal (e.g., Gaab et al., 2003; Salvador et al., 2003; Weibel et al., 2003) and coping processes (e.g., Schmeelk-Cone et al., 2003; Bohnen et al., 2003) are associated with changes of neuroendocrine activity, in the current investigation, proportionate changes in cortisol levels following completion of the TLEQ (a potentially mild stressor) were unrelated to appraisals of items that comprised the AASQ-A or the endorsement of particular coping strategies. As mentioned in Study 3, in that participants appraisals and selection of coping strategies endorsed were completed relative to events in the AASQ-A and not the TLEQ, the possibility exists that these appraisals may have had a weak association with participants perceptions of events described in the TLEQ, and hence with changes of neuroendocrine activity.

General Discussion

In the main, the present investigation confirmed that individuals reporting heightened symptoms of depression more frequently endorsed emotion-focused coping strategies coupled with lower endorsement of problem-focused coping efforts relative to participants with low levels of depressive symptoms. As well, the endorsement of coping strategies varied between the general and specific contexts depending on the severity of depressive symptoms. Although the coping profiles exhibited in the general context were echoed to some extent in the specific contexts, there were several notable differences, as well be discussed shortly. Nevertheless, the coping strategies endorsed in a general context predicted the level of endorsement of these same strategies when assessed relative to the specific situations. In addition, heightened symptoms of depression were associated with *greater* overall variability in the endorsement of specific coping strategies across a variety of situations.

It will be recalled that coping methods endorsed and appraisal of aversive situations ought to be closely linked (Lazarus & Folkman, 1984). To understand how individuals deal with stressors, and the impact of stressors on well being, it is thus important to determine both how they appraise situations, coupled with how they cope given their appraisal., Furthermore it is desirable to assess these coping and appraisal processes across situations. To this end, an appraisal index, the AASQ, was developed. Based on participants' appraisals, the situations comprising the AASQ could be differentiated into those of either a *Personal* or of a *Traumatic* nature. This finding was replicated across two independent samples and held across groups of individuals reporting varying levels of depressive symptomatology. As hypothesized, negative

appraisals of the *Personal* ambiguous situations were positively associated with symptoms of depression. In contrast, appraisal of the *Traumatic* situations was not consistently related to depressive symptom severity. Moreover, variability in the appraisal of the *Personal* ambiguous events was associated with heightened symptoms of depression. Moreover, as expected, the relationship between appraisals and depressive symptoms was mediated by the coping strategies endorsed.

Finally, although we had hypothesized that participants reporting increased symptoms of depression, negative appraisals, increased endorsement of emotion-focused coping strategies or increased numbers of traumatic experiences would exhibit altered neuroendocrine responsivity to a laboratory stressor, such an outcome was not observed. In addition, while participants demonstrated the expected variation of cortisol levels over the course of the day, the diurnal pattern of cortisol release was not associated with depressive symptoms or appraisal and coping processes. However, consistent with our hypothesis, variation of cortisol release was moderated by traumatic experiences reported by participants, such that individuals reporting six or more lifetime traumas exhibited lower levels of cortisol across a day of measurement. Moreover, in recent experiments (Kelly, Michaud, Thorne, Matheson & Anisman, 2004) we observed that cortisol variations were particularly blunted over the course of the day among those individuals that had experienced early life trauma as well as later adverse experiences. In effect, from a biological perspective, the latter findings are in agreement with reports that early traumatic experiences predispose individuals to later trauma-related PTSD (Yehuda, 2004)

Coping and Symptoms of Depression

Coping has been thought of as those adaptive actions or cognitions which are undertaken to manage or eliminate stressful situations (Moos & Holahan, 2003). Aligned with the notion that affective disorders are accompanied by a deflated sense of control over stressful events, major depression has frequently been associated with a reduction in the endorsement of problem-focused coping strategies, coupled with an increase in the use of emotion-focused coping strategies, reduced cognitive restructuring and diminished social support seeking (Endler & Parker, 1994; Holohan et al., 1999; Matheson & Anisman, 2003; Ravindran et al., 1999, 2002; Zlotnick et al., 2000). In agreement with these earlier reports, in the current investigation, individuals with heightened symptoms of depression reported greater endorsement of several emotion-focused coping strategies and decreased endorsement of problem-focused coping efforts relative to participants with low levels of depressive symptoms. Importantly, elevated endorsement of certain emotion-focused strategies was evident even among participants reporting mild symptoms of depression, suggesting that the coping profiles were exceptionally sensitive to differences in affect. It may well be the case that altered coping strategies reflect an early marker or risk factor for the evolution of depressive symptoms (Matheson & Anisman, 2003).

It has, indeed, been argued that the coping strategies endorsed may influence depressive symptoms over time and across adverse situations (Matheson & Anisman, 2003; Nolen-Hoeksema et al., 1993; Ravindran et al., 1999). For example, while a predominately emotion-focused approach (e.g., crying, ruminating, blaming others) may not be particularly helpful in resolving a stressful situation, the use of problem-focused

strategies (making concrete plans, making a "to-do" list) may be effective in this regard, and may thus favour positive outcomes. In addition to direct effects on depressive affect, reliance upon emotion-focused strategies may also increase the potential for negative interpersonal interactions, which in turn, may be associated with the evolution of depressive symptoms (Brown et al., 1987; Kendler et al., 2003; Monroe & Depue, 1991; Roy, 1983, 1985). For example, it has been suggested that rumination (an emotion-focused coping strategy that was positively associated with depressive symptoms in our sample) may reduce the availability of social support as friends and family grow tired of listening to endless ruminations over a particular problem (Nolen-Hoeksema & Davis, 1999). However, as indicated earlier, the effectiveness of a given strategy ought to be evaluated in the context of the other coping strategies employed. For instance, while rumination in combination with self-blame may not be particularly helpful in resolving a stressful situation, rumination combined with problem-solving strategies could foster a positive-outcome (Kelly et al., 2004; Matheson & Anisman, 2003). We have, in fact, found that a characteristic difference between dysthymic patients and non-depressed individuals was that dysthymic patients used rumination largely in conjunction with emotion-focused strategies, whereas non-depressed individuals employed rumination with a broader range of coping strategies, including problem-solving and cognitive restructuring (Kelly et al, 2004).

Despite its obvious advantages, there are instances in which problem-focused coping cannot be readily employed or may be ineffectual (e.g., death of a loved one), and as such, emotion-focused strategies may be more appropriate. Indeed, it has been suggested that the efficacy of the coping strategies endorsed should be evaluated in terms

of the apparent controllability of the situation (Conway & Terry 1992, Folkman, 1984, Zeidner & Saklofske 1996). Although there is mixed support for this hypothesis (Folkman & Moskowitz, 2004), it has frequently been assumed that problem-focused coping strategies are more appropriate when a given situation is appraised as controllable, whereas emotion-focused coping strategies may be adaptive in the face of stressors that are perceived as uncontrollable (Lazarus & Folkman, 1984).

Coping strategies endorsed may vary across situation, and the effectiveness of a given coping strategy, such as problem solving, may vary both across situations and over time (Folkman & Moskowitz, 2004). For example, while momentarily blaming another individual for being careless (e.g., spilling coffee over an important document) may lead to a positive outcome (e.g. the person responsible for the mishap is appropriately reprimanded), continually blaming others may erode interpersonal relationships, which may in turn lead to negative psychological outcomes (e.g., depressive symptoms). Thus, it may be prudent to evaluate the temporal pattern of coping endorsements when assessing the efficacy of a particular coping strategy (Folkman & Moskowitz, 2004).

Coping Styles: General versus Specific Contexts

As mentioned previously, coping can be differentiated into coping *styles,* which include an individual's favoured *set* of coping strategies for dealing with a myriad of stressors, and situational coping *strategies* that characterize an individual's preferred coping methods for dealing with specific events (Carver et al., 1989; Carver & Scheier, 1994). Although it has been suggested (Cohen & Lazarus, 1973; Lazarus & Folkman, 1984) that the contextually-dependent nature of coping may make it difficult to predict situational coping responses from an individual's general coping disposition, others have

advocated for a greater role of coping styles in the selection of specific strategies. For instance, Carver & Scheier (1989; 1994) suggested that while the endorsement of coping strategies may, in fact, change over the course of a stressful event, the endorsement of specific types of coping strategies may be influenced by the individual's propensity to employ specific types of coping strategies. In fact, it has frequently been demonstrated (e.g., Carver & Scheier, 1989, 1994; Endler, Kantor & Parker, 1994; Hudek-Knezevic, & Kardum, 1996; Miller, 1987; Rutherford & Endler, 1999) that dispositional coping styles predict the endorsement of specific strategies across different stages of a stressor event or in association with different stressors.

While dispositional coping styles have been used to predict situational coping factors, the influence of other variables, including characteristics of any given situation itself (Bjorck & Klewicki, 1997; de Ridder & Kerssens, 2003; Mattlin et al., 1990; Terry 1994), perceived control (Anshel & Kaissidis, 1997; Parkes, 1984; Wanberg, 1997) and personality variables (Mayes, Johnson & Sadri, 2000; Nakano, 1992) have also been examined in relation to endorsement of situation-specific coping strategies. Curiously, however, there is a paucity of information concerning the relationship between depressive affect and the patterns of coping that develop in specific situations, as compared to those coping profiles observed in a general context.

As an aside, it might be noted that even when a given coping method is identified, this does not necessarily mean that the functional utility of this method is unchanging (Cutrona & Russell, 1987; Weiss, 1974). For example, when an individual first learns that they are afflicted with a particular illness, they may seek social support as a means of coping. However, the provisions of this support may vary over time following diagnosis

or with the progression of the disease. Soon after diagnosis social support may serve as a distractor, later (as the illness progresses) it may serve in a problem solving capacity ("help me look up new therapies on the internet"), and finally as a source of emotional comfort. Thus, it may be important not simply to assess the type of coping strategy endorsed, but also the supposed function of this coping method. This aspect of coping was not addressed in the present investigation, but ought to be considered in relation to specific stressors and over time (Matheson & Anisman, 2003).

In the current investigation, it was noted that the endorsement of coping strategies varied between the general and specific contexts in a manner dependent on the severity of depressive symptoms. Indeed, while the pattern of coping endorsement demonstrated in the general context translated to some extent to the specific contexts, when confronted with a series of hypothetical traumatic situations, moderately depressed individuals showed less endorsement of emotion-focused coping, whereas individuals indicating low levels of depressive symptoms demonstrated heightened endorsement of particular emotion-focused strategies. In this regard, it will be recalled that stressor exposure results in a canalization of defensive behaviors, at least among infrahumans (Bolles, 1970; Anisman & Waller, 1973). Thus, given the implied severity of the situations presented, it is possible that the range of participants' coping responses may have been reduced in kind. Alternatively, it is possible that the laboratory situation actually served as a distractor, thus diminishing the normal level of distress among participants exhibiting increased symptoms of depression, or it may simply be that these situations were construed as purely hypothetical in nature and that the coping strategies endorsed are, in fact, not those that would be used in a genuinely aversive situation.

It should also be noted that momentary (e.g., coping in response to specific scenarios) and retrospective (how an individual reports coping over the past couple of weeks) accounts of coping behaviours may generate different information about coping (Folkman & Moskowitz, 2004). For example, while momentary assessments may yield accurate, real-time reports of specific thoughts and actions that are relatively untainted by bias due to recall, retrospective measures may encompass more broad conceptualizations of coping by the individual that have come about as a result of retrospection (e.g., finding meaning) or experiential factors (Folkman & Moskowitz, 2004). Thus, it ought to be considered that the apparent differences in coping profiles observed in the specific versus general contexts among individuals reporting varying levels of depression is attributable, in part, to factors related to the measurement of coping in these contexts.

Clearly, it is difficult within a laboratory context to evaluate the influence of coping styles on those coping efforts that occur in response to situation-specific stressors. Nevertheless, analyses of coping styles in relation to specific strategies within the context of a series of hypothetical situations indicated that the coping strategies endorsed in the general context were generally predictive of those endorsed in response to each situation.

Flexibility/Variability of Coping and Appraisal

It has been suggested that the effectiveness of coping methods should be considered from the perspective of the individual's flexibility of endorsing one or another method as the situations demand (Matheson & Anisman, 2003; Mattlin et al., 1990). In this respect, while it may be advantageous to initially utilize a particular coping strategy (e.g., social support seeking) to alleviate psychological distress, it may later prove beneficial to use other types of coping methods (Matheson & Anisman, 2003). Thus,

individuals with a relatively broad range of coping strategies and who are able to modify these strategies as necessary, may be better suited to deal with stressful events (Matheson & Anisman, 2003). Indeed, several studies (Cheng et al., 2004; Compas et al., 1988; Kato, 2001; Lester et al., 1994; Watanabe et al., 2002) have found a positive association between flexibility in coping and psychological well-being using measurement strategies that include specialized questionnaires, tasks requiring flexibility (e.g., card sorting task) and by counting the number of coping strategies endorsed across static measures of coping over time.

In the present investigation, flexibility was taken as the variability in coping methods (or appraisals) endorsed across different situations. Essentially, it was expected that individuals who were relatively inflexible would endorse a given strategy across different situations, irrespective of whether or not that approach was appropriate. In contrast, the more flexible individual would adopt different strategies across situations, and hence variability in strategy endorsed would be increased. Contrary to the view that heightened symptoms of depression would be associated with *decreased* variability both in the endorsement of coping strategies and appraisals across a range of situations, greater variability was associated with higher depressive symptoms. Although contrary to the expected results, the consistency of findings across each of the experiments suggests that these were not spurious findings. Yet it may be premature to abandon the view that depression would be associated with relative inflexibility of coping strategies. One possibility is that among relatively depressed individuals the elevated variability reflects *instability* in the endorsement of coping strategies and appraisals, rather than actual coping flexibility. As mentioned previously, given the transactional nature of coping and

appraisal, it may be difficult to render meaningful interpretations of the apparent purposefulness and efficacy of the endorsement of coping strategies without detailed information concerning both the individual and the situation. Nevertheless, just as symptoms of dysthymia or depression can wax and wane (Griffiths et al., 1999), it is possible that the endorsement of coping strategies and appraisals may follow the same pattern. This might be particularly the case in those individuals showing subsyndromal levels of depression where mood swings would create the same type of variability. As well, it is conceivable that decreased variability in both appraisals and coping may only be associated with severely depressed (melancholic) depression or in certain depressive subtypes.

In assessing variability in coping strategies, it should be considered that if an individual is already employing an effective set of coping strategies, and the attributes of the stressor remain relatively similar over time, then it may actually be adaptive to be *inflexible* in the face of similar stressors. For example, if an individual discovers an effective way of coping with interpersonal conflicts within a relationship, it may be beneficial for them to employ this strategy each time this or a similar conflict arises. Conversely, inconsistently applying this strategy in the face of the same stressor may lead to unfavourable outcomes, and hence, the potential for a decrease in psychological well-being.

From this perspective, it is possible that the decreased variability in coping on the part of individuals exhibiting low symptoms of depression in response to both the potentially traumatic situations, as well as ambiguous situations, may have reflected an adaptive pattern of coping. In this instance the coping strategies endorsed ought to remain

stable across a set of stressors that were perceived to be relatively similar (recall that participants reporting low symptoms of depression were also less variable in their appraisal of the situations presented in the ambiguous events). Indeed, based on their prior experience, it is possible that these individuals may not have perceived a need to alter their coping strategies across the situations presented, as they may have felt they had already adopted the most effective set of coping strategies given the circumstances. In contrast, individuals exhibiting elevated symptoms of depression may have adjusted their coping strategies in accordance with their fluctuating perception of the events. Moreover, as depressive individuals generally perceive outcomes as less favourable (Beck, 1967), it is possible that they may not previously have received reinforcement for the utilization of effective coping strategies (or at least they may not have perceived having been reinforced given the presence of anhedonia, a key feature of depression), and as such, may have been unsure as to which set of strategies to employ. Together, these factors may account for the increased coping variability on the part of individuals reporting increased symptoms of depression across situations. That said, it is acknowledged that the endorsement of coping strategies does, in fact, change over the course of stressor experiences, perhaps reflecting adaptive changes to meet situational demands (Affleck et al., 1987; Collins et al., 1990; Folkman & Lazarus, 1985; Thompson et al., 1993). Clearly, a more comprehensive theoretical framework is required in order to define *a priori* when variability in coping reflects adaptive coping or flexibility, as opposed to erratic or inconsistent coping behaviour (Folkman & Moskowitz, 2004).

Finally, as mentioned earlier, negative associations between flexibility in coping and depressive affect have been demonstrated using strategies that include administration

of specialized coping flexibility questionnaires (e.g., The Coping Flexibility Questionnaire) (Cheng, 2001; Cheng et al., 2004; Gan et al., 2004), tasks requiring flexibility (Lester et al., 1994) and the administration of static measures of coping at different times (Kato, 2004; Kohlmann, 1993; de Ridder & Kerssens, 2003). In this respect, it ought to be underscored that the functional and theoretical significance of differences between participants in terms of standard deviation units remains a matter of speculation. Indeed, although participants may have been significantly more variable than one another in their responses across the situations presented from a *statistical* perspective, it is uncertain whether this novel measurement strategy yields useful information concerning *functional* differences in the endorsement of specific coping strategies across situations.

Appraisal and Symptoms of Depression

Given the importance of appraisal processes in influencing stress reactions (Lazarus & Folkman, 1984), it is essential that suitable instruments be available to measure appraisal processes. Although numerous scales have been developed to measure stressor appraisal (e.g., PSS; Cohen et al., 1983; POMS; McNair et al., 1971; NACL; Nowlis & Green, 1965; SAM; Peacock & Wong, 1990 PANAS; Watson et al., 1988; MAACL; Zuckerman & Lubin, 1965), as described earlier, difficulties have been identified with various measurement strategies (e.g., equivalency of situations reported, response biases). In an attempt to gain additional insight into the appraisal of potentially stressful events by individuals exhibiting varying degrees of depressive affect, creation of a novel questionnaire, the AASQ, was undertaken. This questionnaire was developed with the belief that *ambiguous* events may be particularly useful for identifying

differences in appraisal processes. As the meaning and potential outcome of these events is often unclear, they may emphasize interpretative processes more than other types of events. Hence, a distinctive characteristic of this questionnaire was the use of a series of ambiguous situations to assess differences of appraisal across situations. Based on participants' responses, events comprising the AASQ could be differentiated into those of either a *Personal* or of a *Traumatic* nature. Importantly, irrespective of depressive symptomatology, individuals appeared to differentiate between the situations in a similar manner.

It is well documented that depression is characterized by negative appraisal biases (Alloy & Clements, 1988; Beck, 1967; Lawson & MacLeod., 1999; Lawson, MacLeod & Hammond, 2002). For instance, Abramson et al., (1989) and Alloy and Clements, (1988) suggested that the development of helplessness (and hopelessness) may related to the individual's perception concerning the uncontrollability of the stressful event. Episodes of depression may arise when feelings of hopelessness predominate, such that the individual believes that ensuing negative events will be uncontrollable (Beck, 1967; Seligman, 1976; Swendsen, 1997). In a related fashion, depressed individuals may be especially prone to appraise ambiguous situations in a negative light. For instance, Butler and Matthews (1983) found that clinically depressed participants gave a higher rank-order to negative interpretations than neutral or positive interpretations, when presented ambiguous textual scenarios. Moreover, individuals with depressive affect displayed an increased likelihood of appraising a social performance (a taped speech) in a negative manner (Cane & Gotlib, 1985), and displayed a greater eye blink reflex (a potential index of negative appraisal) in response to ambiguous stimuli than did individuals with

relatively low levels of depression (Lawson et al., 2002). Inasmuch as depressed individuals display a negative cognitive bias when confronted with *ambiguous* information, it was predicted that appraisals of the situations presented in the AASQ among individuals with depressive symptoms would be more negative in tone than those of non-depressed participants.

Consistent with this formulation, in the current investigation negative appraisals of *Personal* ambiguous situations were positively associated with symptoms of depression. Conversely, however, the relationship between negative appraisals of the *Traumatic* ambiguous situations and depressive affect was less consistent. These results are significant in that it has been suggested that an increased tendency to selectively impose negative rather than neutral interpretations on ambiguous situations could directly influence emotional vulnerability (Lawson & MacLeod, 2002; Teasdale, 1983). For example, as negative cognitions increase proportionately with depressed mood, events that evoke negative affect may trigger self-defeating thoughts previously aligned with depressed affect (e.g., social rejection) (Beck, 1967; Teasdale, 1983). Moreover, the fact that appraisals of the *Personal,* but not *Traumatic* events were more consistently aligned with depression was expected, as individuals displaying heightened symptoms of depression perceive themselves as experiencing more negative social interactions than do non-depressed individuals (e.g., Coyne et al., 1987; Hokanson et al., 1989). Indeed, negative social interactions may be a hallmark of depressive illness (Nezlek et al., 1994). Further, as indicated earlier, events which are perceived as representing a loss or withdrawal from the individual's social network or events that are perceived as humiliating and that devalue the individual's core characteristics (such as those which

comprise the *Personal* dimension of the AASQ) appear to be particularly likely to trigger depressive episodes (Brown et al., 1987; Kendler et al., 2003; Monroe & Depue, 1991; Roy, 1983, 1985).

While the data presented provide *prima facie* evidence supporting appraisal differences in relation to depressive symptoms, there are limitations to the conclusions that can be drawn. First, analysis of appraisals associated with depression may be compromised by response biases, rather than actual appraisal or interpretation of situations (MacLeod & Mathews, 1991; Mogg et al., 1994). Specifically, it has been proposed that depressed individuals may exhibit an emotionally tied response bias, which increases their tendency to endorse negative response options. Accordingly, caution may be warranted in interpreting these results, as it is uncertain whether an individual's response represents an actual cognitive interpretation or simply a predisposition to endorse response options with a negative tone (e.g., threatening, distressing etc.). Second, given the potential importance of perceived control in the evolution of depressive states (Alloy & Clements, 1988), in hindsight, it was unfortunate that items that assessed participants' perceived control over both the occurrence and resolution of the events were not included. Current studies using these same scenarios include items to assess participants' perceived control. Finally, although in the current investigation perceptions of increased threat and distress in relation to the ambiguous events were positively associated with the severity of symptoms of depression, it has been observed (Davis & MacDonald, 2004) that feelings of threat and distress following certain events, especially those of a potentially traumatic nature may be associated with positive outcomes. For example, it was noted that following the terrorist attacks of September

11th, 2001, that perceived threat and greater initial distress reactions significantly predicted the extent to which individuals reported positive changes in their lives (e.g. closer to family, refocused priorities) (Davis & MacDonald, 2004). Thus, negative perceptions of certain events may not be wholly indicative of risk for developing symptoms of depression.

Finally, while this AASQ reflects an attempt to better assess appraisal in relation to affect, we acknowledge that a simple questionnaire may not be fully capable of assessing the dynamic and fluid nature of appraisal., Indeed, although the AASQ was developed with the intention of assessing appraisal processes among individuals exhibiting varying levels of depression, it is not without limitations. For example, although the situations presented were held constant, some individual may have encountered events like those described in the scale, while others may not have had such experiences. As such, experiential factors may have influenced the appraisal of these events, independent of symptoms of depression. Additionally, while an effort was made to ensure that the AASQ comprised a sufficiently large number of commonly encountered situations, many types of situations that might have been relevant to participants may have been omitted or overlooked. As well, given that the outcome dimension was constructed such that the choice of possible outcomes was limited to five pre-determined choices, it is possible that participants may have endorsed the outcome that was most similar to, but not the exact outcome they would have anticipated. As well, although most of the situations presented were framed relative to consequences for the individual, it is possible that the situations were appraised as stressful, owing to possible anticipation of harm or embarrassment to others (e.g., friends or family). Currently, the

scale is not able to readily detect such appraisals. Finally, by rendering the scale ambiguous, it may have been less likely to simulate what actually might occur in the face of real stressors of this sort. Clearly, the AASQ, as it now stands, represents a work "in progress", and additional evaluation of its validity is needed, certain items need to be eliminated, and perhaps others added. As well, the scale covers threat, distress and potential outcomes, but does not consider perceived control over the situation, a fundamental aspect of appraisal., At this time, experiments are underway assessing these issues.

Mediating Effects of Coping on the Relationship Between Appraisal and Symptoms of Depression

It will be recalled that the transactional model of stress and coping posits that the impact of environmental challenges may be related to both the appraisal of a stressor, and the perceived availability of coping methods (Lazarus & Folkman, 1984). Essentially, when confronted with a stressful event, an individual first conducts a primary appraisal of the potential danger posed by the event, which is then followed by a secondary appraisal of the coping resources that perceived to be available to contend with the stressor. Of course, the perceived effectiveness of these coping strategies may alter the individuals primary appraisal of the event, such that the stressor is perceived as either more threatening (e.g., I don't have the coping resources to deal with this) or as relatively benign (e.g., I have the coping resources I need to deal with this). Ultimately, the frequent perception of stressful events (and subsequent activation of psychological and physiological stress-related processes) in the vulnerable individual may lead to a decrease in psychological well-being, including the evolution of depressive symptoms.

Thus, given the relationship between coping strategies endorsed and appraisal of stressful events, it was determined whether the coping strategies endorsed mediated the relationship between appraisals and symptoms of depression. As anticipated, the coping strategies endorsed (in particular, emotion-focused strategies) fully mediated the relationship between stressor appraisal and depression. These results are in agreement with the frequent observation (e.g., Bianchi et al., 2004; Connor-Smith & Compas, 2002; Dempsey, 2002; Folkman & Lazarus, 1988; Hien & Miele, 2003; Wei et al., 2003) that coping strategies can mediate the relationship between stressful events or perceptions of stressful events and psychological well-being.

It will be recalled that active coping efforts may divert attention from the source of distress (e.g., active or cognitive distraction), but certain strategies may also have the effect of focusing the individual's attention towards the stressor (e.g., problem-solving or rumination) (Folkman & Lazarus, 1988). Of course, the efficacy of using either an avoidant or a more vigilant strategy depends on the characteristics of the situation and the particular combination of strategies utilized (Matheson & Anisman, 2003). Secondly, coping strategies might mediate the individual's affective state by changing the subjective meaning of the encounter between the individual and the potential stressor (Folkman & Lazarus, 1988; Davis & Nolen-Hoeksema, 2001). Indeed, through cognitive coping styles, the individual may come to perceive the stressful even in a new light. For example, a once daunting stressor may be reappraised as a challenge through a process of cognitive restructuring. Finally, coping could mediate emotional states by impacting directly upon the transaction between the individual and the stressful event itself. Importantly, this avenue of mediation is thought to be facilitated by problem-focused

strategies that are aimed at reducing the stressor directly (Folkman & Lazarus, 1988). For example, studying diligently for a difficult final exam (i.e., employing a coping strategy aimed directly at impacting the stressor) may assuage the student's distress over their upcoming performance.

The results of the present investigation indicated that depressive symptoms were related to the way individuals appraised a situation and the coping styles endorsed. These data, however, do not offer any indication as to the processes that lead up to certain appraisal styles being used nor why particular coping strategies were favoured over others. In preliminary studies, in which individuals with differing levels of depressive symptoms were asked which coping strategies they endorsed and how effective they considered them to be, it was found that in the main they believed that their coping strategies (heavily oriented to emotion-focused methods and reduced social support seeking and problem solving) were as effective as those of individuals with low levels of depressive symptoms. In effect, the individuals using emotion-focused strategies did not perceive these to be ineffective. As such, one could surmise that in the absence of some form of intervention it would be unlikely that they would make efforts to endorse alternatives.

In the course of assessing the mediating effects of coping on the relationship between appraisals and distress, it was noted that negative appraisals were positively associated with the endorsement of emotion-focused coping strategies. In general, these results are consistent with reports that increased endorsement of emotion-focused or avoidant strategies is associated with heightened levels of distress (e.g., Berghuis & Stanton, 2002; Lee & Liu, 2001; Pakenham, Dadds & Terry, 1994; Vitaliano, Katon,

Maiuro & Russo, 1989). Yet, there have been reports that were not consistent with these studies, nor with those of the present investigation. For example, it was reported that the endorsement of problem *and* emotion focused coping was associated with *greater* distress (Gunthert, Cimbolic, Cohen & Armeli, 1999). Moreover, among unemployed individuals, problem-focused coping was not related to distress and that distancing and distracting activities were associated with a decrease in distress (Gowan, Riordan & Gatewood, 1999). The factors responsible for the diverse results observed can not yet be determined, but given the possibility that coping strategies are situation-specific, this needs to be considered as contributing to the observed outcomes.

Neuroendocrine Activity: Relation to Symptoms of Depression and Previous Traumatic Experience

In response to stressful events a cascade of hormonal and central neurotransmitter changes are evoked, which are thought to be biologically significant. Among other things, these physiological and behavioural responses are thought to help the organism deal with an on-going stressor (Anisman & Merali, 1999). In this respect, a central and frequently examined aspect of the physiological response evoked by stressors is activation of the HPA axis, culminating in the release of cortisol from the adrenal gland. In evaluating cortisol changes, investigators have assessed basal levels of the hormone, output over extended periods of time (e.g., total urinary cortisol over a 24 hr period), plasma or salivary cortisol levels over time, and cortisol suppression in response to a synthetic corticoid (dexamethasone suppression test). In each instance, major depression was associated with elevated corticoid concentrations (Nemeroff, 2002), including higher levels of cortisol following awakening relative to non-depressed controls (Plotsky et al.,

1998). In the present investigation, the presence of depressive symptoms was not related to the diurnal pattern of cortisol release. Evidently, unlike major clinical depression, moderate and mild (essentially subsyndromal) symptoms of depression are not associated with elevated neuroendocrine activity following awakening. This finding is consistent with the observation that alterations of neuroendocrine activity are evident primarily among those individuals presenting severe (i.e., major or melancholic) symptoms of depression (Plotsky et al., 1998)

It will be recalled that individuals affected by PTSD exhibit a distinct pattern of neuroendocrine activity which can be distinguished from that observed under basal conditions, as well as among individuals presenting with major depression (Yehuda et al, 1993). Although acute stressors typically elicit an increase of cortisol levels, among individuals with PTSD levels of this hormone are reduced (e.g., Anisman et al., 2001; Boscarino, 1996; Goenjian, et al., 1996; Gurvits et al., 2000; Kellner et al., 1997; Yehuda et al., 1993; Yehuda et al., 1996; Yehuda et al., 1998; Wang, 1997). Consistent with these findings, in the present investigation cortisol release was moderated by traumatic experiences reported by participants, such that those individuals reporting six or more traumas exhibited lower levels of cortisol across a day of measurement relative to individuals with lesser trauma experiences. Moreover, as described earlier (Kelly et al., 2004) the blunting of cortisol release was particularly notable if individuals had experienced multiple traumatic experiences and had encountered a trauma early in life (prior to age 5). It may well be that early life traumatic events results in the sensitization of neuroendocrine processes so that responses to later stressor experiences are exacerbated (Anisman, Zaharia, Meaney & Merali, 1999). Alternatively, adverse early

life experiences may set in motion a cascade of psychological and behavioural changes, including variations of stressor appraisal and coping styles, which give rise to exaggerated responses to later stressor experiences, which influence pathology and neuroendocrine functioning.

It has been suggested that the low levels of cortisol observed in individuals with PTSD may be attributable to an inhibition of the hypothalamic-pituitary-adrenal (HPA) axis through enhanced negative feedback at the level of the pituitary, combined with disturbed negative feedback to the hypothalamus to keep CRH release in check (Yehuda, et al., 1996). Interestingly, it was reported (Heim et al., 2000; Rasmusson et al., 2001) that a diminished ACTH response to CRH challenge, but a greater ACTH response to current psychosocial stress was evident among women with histories of childhood physical and sexual abuse. These data suggest that PTSD is associated with a down-regulated HPA activity, but stressful events, possibly acting through up-regulated limbic processes, may activate the HPA axis, thereby provoking exaggerated cortisol outflow despite the down regulated system. From this perspective, it could be argued that the reduced HPA functioning reflects an adaptive response to contend with an otherwise sensitized amygdala system, thereby keeping stressor-provoked neurochemical responses within a "safe" range. In agreement with this conclusion, Yehuda et al., (2004) recently reported that PTSD was associated with enhanced suppression of ACTH in response to dexamethasone and the ACTH-to-cortisol ratios did not differ between groups before or after dexamethasone administration. Taken together, these findings make it unlikely that low cortisol levels following dexamethasone administration in PTSD occurs as a consequence of low adrenal output and/or abnormal adrenal sensitivity to ACTH (Yehuda

et al., 2004). Moreover, these data speak to the notion that PTSD is associated with an enhanced cortisol negative feedback inhibition of ACTH secretion, likely mediated at the level of the pituitary (Yehuda et al., 2004). Ultimately, the neuroendocrine profile in PTSD may be indicative, to some extent, of an adaptive process to protect the body from the harmful effects of sustained exposure to elevated levels of cortisol

Although it was predicted that individuals reporting increased symptoms of depression or increased numbers of traumatic experiences would exhibit altered neuroendocrine responses to a laboratory stressor, in general, such effects were not evident. These data suggest that the stressors employed (e.g., images of potentially traumatic images, reminders of previous traumatic experiences) were not sufficiently stressful to evoke either an up- or down-regulation of neuroendocrine activity. In a recent meta-analysis Dickerson & Kemeny (2004) suggested that passive tasks (e.g., images or films) are relatively ineffective in provoking marked increases of cortisol levels, compared with tasks containing both uncontrollable and psychosocial elements. Moreover, these investigators suggested that cortisol elevations are most notable when participants are actively engaged in the test situation (as in the Trier Social Stress Test), as opposed to simply being passive recipients of a stressor image. Indeed, despite the relatively graphic and aversive nature of the images presented, as well as the situations participants were asked to recall, it should be considered that they may not have been effective in realistically portraying the dynamics and complexities associated with experiencing the actual event, even for those with similar prior experiences. In fact, Matheson and Cole (2004) recently reported that the anger (hostility) associated with an aversive event was more likely to promote elevated cortisol levels than was the actual

perceived aversiveness of the situation. In effect, in evaluating the effects of stressors on cortisol responses among previously stressed (or in depressed) individuals, it may be necessary to permit participants to express emotions rather than simply be bystanders to aversive events.

Conclusion

As previously described, stressful events have been associated with a variety of behavioural and physiological pathologies including immune and cardiovascular disturbances (Cohen et al., 2001; Sapolsky, 2001), mood and anxiety-related disorders (Abramson et al., 1978; Billings & Moos, 1982, 1985; Brown & Harris, 1978, 1989; Cui & Vaillant, 1996; Daley et al., 2000; Dura et al., 1990; Hammen et al.,1986, 1992; Monroe & Depue, 1991; Monroe et al., 1983, 1992; Monroe & Simons, 1991; Mundt et al., 2000; Paykel, 2001) and in the case of severe trauma, PTSD (Yehuda, 2002). While these pathologies are likely related to alterations of a variety of neurochemical and neuroendocrine processes, these are likely moderated by appraisal and coping processes. Indeed, a number of animal studies indicate that cognitive processes may be a fundamental determinant of outcomes under stressful conditions (Anisman & Matheson, 2004).

At the outset of this dissertation it was made clear that analyzing the relationship between stressors and pathology is exceedingly difficult. It remains no less so; however, it is abundantly clear that in order to adequately examine those conditions that lead to pathology (both psychological and physical) it is not only necessary to examine appraisal and coping processes, but also a constellation of other variables including experiential factors (e.g., previous trauma, early-life events), organismic factors (e.g., genetic

vulnerability, age, gender) and finally, characteristics of the stressor itself (e.g., severity, chronicity, predictability). Indeed, it is the confluence of these processes that contribute to the development of pathological states. To be sure, not all individuals that encounter a stressful event, even a traumatic one, will develop depression or PTSD. Some may develop other types of illnesses, multiple pathologies, or none at all. The downstream effects of how an individual is affected by stressors are governed by the "weak link" within their arsenal of adaptive systems. Stressors may place a strain on the system, so that the weak link is exposed, culminating in pathology. The particular pathological outcome presented is, from this perspective, determined by their pre-existent vulnerabilities that may emanate from cognitive, experiential or organismic factors.

The current investigation confirmed that heightened symptoms of depression were related to greater endorsement of emotion-focused strategies and more negative appraisals of a variety of ambiguous situations. Moreover, like depressive symptoms, negative appraisals were predictive of the endorsement of a variety of emotion-focused coping strategies. Importantly, these data suggest that the endorsement of certain coping strategies, coupled with the propensity to appraise ambiguous events in a negative light, even when more positive outcomes are equally possible, may herald vulnerability to depressive states. In addition, contrary to expectations, variability in coping and appraisals was positively associated with depressive affect. While the nature and meaning of this increased variability in coping and appraisals among individuals displaying elevated symptoms of depression remains unclear, it may be the case that the consistent, rather than variable appraisals and endorsement of coping strategies in response to events with similar characteristics may buffer against the development of

depressive symptoms. Finally, while subsyndromal symptoms of depression (and appraisal and coping processes in the current context) do not appear to be associated with variations in neuroendocrine reactivity, it seems that increased numbers of previous traumatic experiences may, in fact, be associated with a disruption in the normal diurnal release of cortisol. In particular, it was noted that in comparison to individuals reporting six or more traumas exhibited markedly lower levels of cortisol shortly after awakening than those that had experienced fewer trauma events (although, of course, other factors may have moderated this effect) As such, repeated traumatic events may prompt an adaptive down-regulation in neuroendocrine activity in order to protect the individual from the deleterious effects of chronically elevated levels of circulating glucocorticoids.

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Appendix A

Table 1

Factor Loadings for the Threat Dimension of the AASQ in Study 2

Personal (Eigenvalue: 6.72; Cronbach's α: .88 Variance Explained: 33.7%)	
Items	Factor Loadings
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.75
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.	.65
6. While doing a presentation, you notice a couple of students at the back of the class laughing.	.65
14. You go to take money out of your account, but your grant/scholarship/student loan check has not been processed by the bank / deposited by the university. Everyone else has his or hers.	.63
23. You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard.	.63
2. Imagine that you get home from class and there is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you.	.62
12. Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.	.61
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.	.61

1. Your professor hands back last week's assignments to everyone but you, and then asks you to stay after class.	.59
22. Someone you are very close to (e.g., partner) leaves to drive home and is supposed to call your when they get in. It's been a couple of hours and you haven't heard anything. There is no answer at their place.	.57
4. Most of your friends have left town to attend other universities.	.54
11. The supervisor at your part-time job calls and asks you to come in to discuss your most recent evaluation.	.51
19. You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.	.51
21. A couple of weeks after you have decided to invest a significant portion of your student loan in stocks, the market begins to waiver.	.48
3. CNN announces that an unknown number of planes have been hijacked simultaneously. You suddenly remember that your mother was flying to Minnesota for a business trip today.	.43
Traumatic	
(Eigenvalue: 1.86; Cronbach's α: .78; Variance Explained: 9.30%)	
Items	
15. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.	.83
18. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly.	.77
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town	.72

5. There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.	.63
24. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking lot.	.56

Note. AASQ = Appraisal of Ambiguous Events Questionnaire

Table 2

Factor Loadings for the Distress Dimension of the AASQ in Study 2

Personal (Eigenvalue: 6.27; Cronbach's α: .85; Variance Accounted for: 33%)	
Items	Factor Loadings
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.69
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.	.67
6. While doing a presentation, you notice a couple of students at the back of the class laughing.	.63
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.	.61
2. Imagine that you get home from class and there is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you.	.59
16. You get an anonymous spiteful letter left on your locker door / left on your desk.	.58
23. You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard	.55
1. Your professor hands back last week's assignments to everyone but you, and then asks you to stay after class.	.54
4. Most of your friends have left town to attend other universities.	.49
12. Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.	.47

19. You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.	.46
14. You go to take money out of your account, but your grant/scholarship/student loan check has not been processed by the bank / deposited by the university. Everyone else has his or hers.	.45
22. Someone you are very close to (e.g., partner) leaves to drive home and is supposed to call your when they get in. It's been a couple of hours and you haven't heard anything. There is no answer at their place.	.45

Traumatic (Eigenvalue, 1.64: Cronbach's α: .82; Variance Accounted for: 8.64)	
Items	
15. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.	.79
18. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly.	.76
5. There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.	.70
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town	.66
20. You are applying some sun tan lotion when you notice a small mass on your neck. Your physician performs a small biopsy and says it's probably nothing, but that he can't be sure until the test results come back in a week.	.64
24. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way	.56

to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking lot.

Note. AASQ = Appraisal of Ambiguous Events Questionnaire

Table 3

Factor Loadings for the Outcome Dimension of the AASQ in Study 2

Personal (Eigenvalue: 5.33; Cronbach's α: .79; Variance Accounted for: 25.37%)	
Items	Factor Loadings
19. You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.	.68
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.60
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.	.54
2. Imagine that you get home from class and there is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you.	.54
4. Most of your friends have left town to attend other universities.	.54
11. The supervisor at your part-time job calls and asks you to come in to discuss your most recent evaluation.	.53
6. While doing a presentation, you notice a couple of students at the back of the class laughing.	.53
23. You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard	.51
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.	.49

12. Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.	.44
13. You receive an unexpected message on your machine from student health services asking you to call the office after having gone in for routine check up/tests the week before.	.42
1. Your professor hands back last week's assignments to everyone but you, and then asks you to stay after class.	.42

Traumatic

(Eigenvalue: 1.70; Cronbach's α: .75; Variance Accounted for: 8.04%)

Items	
15. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.	.64
18. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly.	.62
22. Someone you are very close to (e.g., partner) leaves to drive home and is supposed to call your when they get in. It's been a couple of hours and you haven't heard anything. There is no answer at their place.	.64
3. CNN announces that an unknown number of planes have been hijacked simultaneously. You suddenly remember that your mother was flying to Minnesota for a business trip today.	.62
20. You are applying some sun tan lotion when you notice a small mass on your neck. Your physician performs a small biopsy and says it's probably nothing.	.59

7. You are at health services for what you think is something minor. After the initial exam you glimpse of the nurse who just examined you speaking with your physician. They both appear to be concerned.	.59
24. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking lot.	.56
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town	.55
5. There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.	.44

Note. AASQ = Appraisal of Ambiguous Events Questionnaire

Table 4

Standardized Factor Loading and Standardized Residuals for Items of the AASQ in Study 2 (Threat)

Factor Item	Standardized Factor Loadings	Standardized Residual
Personal		
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.73	.54
12. Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.	.65	.42
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.	.64	.40
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.	.63	.40
6. While doing a presentation, you notice a couple of students at the back of the class laughing.	.61	.38
4. Most of your friends have left town to attend other universities.	.55	.30
5. There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.	.55	.31
23. You phone your department to see if your request to switch your major has gone through, but the	.55	.30

person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard.		
2. Imagine that you get home from class and there is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you.	.53	.28
Traumatic		
15. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.	.75	.56
18. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly.	.73	.54
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town	.65	.42
5. There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.	.57	.32
24. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking lot.	.56	.31

Note. AASQ = Appraisal of Ambiguous Events Questionnaire

Table 5

Standardized Factor Loading and Standardized Residuals for Items of the AASQ in Study 2 (Distress)

Factor Item	Standardized Factor Loadings	Standardized Residual
Personal		
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.63	.40
6. While doing a presentation, you notice a couple of students at the back of the class laughing.	.61	.37
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.	.60	.36
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.63	.40
12. Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.	.56	31
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.	.56	.32
19. You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on	.53	.28

Monday.		
23. You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard	.51	.26
4. Most of your friends have left town to attend other universities.	.45	.21
Traumatic		
18. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly	.74	.55
15. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.	.71	.51
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town	.64	.40
5. There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.	.63	.39
24. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking	.61	.37

lot.

Note. AASQ = Appraisal of Ambiguous Events Questionnaire

Table 6

Standardized Factor Loading and Standardized Residuals for Items of the AASQ in Study 2 (Outcome)

Factor Item	Standardized Factor Loadings	Standardized Residual
Personal		
19. You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.	.62	.38
6. While doing a presentation, you notice a couple of students at the back of the class laughing.	.56	.32
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.55	.31
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.	.55	.30
2. Imagine that you get home from class and there is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you	.49	.24
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.	.49	.24
23. You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the	.48	.23

matter cannot be discussed on the phone and that a letter has been mailed to you in this regard		
12. Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.	.44	.20
4. Most of your friends have left town to attend other universities.	.37	.13
Traumatic		
18. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly.	.56	.31
15. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.	.53	.28
5. There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.	.52	.27
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town	.45	.20
24. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking	.42	.18

lot.

Note. AASQ = Appraisal of Ambiguous Events Questionnaire

Table 7

Standardized Factor Loading and Standardized Residuals for Items of the AASQ in Study 3 (Threat)

Factor Item	Standardized Factor Loadings	Standardized Residual
Personal		
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.75	.57
6. While doing a presentation, you notice a couple of students at the back of the class laughing.	.68	.46
19. You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.	.66	.43
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.	.63	.40
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.	.62	.38
12. Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.	.61	.37
4. Most of your friends have left town to attend other universities.	.58	.33
2. Imagine that you get home from class and there	.57	.33

is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you		
23. You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard	.54	.30
Traumatic		
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town	.71	.50
15. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.	.69	.48
18. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly	.69	.48
24. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking lot	.66	.44
5. There is an outbreak of smallpox, and the government is only able to immunize a portion	.56	.31

	of the population. The criteria for immunization have not been disclosed.

Note. AASQ = Appraisal of Ambiguous Events Questionnaire

Table 8

Standardized Factor Loading and Standardized Residuals for Items of the AASQ in Study 3 (Distress)

Factor Item	Standardized Factor Loadings	Standardized Residual
Personal		
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.69	.47
6. While doing a presentation, you notice a couple of students at the back of the class laughing.	.63	.40
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.	.62	.38
19. You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.	.56	.31
23. You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard	.52	.27
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.	.51	.26
12. Your first-year seminar instructor has asked a	.51	.26

group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.		
2. Imagine that you get home from class and there is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you.	.48	.23
4. Most of your friends have left town to attend other universities.	.43	.18
Traumatic		
18. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly.	.68	.46
15. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.	.67	.45
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town	.65	.42
5. There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.	.58	.34
24. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group	.56	.31

of kids is beginning to congregate in the adjacent parking lot.	

Note. AASQ = Appraisal of Ambiguous Events Questionnaire

Table 9

Standardized Factor Loading and Standardized Residuals for Items of the AASQ in Study 3 (Outcome)

Factor Item	Standardized Factor Loadings	Standardized Residual
Personal		
9. You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.	.65	.43
17. One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.	.56	.31
8. You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.	.52	.27
6. While doing a presentation, you notice a couple of students at the back of the class laughing.	.52	.27
19. You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.	.49	.24
23. You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard	.46	.21
12. Your first-year seminar instructor has asked a	.46	.21

group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.		
2. Imagine that you get home from class and there is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you.	.40	.16
4. Most of your friends have left town to attend other universities.	.34	.12
Traumatic		
18. You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly.	.61	.37
15. There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.	.55	.30
10. You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town	.51	.26
24. You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking lot.	.50	.25
5. There is an outbreak of smallpox, and the government is only able to immunize a portion	.49	.24

	of the population. The criteria for immunization have not been disclosed.

Note. AASQ = Appraisal of Ambiguous Events Questionnaire

Appendix B

21 – Item Beck Depression Inventory (BDI)

On this questionnaire are groups of statements. Please read the entire group of statements of each category. Then pick out ONE statement in that group which best describes the way you feel. Check off the number beside the statement you have chosen.

---

1. ___ 0 = I do not feel sad
   ___ 1 = I feel sad or blue
   ___ 2a = I am blue or sad all of the time and I can't snap out of it
   ___ 2b = I am so sad or unhappy that it is very painful
   ___ 3 = I am so sad or unhappy that I can't stand it

2. ___ 0 = I am not particularly pessimistic or discouraged about the future
   ___ 1 = I feel discouraged about the future
   ___ 2a = I feel I have nothing to look forward to
   ___ 2b = I feel I won't every get over my troubles
   ___ 3 = I feel that the future is hopeless and things cannot improve

3. ___ 0 = I do not feel like a failure
   ___ 1 = I feel I have failed more than the average person
   ___ 2a = I feel I have accomplished very little that is worthwhile or that means anything
   ___ 2b = As I look back on my life, all I can see is a lot of failures
   ___ 3 = I feel I am a complete failure as a person

4. ___ 0 = I am not particularly dissatisfied
   ___ 1a = I feel bored most of the time
   ___ 1b = I don't enjoy things the way I used to
   ___ 2 = I don't get satisfaction out of anything anymore
   ___ 3 = I am dissatisfied with everything

5. ___ 0 = I don't feel particularly guilty
   ___ 1 = I feel bad or unworthy a good part of the time
   ___ 2a = I feel quite guilty
   ___ 2b = I feel bad or unworthy practically of the time now
   ___ 3 = I feel as though I am very bad or worthless

6. ___ 0 = I don't feel I am being punished
   ___ 1 = I have a feeling that something bad may happen to me
   ___ 2 = I feel I am being punished or will be punished
   ___ 3a = I feel I deserve to be punished
   ___ 3b = I want to be punished

7. ___ 0 = I don't feel disappointed in myself
___ 1a = I am disappointed in myself
___ 1b = I don't like myself
___ 2 = I am disgusted with myself
___ 3 = I hate myself

8. ___ 0 = I do not feel I am any worse than anybody else
___ 1 = I am very critical of myself for my weaknesses or mistakes
___ 2a = I blame myself for everything that goes wrong
___ 2b = I feel I have many bad faults

9. ___ 0 = I don't have thoughts of harming myself
___ 1 = I have thoughts of harming myself but I would not carry them out
___ 2a = I feel I would be better off dead
___ 2b = I have definite plans about committing suicide
___ 2c = I feel my family would be better off if I were dead
___ 3 = I would kill myself if I could

10. ___ 0 = I don't cry anymore than usual
___ 1 = I cry more now than I used to
___ 2 = I cry all the time now. I can't stop it
___ 3 = I used to be able to cry but now I can't cry at all even though I want to

12. ___ 0 = I am no more irritated now than I ever am
___ 1 = I get annoyed or irritated more easily than I used to
___ 2 = I get irritated all the time
___ 3 = I don't get irritated at all the things that used to irritate me.

12. ___ 0 = I have not lost interest in other people
___ 1 = I am less interested in other people than I used to be
___ 2 = I have lost most of my interest in other people and I have little feeling for them
___ 3 = I have lost all my interest in other people and don't care about them at all

13. ___ 0 = I make decisions about as well as ever
___ 1 = I am less sure of myself now and try to put off making decisions
___ 2 = I can't make decisions anymore without help
___ 3 = I can't make decisions at all anymore

14. ___ 0 = I don't feel I look any worse than I used to
___ 1 = I am worried that I am looking old or unattractive
___ 2 = I feel that there permanent changes in my appearance and they make me look unattractive
___ 3 = I feel that I am ugly or repulsive looking

15. ___ 0 = I can work about as well as before
___ 1a = It takes extra effort to get started at doing something
___ 1b = I don't work as well as I used to
___ 2 = I have to push myself very hard to do anything
___ 3 = I can't do any work at all

16. ___ 0 = I can sleep as well as usual
___ 1 = I wake up more tired in the morning than I used to
___ 2 = I wake up 1-2 hours earlier than usual and find it hard to get back to sleep
___ 3 = I wake up early every day and can't get more than 5 hours sleep

17. ___ 0 = I don't get anymore tired than usual
___ 1 = I get tired more easily than I used to
___ 2 = I get tired from doing anything
___ 3 = I get too tired to do anything

18. ___ 0 = My appetite is no worse than usual
___ 1 = My appetite is not as good as it used to be
___ 2 = My appetite is much worse now
___ 3 = I have no appetite at all any more

19. ___ 0 = I haven't lost much weight, if any, lately
___ 1 = I have lost more than 5 pounds
___ 2 = I have lost more than 10 pounds
___ 3 = I have lost more than 15 pounds

20. ___ 0 = I am no more concerned about my health than usual
___ 1 = I am concerned about aches and pains or upset stomach or constipation or other unpleasant feelings in my body
___ 2 = I am so concerned with how I feel or what I feel that it's hard to think of much else
___ 3 = I am completely absorbed in what I feel

21. ___ 0 = I have not noticed any recent change in my interest in sex
___ 1 = I am less interested in sex than I used to be
___ 2 = I am much less interested in sex now
___ 3 = I have lost interest in sex completely

Survey of Coping Profile Endorsement (SCOPE)

Ordinarily, in recent weeks have you	*Never*	*Seldom*	*Sometimes*	*Often*	*Almost always*
1. accepted that there was nothing you could do to change your situation?	0	1	2	3	4
2. tried to just take whatever came your way?	0	1	2	3	4
3. talked with friends or relatives about your problems?	0	1	2	3	4
4. tried to do things which you typically enjoy?	0	1	2	3	4
5. sought out information that would help you resolve your problems?	0	1	2	3	4
6. blamed others for creating your problems or making them worse?	0	1	2	3	4
7. sought the advice of others to resolve your problems?	0	1	2	3	4
8. blamed yourself for your problems?	0	1	2	3	4
9. exercised?	0	1	2	3	4
10. fantasized or thought about unreal things (eg., the perfect revenge, or winning a million dollars) to feel better?	0	1	2	3	4
11. been very emotional compared to your usual self?	0	1	2	3	4
12. gone over your problems in your mind over and over again?	0	1	2	3	4
13. asked others for help?	0	1	2	3	4
14. thought about your problems a lot?	0	1	2	3	4
15. became involved in recreation or pleasure activities?	0	1	2	3	4
16. worried about your problems a lot?	0	1	2	3	4
17. tried to keep your mind off things that are upsetting you?	0	1	2	3	4
18. tried to distract yourself from your troubles?	0	1	2	3	4
19. avoided thinking about your problems?	0	1	2	3	4
20. made plans to overcome your problems?	0	1	2	3	4
21. told jokes about your situation?	0	1	2	3	4
22. thought a lot about who is responsible for your problems (besides yourself)?	0	1	2	3	4
23. shared humorous stories etc. to cheer yourself and others up?	0	1	2	3	4
24. told yourself that other people have dealt with problems such as yours?	0	1	2	3	4

Ordinarily, in recent weeks have you	*Never*	*Seldom*	*Sometimes*	*Often*	*Almost always*
25. thought a lot about how you have brought your problems on yourself?	0	1	2	3	4
26. decided to wait and see how things turn out?	0	1	2	3	4
27. wished the situation would go away or be over with?	0	1	2	3	4
28. decided that your current problems are a result of your own past actions?	0	1	2	3	4
29. gone shopping?	0	1	2	3	4
30. asserted yourself and taken positive action on problems that are getting you down?	0	1	2	3	4
31. sought reassurance and moral support from others?	0	1	2	3	4
32. resigned yourself to your problems?	0	1	2	3	4
33. thought about how your problems have been caused by other people?	0	1	2	3	4
34. daydreamed about how things may turn out?	0	1	2	3	4
35. been very emotional in how you react, even to little things?	0	1	2	3	4
36. decided that you can grow and learn through your problems?	0	1	2	3	4
37. told yourself that other people have problems like your own?	0	1	2	3	4
38. wished I was a stronger person or better at dealing with problems?	0	1	2	3	4
39. looked for how you can learn something out of your bad situation?	0	1	2	3	4
40. asked for God's guidance?	0	1	2	3	4
41. kept your feelings bottled up inside?	0	1	2	3	4
42. found yourself crying more than usual?	0	1	2	3	4
43. tried to act as if you were not upset?	0	1	2	3	4
44. prayed for help?	0	1	2	3	4
45. gone out?	0	1	2	3	4
46. held in your feelings?	0	1	2	3	4
47. tried to act as if you weren't feeling bad?	0	1	2	3	4
48. taken steps to overcome your problems?	0	1	2	3	4
49. made humorous comments or wise cracks?	0	1	2	3	4
50. told others that you were depressed or emotionally upset?	0	1	2	3	4

Survey of Coping Profile Endorsement - Abbreviated (SCOPE-A)

Based on your own sense of what is going on in the picture, how would you deal with the situation?

If I was in this situation, I would...

	Not at all				Extremely
1. make plans to overcome my concerns or problems.	0	1	2	3	4
2. tell myself that other people have problems just like mine.	0	1	2	3	4
3. move on by getting involved in recreation or pleasure activities?	0	1	2	3	4
4. try to keep my mind off things that are upsetting me.	0	1	2	3	4
5. spend a lot of time thinking about my problems.	0	1	2	3	4
6. make humorous comments or tell stories about my situation.	0	1	2	3	4
7. talk with friends or relatives about my problem.	0	1	2	3	4
8. cry, even if in the company of someone else.	0	1	2	3	4
9. think a lot about who is responsible for my problems (besides me).	0	1	2	3	4
10. think about how I have brought about these problems on myself	0	1	2	3	4
11. hold in my feelings.	0	1	2	3	4
12. decide to wait and see how things turn out rather than trying to change anything.	0	1	2	3	4
13. wish the situation would just go away or be over with	0	1	2	3	4

Traumatic Life Events Questionnaire (TLEQ)

The purpose of this questionnaire is to identify significant life experiences in one's life. The events listed below are far more common than many people realize. Please read each question carefully and circle the answers that best describe your experience.

1. Have you ever experienced a natural disaster (a flood, hurricane, earthquake, etc.)?

   never once twice 3 times 4 times 5 times more than 5 times

   If this happened:
   When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
   Did you experience fear, helplessness, or horror at what happened? **yes / no**
   Were you seriously injured? **yes / no**
   Was someone you cared about or close by seriously injured or killed? **yes / no**
   Did you think you or a loved one was in danger of being killed by the disaster? **yes / no**

2. Were you involved in a motor vehicle accident for which you received medical attention or that badly injured or killed someone?

   never once twice 3 times 4 times 5 times more than 5 times

   If this happened:
   When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
   Did you experience fear, helplessness, or horror when it happened? **yes / no**
   Were you seriously injured? **yes / no**

3. Have you been involved in any other kind of accident where you or someone else was badly hurt? (examples: a plane crash, a drowning or near drowning, an electrical or machinery accident, an explosion, home fire, chemical leak, or overexposure to radiation or toxic chemicals)

   never once twice 3 times 4 times 5 times more than 5 times

   If this happened:
   When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
   Did you experience fear, helplessness, or horror when it happened? **yes / no**
   Were you seriously injured? **yes / no**

4. Have you lived, worked, or had military service in a war zone? **yes / no**
   If yes, were you ever exposed to warfare or combat? (for example: in the vicinity of a rocket attack or people being fired upon; seeing someone getting wounded or killed)

   never once twice 3 times 4 times 5 times more than 5 times

   If this happened:
   When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
   Did you experience fear, helplessness, or horror when it happened? **yes / no**
   Were you seriously injured? **yes / no**

5. Have you experienced the unexpected and sudden death of a close friend or loved one?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Were you seriously injured? **yes / no**

6. Has a loved one (who is living) ever experienced a life threatening or permanently disabling accident, assault, or illness? (examples: spinal cord injury, rape, life threatening virus)

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
Did you experience fear, helplessness, or horror when it happened? **yes / no**

7. Have you ever had a life threatening illness?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
Did you experience fear, helplessness, or horror when it happened? **yes / no**

8. Have you been robbed or been present during a robbery – where the robber(s) used or displayed a weapon?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Were you seriously injured? **yes / no**

9. Have you ever been hit or beaten up and badly hurt by a stranger or someone you didn't know very well?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Were you seriously injured? **yes / no**

10. Have you seen a stranger (or someone you didn't know very well) attack or beat up another someone and seriously injure or kill them?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
Did you experience fear, helplessness, or horror when it happened? **yes / no**

11. Has anyone threatened to kill you or cause you serious physical harm?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Was this person a stranger? **yes / no** friend or acquaintance? **yes / no**
relative? **yes / no** intimate partner? **yes / no**

12. While growing up, were you physically punished in a way that resulted in bruises, burns, cuts, or broken bones?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
Did you experience fear, helplessness, or horror when it happened? **yes / no**

13. While growing up, did you see or hear family violence? (such as your father hitting your mother; or any family member beating up or inflicting bruises, bruises, or cuts on another family member)

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
Did you experience fear, helplessness, or horror when it happened? **yes / no**

14. Have you ever been slapped, punched, kicked, beaten up, or otherwise physically hurt by your spouse (or former spouse), a boyfriend/girlfriend, or some other intimate partner?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Were you seriously injured? **yes / no**
Has more than one intimate partner physically hurt you? **yes / no**
If yes, how many have hurt you? _____

15. Before your 13th birthday: Did anyone – who was at least 5 years older than you – touch or fondle your body in a sexual way or make you touch or fondle their body in a sexual way?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Were you seriously injured? **yes / no**
Was the person a stranger? **yes / no** friend or acquaintance? **yes / no**
parent or caregiver? **yes / no** other relative? **yes / no**
Was threat or force used? **yes / no**
Was there oral, anal, or vaginal penetration? **yes / no**

16. Before your 13th birthday: Did anyone close to your age touch sexual parts of your body or make you touch sexual parts of their body –against your will or without your consent?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Were you seriously injured? **yes / no**
Was the person a stranger? **yes / no** friend or acquaintance? **yes / no**
parent or caregiver? **yes / no** other relative? **yes / no**
Was threat or force used? **yes / no**
Was there oral, anal, or vaginal penetration? **yes / no**

17. After your 13th birthday and before your 18th birthday: Did anyone touch sexual parts of your body or made you touch sexual parts of their body – against your will or without your consent?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Were you seriously injured? **yes / no**
Was the person a stranger? **yes / no** friend or acquaintance? **yes / no**
parent or caregiver? **yes / no** other relative? **yes / no**
Was threat or force used? **yes / no**
Was there oral, anal, or vaginal penetration? **yes / no**

18. After your 18th birthday: : Did anyone touch sexual parts of your body or made you touch sexual parts of their body – against your will or without your consent?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Were you seriously injured? **yes / no**
Was the person a stranger? **yes / no** friend or acquaintance? **yes / no**
parent or caregiver? **yes / no** other relative? **yes / no**
Was threat or force used? **yes / no**
Was there oral, anal, or vaginal penetration? **yes / no**

19. Has anyone stalked you – in other words: followed you or kept track of your activities – causing you to feel intimidated or concerned for your safety?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**
Was the person a stranger? **yes / no** friend or acquaintance? **yes / no**
relative? **yes / no** other relative? **yes / no**
Did you experience fear, helplessness, or horror when it happened? **yes / no**

20. Have you ever had a miscarriage?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**
Did you experience fear, helplessness, or horror when it happened? **yes / no**
Were you seriously injured? **yes / no**

21. Have you ever had an abortion?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**
Did you experience fear, helplessness, or horror when it happened? **yes / no**

22. Have you ever had something happened to you that you believe represented an experience of discrimination (e.g., religious, racial, sex)?

never once twice 3 times 4 times 5 times more than 5 times

If this happened:
When did it happen? _____ **In the past year;** _____ **2-5 years ago;** _____ **6-10 years ago**_____ **10-15 years ago;** _____ **when you were less than 5 years old**

Was the source of the discrimination a stranger? **yes / no**
friend or acquaintance? **yes / no**
someone in your workplace/school? **yes / no**
an organization/institution **yes / no**

Did you experience fear, helplessness, or horror when it happened? **yes / no**

23. Have you experienced (or seen) any other events that were life threatening, caused serious injury, or were highly disturbing and distressing? (examples: lost in the wilderness; a serious animal bite; violent death of a pet; being kidnapped and held hostage; seeing a mutilated body or parts)

never **once** **twice** **3 times** **4 times** **5 times** **more than 5 times**

Please describe:_____

_____

If this happened:

Did you experience fear, helplessness, or horror when it happened? **yes / no**

Were you seriously injured? **yes / no**

24. If any of the events (listed above) happened to you, which one event CAUSES YOU THE MOST DISTRESS?

Indicate Item #: ____

When did this event (last) happen (your age or date)?_____

How much distress (anxiety, worry, sadness, or grief) does this event cause you?

None happened	**no distress**	**slight distress**	**moderate distress**	**considerable distress**	**extreme distress**

Appraisal of Ambiguous Situations Questionnaire (AASQ)

The following is a list of situations that you might encounter at one time or another. Please imagine yourself in each situation, and then indicate how *threatening*, as well as how *distressing* you would find each of these events. We will also be asking you to indicate your thoughts concerning each of these situations. *Please note that there are no right answers for each question – we are simply looking for your first reaction to each of these situations.*

1) Your professor hands back last week's assignments to everyone but you, and then asks you to stay after class.

a. *How threatening would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you think the professor is most likely to say?*

_____ Your assignment was excellent – I just wanted to put a name to a face.

_____Your assignment was great, but there was one question where you could have done better.

_____ Is this your assignment? You forgot to put your name at the top.

_____I'm a little worried that you might not understand the material.,

_____Your assignment was completely unsatisfactory – you should consider dropping this course.

2) Imagine that you get home from class and there is a message from someone you're very close to (e.g., partner) who is away at another university that they really have to talk to you.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you think this person is most likely to say?*

_____ I really miss you – I just had to hear your voice.

_____ I just got an A on my first mid-term.

_____ I'm looking for an email address, do you have it?

_____ I'm a little concerned about our relationship.

_____I've thought about it, and I don't think I need this relationship in my life.

3) CNN announces that an unknown number of planes have been hijacked simultaneously. You suddenly remember that your mother was flying to Minnesota for a business trip today.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you be most likely to think if you were in this situation?*

_____The odds of my mom's plane being hijacked is incredibly small – I'm not worried about her at all.

_____I'm not worried yet, but I'd like to hear from her or at least get some more information.

_____I'm a little bit apprehensive about this, but not so much that it disrupts my day

_____This is extremely worrisome – my mom very likely could be on one of those planes!

_____Oh my gosh! – I just know my mom is on one of those planes and is doomed.

4) Most of your friends have left town to attend other universities.

a. *How threatening would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you think is most likely to happen to these friendships?*

_____They will grow stronger.

_____They will get a little better.

_____They won't change at all.

_____They will get a little worse.

_____They will likely fade away.

5) There is an outbreak of smallpox, and the government is only able to immunize a portion of the population. The criteria for immunization have not been disclosed.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you be most likely to think if this possible outbreak of smallpox?*

_____I'm sure that I'm safe – I will be immunized

_____Though I can't guarantee it, I'm fairly certain I'll be safe

_____It's to hard to say either way what will happen

_____Knowing my luck, I probably won't meet the criteria – I might be in danger

_____I'm positive that I won't be picked – my life is in serious jeopardy

6) While doing a presentation, you notice a couple of students at the back of the class laughing.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you think that they would be most likely laughing about?*

_____I must have said something funny – this presentation is going rather well.

_____Something that happened in the last person's presentation.

_____Something that happened last night and has nothing to do with my presentation.

_____My presentation in general – it's probably not that great.

_____I must look like a complete idiot up here, who has no idea what they are talking about.

7) You are at health services for what you think is something minor. After the initial exam you glimpse of the nurse who just examined you speaking with your physician. They both appear to be concerned.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you be most likely to think that is happening?*

_____They are discussing a matter unrelated to my problem

_____They might be talking about me, but I'm sure it's nothing

_____Hmm....they look pretty serious. I wonder what that's about?

_____That doesn't look good – maybe the nurse suspects something?

_____Uh oh – this is definitely bad news – I've got something really serious wrong with me.

8) You overhear a discussion about a party that your friends went to last week; however you are only hearing about it now.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you think is the most likely reason that you didn't get invited along?*

_____It was my own fault – I was at the library all night and they couldn't reach me.

_____My friends are forgetful, but it doesn't mean anything.

_____ I must have mentioned a few days earlier that I didn't feel like going, so they didn't ask.

_____This has happened a few times now – I must have done something wrong.

_____ It's certain that I've fallen out of favour with my friends.

9) You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.

a. ***How threatening would this situation be to you?***

1	2	3	4	5
Not at all				Extremely

b. ***How distressing would this situation be for you?***

1	2	3	4	5
Not at all				Extremely

c. ***What would think is the most likely reason that they are acting this way?***

_____No big deal - they are just in a bad mood, and it has nothing to do with me.

_____They are in a bad mood unrelated to me, but maybe I aggravated things but appearing suddenly.

_____It's hard to say…it could be about me, but maybe not.

_____The person is now unsure about me and is feeling awkward.

_____They didn't really want to say "yes" to the date in first place and are trying to let me know.

10) You are flipping around on the television when you notice that a severe weather warning has been issued for your area with reports of a tornado having touched down just west of your town

a. ***How threatening would this situation be to you?***

1	2	3	4	5
Not at all				Extremely

b. ***How distressing would this situation be for you?***

1	2	3	4	5
Not at all				Extremely

c. What would you be most likely to think of the threat of a potential tornado?

_____Excellent – I'll get to watch a great storm

_____It's probably nothing, but I'll keep an eye out

_____Hmm….while I'm concerned, its still doesn't call for action

_____I don't have a good feeling about this at all – I'm pretty sure I'm in danger.

_____This is horrible – this could pose a real threat to my life!

11) The supervisor at your part-time job calls and asks you to come in to discuss your most recent evaluation.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you think they are most likely to say?*

_____Excellent job! – We would like to give you a raise

_____You are doing well - keep it up.

_____So far so good, but there is room for improvement

_____There are some serious problems here.

_____Things just aren't working out – we have to let you go.

12) Your first-year seminar instructor has asked a group of fellow students to participate in a student/teacher liaison committee but has not mentioned it to you.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you think is the most likely reason that it wasn't mentioned to you?*

_____The instructor wanted to give the opportunity to students who really needed it.

_____I was most likely considered, but in the end went with someone else for whatever reason

_____The students were just picked at random

_____I'm not completely sure, but sometimes I think the instructor believes my ideas are weird

_____The instructor thinks that I'm not that intelligent, so he didn't bother asking me

13) You receive an unexpected message on your machine from student health services asking you to call the office after having gone in for routine check up/tests the week before.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you think is the most likely reason that they have asked you to call the office?*

_____They just wanted to let me know that my test results came back normal

_____My tests came back normal, but I need to schedule more tests for Spring.

_____They probably just need to confirm my health number for their records.

_____Something of concern probably showed up in my test results – this could be bad.

_____There is obviously something seriously wrong – why would they bother calling?

14) You go to take money out of your account, but your grant/scholarship/student loan check has not been processed by the bank / deposited by the university. Everyone else has his or hers.

a. How threatening would this situation be to you?

1	2	3	4	5
Not at all				Extremely

b. How distressing would this situation be for you?

1	2	3	4	5
Not at all				Extremely

c. What would you be most likely to think if this happened?

_____No big deal – It must just be delayed due to an administrative error. I'm confident it's on the way.

_____I should probably keep an eye on it, but I'm pretty sure everything is okay.

_____This could be a bad sign, but I won't panic yet.

_____Something is obviously wrong and I'm quite worried.

_____Something has definitely gone wrong with my loan/scholarship – I'm going to be broke for the year!

15) There has been a recent wave of "sniper" killings in town over the past few months. There aren't any firm leads and the victims seem to be chosen at random.

a. ***How threatening would this situation be to you?***

1	2	3	4	5
Not at all				Extremely

b. How distressing would this situation be for you?

1	2	3	4	5
Not at all				Extremely

c. What would you be most likely to think about these sniper shootings?

_____With all the extra police around the city, crime will probably go down.

_____The chance of this impacting my life is pretty low. I'm not that worried.

_____This situation isn't critical yet, but it could get worse

_____This is pretty scary – I'm worried for both myself and my family

_____It's only a matter of time before this hit really close to home – I'm terrified.

16) You get an anonymous spiteful letter left on your locker door / left on your desk.

a. ***How threatening would this situation be to you?***

1	2	3	4	5
Not at all				Extremely

b. ***How distressing would this situation be for you?***

1	2	3	4	5
Not at all				Extremely

c. ***What would you be most likely to think if you were left this note?***

_____My friends are such jokers – this is hilarious!

_____It's probably my friends playing a joke, but it's a pretty bad one.

_____I'm not really sure either way.

_____Does one of my "friends" really hate me?

_____This is devastating – I knew my friends have been irritated with me lately but I didn't think it was this bad

17) One of your friends calls you to tell you that they saw your boyfriend/girlfriend out with another person on the weekend.

a. How threatening would this situation be to you?

1	2	3	4	5
Not at all				Extremely

b. How distressing would this situation be for you?

1	2	3	4	5
Not at all				Extremely

c. *What would be most likely to be your first thought?*

_____He/she goes out with friends all the time – I trust them completely

_____It's probably nothing – he/she probably had some friends in town.

_____It's strange that they didn't mention it, but maybe they just forgot.

_____This is not a good sign…I think he/she is losing interest in me.

_____I just knew that they were cheating on me. This relationship is over.

18) You see a report on the news that there is plausible evidence that a "dirty bomb" has recently been smuggled into the country and may be used shortly.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you be most likely to think about the threat of this "dirty bomb"?*

_____This is probably just another rumor – I'm going to ignore it.

_____It might be true, but I'm sure that I'm safe.

_____This may be something to take seriously, but I need more information first.

_____This really concerns me – I think I may be in danger

_____It is jut a matter of time before we are hit with a devastating terrorist attack – I'm definitely in serious danger.

19) You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.

a. ***How threatening would this situation be to you?***

1	2	3	4	5
Not at all				Extremely

b. ***How distressing would this situation be for you?***

1	2	3	4	5
Not at all				Extremely

c. ***What would you be most likely to think that would happen?***

_____My friends are going to think I'm a party animal and fun to hang out with.

_____I'm probably going to get made fun of but everyone will probably understand.

_____It's hard to say – some people might have been mildly offended, but maybe I'm exaggerating

_____I'm pretty sure I've damaged a few friendships – things will definitely be awkward for a while.

_____I'm going to be thought of as an idiot and I've definitely ruined a lot of friendships.

20) You are applying some sun tan lotion when you notice a small mass on your neck. Your physician performs a small biopsy and says it's probably nothing, but that he can't be sure until the test results come back in a week.

a. ***How threatening would this situation be to you?***

1	2	3	4	5
Not at all				Extremely

b. How distressing would this situation be for you?

1	2	3	4	5
Not at all				Extremely

c. ***What would be most likely to be your first thought?***

_____It's definitely nothing to be concerned about

_____I'm a little concerned, but it's probably nothing

_____I'm not sure what to make of this

_____I'm pretty worried about this – I don't have a good feeling about it.

_____It's definitely something life-threatening– why else would they bother with a biopsy?

21) A couple of weeks after you have decided to invest a significant portion of your student loan in stocks, the market begins to waiver.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you be most likely to think about this situation?*

_____It is a pretty safe bet – In the long term things will work out

_____It is getting a bit risky, but I think I know what I'm doing

_____I'm going to wait and see but it could go either way.

_____Uh oh…I'm pretty worried that I could lose it all

_____What have I done? – this is going to ruin me for the year!

22) Someone you are very close to (e.g., partner) leaves to drive home and is supposed to call your when they get in. It's been a couple of hours and you haven't heard anything. There is no answer at their place.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you think is the most likely reason they haven't called?*

_____I'm positive they just forgot to call and went to friend's house on the way home

_____I'm a little surprised I haven't heard from them, but everything should be okay

_____I don't know what to think…

_____This is not a good sign – something might have happened

_____I'm certain that something terrible has happened – I'm positive I would have heard from them by now.

23) You phone your department to see if your request to switch your major has gone through, but the person at the desk tells you that the matter cannot be discussed on the phone and that a letter has been mailed to you in this regard.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you be most likely to think that has happened with your application?*

_____This must be standard procedure for the department – everything is fine

_____I wish they could just tell me, but I'm pretty sure it's fine

_____That is odd – why can't they just tell me? Hmm...

_____That doesn't sound very good – it could be bad news

_____That does it – my transfer didn't go through. It's jut a matter of time before I get my rejection letter.

24) You have heard reports that a group of youths has been beating and robbing individuals around shopping malls and bus stations. On the way to the bus-stop you notice that a group of kids is beginning to congregate in the adjacent parking lot.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would be most likely to think of this situation?*

_____It's just a bunch of kids – I'm sure they are just hanging out and having a good time and aren't going toharm anyone.

_____I wonder if I recognize any of those. They seem to be ready to engage in some sort of activity.

_____What a big group of kids....I wonder what they are up to.

_____This is a bit scary – I hope this isn't the group I heard about it.

_____I'm terrified – That is the group of kids who have been stealing people's money - If I go over there I'm sure to be attacked!

Combined AASQ-A & SCOPE-A

1) Your professor hands back last week's assignments to everyone but you, and then asks you to stay after class.

a. *How threatening would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at al				Extremely

c. *What would you think the professor is most likely to say?*

1) Your assignment was excellent – I just wanted to put a name to a face._____

2) Your assignment was great, but there was one question where you could have done better._____

3) Is this your assignment? You forgot to put your name at the top._____

4) I'm a little worried that you might not understand the material.,_____

5) Your assignment was completely unsatisfactory – you should consider dropping this course._____

2. How would you deal with the situation?

If I was in this situation, I would...

	Not at all Likely				Extremely Likely
1. make plans to overcome my concerns or problems.	0	1	2	3	4
2. tell myself that other people have problems just like mine.	0	1	2	3	4
3. move on by getting involved in recreation or pleasure activities?	0	1	2	3	4
4. try to keep my mind off things that are upsetting me.	0	1	2	3	4
5. spend a lot of time thinking about my problems.	0	1	2	3	4
6. make humorous comments or tell stories about my situation.	0	1	2	3	4
7. talk with friends or relatives about my problem.	0	1	2	3	4
8. cry, even if in the company of someone else.	0	1	2	3	4
9. think a lot about who is responsible for my problems (besides me).	0	1	2	3	4
10. think about how I have brought about these problems on myself	0	1	2	3	4
11. hold in my feelings.	0	1	2	3	4
12. decide to wait and see how things turn out rather than trying to change anything.	0	1	2	3	4
13. wish the situation would just go away or be over with	0	1	2	3	4

2) You were really drunk at a party last Friday night, the events are hazy but you know you've stepped on a few toes/made a fool of yourself and you have to face the class/ friends on Monday.

a. ***How threatening would this situation be to you?***

1	2	3	4	5
Not at all				Extremely

b. ***How distressing would this situation be for you?***

1	2	3	4	5
Not at all				Extremely

c. ***What would you be most likely to think that would happen?***

1) My friends are going to think I'm a party animal and fun to hang out with._____
2) I'm probably going to get made fun of but everyone will probably understand. _____
3) It's hard to say – some people might have been mildly offended, but maybe I'm exaggerating _____
4) I'm pretty sure I'm damaged a few friendships – things will definitely be awkward for a while._____
5) I'm going to be thought of as an idiot and I've definitely ruined a lot of friendships._____

2. How would you deal with the situation?

If I was in this situation, I would…

	Not at all Likely				Extremely Likely
1. make plans to overcome my concerns or problems.	0	1	2	3	4
2. tell myself that other people have problems just like mine.	0	1	2	3	4
3. move on by getting involved in recreation or pleasure activities?	0	1	2	3	4
4. try to keep my mind off things that are upsetting me.	0	1	2	3	4
5. spend a lot of time thinking about my problems.	0	1	2	3	4
6. make humorous comments or tell stories about my situation.	0	1	2	3	4
7. talk with friends or relatives about my problem.	0	1	2	3	4
8. cry, even if in the company of someone else.	0	1	2	3	4
9. think a lot about who is responsible for my problems (besides me).	0	1	2	3	4
10. think about how I have brought about these problems on myself	0	1	2	3	4
11. hold in my feelings.	0	1	2	3	4
12. decide to wait and see how things turn out rather than trying to change anything.	0	1	2	3	4
13. wish the situation would just go away or be over with	0	1	2	3	4

3) You have asked someone out on a date and they said "yes"; but, the next time you see them they seem distracted, in a bad mood, and essentially ignore you.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would think is the most likely reason that they are acting this way?*

1) No big deal - they are just in a bad mood, and it has nothing to do with me._____

2) They are in a bad mood unrelated to me, but maybe I aggravated things but appearing suddenly._____

3) It's hard to say...it could be about me, but maybe not._____

4) The person is now unsure about me and is feeling awkward._____

5) They didn't really want to say "yes" to the date in first place and are trying to let me know._____

2. How would you deal with the situation?

If I was in this situation, I would...

	Not at all Likely				Extremely Likely
1. make plans to overcome my concerns or problems.	0	1	2	3	4
2. tell myself that other people have problems just like mine.	0	1	2	3	4
3. move on by getting involved in recreation or pleasure activities?	0	1	2	3	4
4. try to keep my mind off things that are upsetting me.	0	1	2	3	4
5. spend a lot of time thinking about my problems.	0	1	2	3	4
6. make humorous comments or tell stories about my situation.	0	1	2	3	4
7. talk with friends or relatives about my problem.	0	1	2	3	4
8. cry, even if in the company of someone else.	0	1	2	3	4
9. think a lot about who is responsible for my problems (besides me).	0	1	2	3	4
10. think about how I have brought about these problems on myself	0	1	2	3	4
11. hold in my feelings.	0	1	2	3	4
12. decide to wait and see how things turn out rather than trying to change anything.	0	1	2	3	4
13. wish the situation would just go away or be over with	0	1	2	3	4

4) You are at health services for what you think is something minor. After the initial exam you glimpse of the nurse who just examined you speaking with your physician. They both appear to be concerned.

a. ***How threatening would this situation be to you?***

1	2	3	4	5
Not at all				Extremely

b. ***How distressing would this situation be for you?***

1	2	3	4	5
Not at all				Extremely

c. ***What would you be most likely to think that is happening?***

1) They are discussing a matter unrelated to my problem_____

2) They might be talking about me, but I'm sure it's nothing _____

3) Hmm....they look pretty serious. I wonder what that's about?_____

4) That doesn't look good – maybe they suspect something? _____

5) Uh oh – this is definitely bad news – I've got something really serious wrong with me_____

2. How would you deal with the situation?

If I was in this situation, I would...

	Not at all Likely				Extremely Likely
1. make plans to overcome my concerns or problems.	0	1	2	3	4
2. tell myself that other people have problems just like mine.	0	1	2	3	4
3. move on by getting involved in recreation or pleasure activities?	0	1	2	3	4
4. try to keep my mind off things that are upsetting me.	0	1	2	3	4
5. spend a lot of time thinking about my problems.	0	1	2	3	4
6. make humorous comments or tell stories about my situation.	0	1	2	3	4
7. talk with friends or relatives about my problem.	0	1	2	3	4
8. cry, even if in the company of someone else.	0	1	2	3	4
9. think a lot about who is responsible for my problems (besides me).	0	1	2	3	4
10. think about how I have brought about these problems on myself	0	1	2	3	4
11. hold in my feelings.	0	1	2	3	4
12. decide to wait and see how things turn out rather than trying to change anything.	0	1	2	3	4
13. wish the situation would just go away or be over with	0	1	2	3	4

5) CNN announces that an unknown number of planes have been hijacked simultaneously. You suddenly remember that your mother was flying to Minnesota for a business trip today.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you be most likely to think if you were in this situation?*

1) The odds of my mom's plane being hijacked is incredibly small – I'm not worried about her at all._____

2) I'm not worried yet, but I'd like to hear from her or at least get some more information._____

3) I'm a little bit apprehensive about this, but not so much that it disrupts my day _____

4) This is extremely worrisome – my mom very likely could be on one of those planes!_____

5) Oh my gosh! – I just know my mom is on one of those planes and is doomed. _____

2. How would you deal with the situation?

If I was in this situation, I would...

	Not at all Likely				Extremely Likely
1. make plans to overcome my concerns or problems.	0	1	2	3	4
2. tell myself that other people have problems just like mine.	0	1	2	3	4
3. move on by getting involved in recreation or pleasure activities?	0	1	2	3	4
4. try to keep my mind off things that are upsetting me.	0	1	2	3	4
5. spend a lot of time thinking about my problems.	0	1	2	3	4
6. make humorous comments or tell stories about my situation.	0	1	2	3	4
7. talk with friends or relatives about my problem.	0	1	2	3	4
8. cry, even if in the company of someone else.	0	1	2	3	4
9. think a lot about who is responsible for my problems (besides me).	0	1	2	3	4
10. think about how I have brought about these problems on myself	0	1	2	3	4
11. hold in my feelings.	0	1	2	3	4
12. decide to wait and see how things turn out rather than trying to change anything.	0	1	2	3	4
13. wish the situation would just go away or be over with	0	1	2	3	4

6) A couple of weeks after you have decided to invest a significant portion of your student loan in stocks, the market begins to waiver.

a. *How threatening would this situation be to you?*

1	2	3	4	5
Not at all				Extremely

b. *How distressing would this situation be for you?*

1	2	3	4	5
Not at all				Extremely

c. *What would you be most likely to think about this situation?*

1) It is a pretty safe bet – In the long term things will work out_____

2) It is getting a bit risky, but I think I know what I'm doing_____

3) I'm going to wait and see but it could go either way._____

4) Uh oh...I'm pretty worried that I could lose it all_____

5) What have I done? – this is going to ruin me for the year!_____

2. How would you deal with the situation?

If I was in this situation, I would...

	Not at all Likely				Extremely Likely
1. make plans to overcome my concerns or problems.	0	1	2	3	4
2. tell myself that other people have problems just like mine.	0	1	2	3	4
3. move on by getting involved in recreation or pleasure activities?	0	1	2	3	4
4. try to keep my mind off things that are upsetting me.	0	1	2	3	4
5. spend a lot of time thinking about my problems.	0	1	2	3	4
6. make humorous comments or tell stories about my situation.	0	1	2	3	4
7. talk with friends or relatives about my problem.	0	1	2	3	4
8. cry, even if in the company of someone else.	0	1	2	3	4
9. think a lot about who is responsible for my problems (besides me).	0	1	2	3	4
10. think about how I have brought about these problems on myself	0	1	2	3	4
11. hold in my feelings.	0	1	2	3	4
12. decide to wait and see how things turn out rather than trying to change anything.	0	1	2	3	4
13. wish the situation would just go away or be over with	0	1	2	3	4