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Chapter 7

**A UNIQUE VULNERABILITY COMMON TO ALL ANXIETY DISORDERS:
THE LOOMING MALADAPTIVE STYLE**

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A Unique Vulnerability Common to All Anxiety Disorders: The Looming Maladaptive Style

Despite the surge of interest in cognitive aspects of anxiety in recent years, cognitive vulnerability research has lagged behind both advances in the depression literature and literature on proximal cognitive processes in anxiety (e.g., attention and memory bias). At one end of the spectrum, research has examined *nonspecific* and general aspects of cognitive vulnerability that are common to other disorders such as depression or even schizophrenia (e.g., perceptions of uncontrollability). Examining nonspecific cognitive vulnerability factors is insufficient, however, since they ultimately reveal little about the origins of the *special or unique* cognitive phenomenology of anxiety disorders. At the opposite end of the spectrum, other research has examined cognitive vulnerability factors that are only relevant to some domains of anxiety or to specific anxiety disorders (e.g., anxiety sensitivity in panic). Although these factors reveal important information about specific anxiety disorders and aspects of anxiety, their relatively narrow focus precludes examination of vulnerability factors that may increase cognitive risk across the anxiety disorders. To this end, remarkably little research or theory has addressed *common cognitive vulnerabilities* that confer heightened risk to the development of most anxiety disorders and aspects of anxiety but not to depression.

This chapter summarizes the most recent advances of our ongoing Cognitive Vulnerability to Anxiety Project (CVA Project). The CVA project is designed to complement research on cognitive mechanisms in specific anxiety disorders in that we have focused on a *superordinate cognitive vulnerability* that is postulated to be common to anxiety disorders but not depression. This common vulnerability applies to many particular aspects (e.g., information processing, appraisal, learning history) and types of anxiety disorders (e.g., social phobia (SP), generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD) and post-traumatic stress disorder (PTSD)). Further,

this cognitive vulnerability is expected, in conjunction with lower level “disorder-specific” cognitive mechanisms, to confer higher risk for the occurrence of specific anxiety disorders (e.g., responsibility in OCD, catastrophic misinterpretations in panic, worry in GAD).

Common and Unique Cognitive Vulnerabilities to Anxiety

Cognitive vulnerabilities to anxiety disorders warrant high research priority because of the prevalence and economic cost of the anxiety disorders. Data from the National Comorbidity Study (NCS) indicate a lifetime prevalence rate of 24.9% and an annual prevalence rate of 17.2% for one of the anxiety disorders, and this total does not include data for PTSD or OCD (Kessler et al., 1994). Further, anxiety disorders were more common than any other class of disorders in the NCS. The anxiety disorders are the single largest and most financially costly class of mental health problems in the United States. For example, anxiety disorders cost an estimated \$46.6 billion dollars in 1990 alone in direct and indirect costs (Dupont et al., 1996). Moreover, anxiety disorders are associated with heightened co-occurrence of other Axis I disorders (e.g., Brown et al., 2001), myriad “unexplained” physical symptoms and chronic health conditions (e.g., Roy-Byrne & Katon, 2000), and a poorer quality of life than non-anxiety disordered patients (Leon, Portera, & Weissman, 1995). An even larger percentage of the population suffers from subclinical anxiety, which may contribute to a range of social, occupational, and health difficulties, including high blood pressure and heart disease, ulcers, lost productivity, impaired of sleep, and interpersonal discomfort.

Recent research in the anxiety literature on cognitive vulnerabilities has begun to examine the mechanisms that produce liability for specific types of anxiety disorders (e.g., anxiety sensitivity in panic, or inflated responsibility in OCD). Although knowledge of such *disorder-specific mechanisms* is important to achieve a full understanding of the cognitive etiology of anxiety disorders, it is equally important to identify *common* cognitive vulnerability factors. Such common factors are implicit in both cognitive models of anxiety (e.g., Beck & Emery, 1985) and our current

diagnostic classification of anxiety disorders. For example, the DSM-IV reflects the assumption that anxiety disorders have shared, as well as unique, symptoms. It is evident that variables such as trait anxiety and neuroticism are elevated in nearly all anxiety disorders (e.g., Rachman, 1998; Zuckerman, 1999), but represent *non-specific* vulnerability factors (e.g., Bieling, Antony, & Swinson, 1998).

Insert Figure 1 about here

As depicted in Figure 1, the “general liability” that individuals might have to developing a specific anxiety disorder should be increased by the presence of a superordinate cognitive vulnerability to anxiety disorders, such as the *looming maladaptive style* (Riskind & Williams, 1999a & b; Riskind, Williams, Gessner, Chrosniak, & Cortina, 2000; Williams, Shahar, Riskind, & Joiner, in press). In conjunction with this broad cognitive vulnerability, additional hyper-specific etiological factors, including those that are cognitive, developmental, or biological, are believed to interact to determine the resultant anxiety disorder(s). These can include lower level disorder-specific cognitive mechanisms that are specific to each anxiety disorder (e.g., inflated beliefs about responsibility in OCD), as well as those that are nonspecific (e.g., beliefs about the uncontrollability of threat). Our model conceptualizes this common cognitive vulnerability as a distal, superordinate characteristic style of threat/harm appraisal and elaboration that interacts with the disorder-specific cognitive mechanisms that are central to each anxiety disorder (e.g., predicting social rejection in SP, overestimating responsibility and negative significance in OCD, worry and catastrophizing in GAD, etc.). We contend that ultimately an adequate cognitive model of anxiety must account for both the common cognitive vulnerability factors and the disorder-specific cognitive mechanisms in each disorder, as well as the interactions between such factors.

The Cognitive Vulnerability to Anxiety Project

The CVA Project was designed to systematically examine a common cognitive vulnerability that is postulated to increase liability to anxiety and anxiety disorders but not depression. This research centers around the cognitive model of anxiety called the *looming vulnerability model of anxiety* (LVM) (Riskind, 1997; Riskind & Williams, 1999a & b; Riskind et al., 2000; Williams et al., in press). Like other cognitive models of anxiety (e.g., Beck & Emery, 1985), the LVM assumes that exaggerated appraisals of threat contribute to the onset, exacerbation, and maintenance of anxiety and its disorders (Riskind, 1997). However, the LVM differs conceptually in important ways from other cognitive models of anxiety in its conceptualization of threat. The task of the sections below is to elaborate the model of cognitive vulnerability proposed in the LVM and to summarize the main research findings that are pertinent to our model.

The Looming Vulnerability Model of Anxiety

According to the looming vulnerability model (LVM), the quintessential instance of danger in the phenomenology of anxiety is characterized in terms of mental representations of dynamically intensifying danger and rapidly rising risk. In this way, the LVM differs from the standard cognitive model of anxiety (e.g., Beck & Emery, 1985), in that our model focuses on *dynamic danger content* (e.g., qualities such as the velocity and gathering momentum of threat), rather than on static predictions of threat. We suggest that the static estimates featured in most cognitive theories of anxiety – such as “single-point” estimates of the likelihood or severity of harm (Beck & Emery, 1985) -- provide a bare picture of the anxious individual’s perceptions of threat, constituting a dim reflection and lifeless extract of the anxious individual’s phenomenological experience. Thus, the LVM assumes that the phenomenology of intensifying danger is dynamic, like a motion picture, rather than static like a photograph. We postulate that this is an important conceptual modification of the standard cognitive formulation of anxiety that affords important points of refinement,

expansion, and modification for theory, assessment, and treatment. For example, our conceptual modification provides a more fine-grained analysis of the underlying cognitive mechanisms that explicate the attentional bias associated with anxiety, as well as anxious individuals' lack of habituation to fear-relevant stimuli (Riskind, 1997; Williams, Riskind, Olatunji, & Elwood, 2004a).

In the LVM, the universal threat-related cognitive content of anxiety is captured by the core theme of rapidly intensifying danger or rising risk as one projects the self into an anticipated future. This core threat-related content shares an evolutionary continuity with fear responses observed in other species (e.g., fish, fowl, crabs, and primates) in response to rapidly intensifying or approaching "looming" threats (see Riskind, 1997, for a review of ethological and developmental studies). As will be seen below, once this innate threat/harm appraisal mechanism is elaborated into a durable cognitive style, it interacts with environmental events, stressors, and lower-order cognitive mechanisms to determine what type of anxiety will likely result.

According to the LVM, anxiety occurs when individuals experience an acute subjective state of looming vulnerability --a state in which danger seems to be dynamically increasing from instant to instant toward some catastrophic end, creating a sense of rapidly rising risk. At times, such state elicitation of looming vulnerability accurately reflect reality (e.g., when facing an oncoming freight train), at other times they have a moderate but still vague reality-basis (e.g., there are intensifying problems in a relationship); and, at still other times, these state elicitation reflect internally generated scenarios that have little basis in reality (e.g., based only on partial or ambiguous environmental information). Thus, looming vulnerability can occur either as a result of an objective stimulus configuration or as the result of an acquired cognitive bias, or can occur out of an interaction of both. Once activated, the sense of looming vulnerability is a critical phenomenological component of threat that sensitizes anxious individuals to threat movement and signs of intensifying danger in their environments, biases their cognitive processing, and renders

their anxiety to be more persistent and less likely to habituate (Riskind, 1997; Riskind et al., 2000; Williams et al., 2004a).

The Looming Maladaptive Style

Although the sense of looming vulnerability can be experienced simply as a state elicitation, it can also develop into a more durable cognitive pattern as a result of exposure to certain antecedent conditions (e.g., developmental or attachment patterns, negative life events). From their learning histories, some individuals develop a characteristic style of threat/harm appraisal, anticipation, and elaboration such that they mentally represent potential threats as rapidly intensifying, approaching, or escalating in harm or danger. This *looming maladaptive style* (LMS) is assumed to function as a danger schema and to produce the typical cognitive phenomenology of intensifying danger and rapidly rising risk seen in pathological anxiety. At the same time, the LMS is presumed to remain relatively latent until activated by requisite environmental stimuli (i.e., potential threat stimuli). Consequently, the LMS is assumed to produce a schematic processing bias for threat information in cognitively vulnerable individuals, even when such individuals are not currently anxious.

Given that several recent studies have emphasized the relationship between catastrophizing and anxiety (e.g., Davey & Levy, 1998; Vasey & Borkovec, 1992), two important demarcations appear necessary. First, it seems important to distinguish between the LMS and catastrophizing about threat or danger. In our conceptual framework, the LMS acts as an overarching danger schema that is the underlying or distal mechanism that leads to proximal and lower-order ideational activity, such as catastrophizing, for specific threat situations. Further, the LMS differs from catastrophizing in that it emphasizes the perceived velocity and rate of change involved in catastrophic cognitions, rather than simply the imagined outcomes of catastrophic cognitions. Concordant with this view, recent research provides evidence that the LMS predicts residualized gains in the extent to which individuals engage in catastrophizing over time (Riskind & Williams,

1999b). The reverse was not true, however, in that catastrophizing does not predict changes in the LMS over time. These findings suggest that the LMS is a stable individual difference that acts to increase vulnerability to later catastrophizing and anxiety while remaining conceptually and psychometrically distinct.

Second, given that recent research highlights the potent role of catastrophic cognitions in the genesis of panic attacks (e.g., Clark, 1988) one may wonder why the LMS does not unequivocally lead to panic reactions. Our research suggests that the LMS only serves as a catalyst for panic reactions when the individual experiences stimulus-specific forms of looming vulnerability to bodily sensations, or to the sequel of somatic sensations (e.g., Riskind & Chambliss, 1999). In other types of anxiety the fear component does not produce a full-blown panic attack because the focus of the looming danger is external to the individual (e.g., a spider), unrelated to somatic sensations (e.g., social rejection), vague or diffuse (e.g., abstract worry about financial concerns), or because self-protective responses are utilized to neutralize or cope with the perceived threat.

Elaborated Scheme of the Psychological Repercussions of the LMS

The painful repercussions of the LMS are postulated to reverberate throughout the whole of the individuals cognitive, affective, physiological, and behavioral systems through a series of etiological chains that are related to anxiety. As presented in Figure 2, these etiological chains begin with the LMS (the distal vulnerability) and proceed through intermediate and proximal cognitions and information processing to self-protective responses.

Insert Figure 2 about here

I. Initial Processing.

Once the hypothesized the LMS is developmentally established, the cognitively vulnerable

individual's information processing is filtered through and systematically biased by this putative style of threat/harm appraisal, elaboration, and anticipation. The LMS is assumed to function as a danger schema that pervasively biases the processing of threat-related information (e.g., selective attention, encoding, retrieval, interpretation; Riskind et al., 2000; Williams et al., 2004a). In addition, the cognitive repercussions of the LMS on information processing are assumed to "trickle down" and affect the whole scope of the person's ideational material related to threat elaboration, including his or her associations, expectations, predictions, fantasies, and dreams.

The person's schema-driven mental representations of rapidly intensifying danger are also likely to lead to an increase in hypervigilance and an attentional bias for threat (e.g., Williams et al., 2004a). For example, the inflated sense that potential dangers are advancing, escalating in risk, unforeseeable, and ever-present should naturally lead the person to scour the surrounding environment for any potential indicators of danger. As suggested by the literature on perceptual processes, individuals allocate attention to perceived *changes in stimuli* that are more salient or novel (i.e., that are perceived as looming), than to stimuli themselves (Gibson, 1979). Thus, cognitively vulnerable individuals, who experience a chronic state of looming vulnerability, are likely to develop an attentional bias for threat and to exhibit heightened states of vigilance, even in the absence of objectively threatening information. Quite the opposite would occur if sources of risk were expected to be stable factors that have permanence and continuity. Were risk not rising or intensifying, the incentive for individuals to have an attentional bias or hypervigilance for threat would be significantly reduced.

II. Sense of urgent threat and imperative need for action.

The mental representations of intensifying danger that are generated by the LMS routinely induce a more intense feeling of fear and personal vulnerability and lead to an increased sense of time urgency and *imperative need for action*. As the anticipated prospect of headlong or rapid

destruction seemingly builds within the cognitively vulnerable person's mental representations of threat, his or her level of anxiety and urgency to neutralize or cope with the perceived threat inimically escalates. This point is illustrated with the analogy of individuals who were to misperceive a car that is objectively traveling at 10 miles an hour towards them as traveling at 70 miles an hour. They would have a disturbing sense that they had no time to waste, and indeed, have insufficient time to prepare for, or prevent, the possibility of harm. Such feelings of rapidly escalating threat could catalyze intense feelings of fear and a perceived need to seek desperate, often extreme and rigid, measures to avoid the threat.

In this way the mental representations of dynamically intensifying or approaching threat that are generated by the LMS may quickly lead from the initial appraisal of potential threat (e.g., an ambiguous cue), to biased elaborations of the temporal and spatial progression and ultimate consequences of such threat, to an imperative sense of urgency to utilize self-protective or compensatory response. For example, cognitively vulnerable persons might notice a rather mundane "absent" look in a lover, or behavior of other people in a social performance situation, and envision a rapidly rising risk of being rejected; or they might hear an engine noise while driving their cars and mentally simulate a state of rapidly intensifying peril. Whether the mental representations of rapidly intensifying danger are accurate or not, the danger is perceived as more time-urgent, more imperative, and, consequently, more fear inducing.

III. Self-Protective Behaviors.

The sense of rapidly rising risk is likely to naturally evoke greater distress and lead cognitively vulnerable individuals to engage in various *self-protective behaviors*. When direct action is possible, cognitively vulnerable individuals may engage in behavioral avoidance. When direct action is not possible or when there are no instrumental responses immediately available or a lack of sufficient time to prepare for the possibility of countering the prospect of harm, the person may

engage in cognitive avoidance behaviors.

Feeling chronically pressed by time and threatened by an imperative need for action on so many fronts, cognitively vulnerable individuals are likely to select “default” coping strategies that have the benefit of being fast acting, but the liabilities of being extreme and often unnecessary (Williams, 2002; Williams & Riskind, 2004a). Typically, this results in “coping rigidity” (i.e., a narrow tendency to use highly restricted avoidance coping strategies across situations, which includes both behavioral and cognitive avoidance; Williams, 2002; Williams & Riskind, 2004a). Research from several recent studies reveals a strong association between the LMS and an avoidant coping style, even when the individual’s level of anxiety is statistically controlled. Moreover, this research consistently reveals a strong association between the LMS and decreased coping flexibility (e.g., Williams, 2002; Williams & Riskind, 2004a).

Building on recent research on the role of worry in pathological anxiety, we assume that worry can be characterized as another self-protective process (e.g., Borkovec, 1994) such that fear-related imagery is translated into less distressing verbal or linguistic form (Borkovec & Inz, 1990). To this end, results of a recent mentation sampling study provide evidence that higher levels of the LMS are associated with a predominance of imagery-based mental activity during anticipation of an upcoming stressor, whereas worry is associated with a predominance of lexical activity (Williams, McDonald, & Riskind, 2004). Additionally, worry, as well as more abstract meta-cognitive activities such as meta-worry (i.e., worry about the degree to which one is worrying; Wells, 1995) can absorb so much of the vulnerable person’s mental capacity that these activities may reduce the amount of attention that the person can allocate to managing frightening mental representations. In some cases, events can be moving so quickly that worry and meta-worry cannot provide adaptive, short-term coping options that serve to lessen, or transform, mental representations of rapidly intensifying danger. Once this threshold is reached, the individual is likely to engage in wishful thinking or

thought suppression as the primary avoidance strategy. Evidence for these links has been found in several studies (e.g., Riskind & Williams, in press; Williams, Riskind, Olatunji, & Tolin, 2004b).

Since cognitively vulnerable persons are being challenged on so many fronts by prospects of intensifying dangers, they can become taxed and depleted in cognitive and emotional resources (Baumeister, Dale, & Sommer, 1998) and suffer a state of “cognitive *overload*” (Wegner, 1994). As a consequence of feeling wearied by an incessant need for vigilance, caution, and self-protective action, cognitively vulnerable individuals are liable to have fewer mental resources with which to engage in successful mood-regulation or to successfully cope with potential threats. These general impairments in the capacity for mental and emotional control, coupled with their schematic processing bias to mentally represent threats as rapidly intensifying, may increase cognitively vulnerable individuals’ liability to all forms of anxiety disorder. Evidence has been obtained for this impairment of mental control in a series of recent studies (e.g., Williams et al., 2004b).

IV. Bi-directional Feedback Loops

Finally, the etiological chains related to anxiety often involve bi-directional reciprocal feedback loops in which individuals’ maladaptive avoidance or neutralizing behavior helps to maintain their distorted mental representations of intensifying danger and their beliefs that they are indeed limited in coping options. Further, the LMS coupled with the inflexible use of cognitive avoidance strategies (e.g., worry) may lead to mental representations of increasingly abstract and diffuse threats that are difficult to challenge or counter. As a consequence, a “confirmation-bias” may be created such that the individuals faulty primary and secondary appraisals are not only maintained, but also strengthened (e.g., by self-produced “evidence,” or “illusory correlations”), thereby catalyzing a slip into a vicious dysfunctional spiral toward pathological anxiety.

Suicide as extreme avoidance coping

As elsewhere described, suicidality can represent an extreme instance of “self-protective”

defensive reactions to rapidly intensifying danger (Riskind, Long, Williams, & White, 2000). While depression, or more exactly, hopelessness, seems to represent the main psychological factor in suicide (e.g., Abramson et al., 1998), recent work suggests that *comorbid anxiety* (and states of looming vulnerability) can further exacerbate suicide risk (for a review see Riskind, Long et al., 2000). Consistent with escape theories of suicide (Baumeister, 1990; Schneidman, 1989), the LVM of anxiety conceptualizes suicide as being motivated by the desire to avoid rapidly rising and intolerable psychological pain in living. Particularly at risk for suicide are individuals who perceive their life circumstances as progressively worsening, and/or intensifying in risk and psychological pain, and who may perceive their situations as hopeless. For example, consider the haunting image of the suicidal stock traders who hurled themselves from high buildings at the dawn of the crash of 1929. Such individuals not only saw their current situations as irrevocable, they saw their futures as rapidly becoming more painful, creating a sense of urgency and desperation to escape. Avoidance of the rapidly rising and inexorable risk of pain apparently became a dominant goal motivating their behavior. Thus, a *fusion* of hopelessness and looming vulnerability is likely to provide an impelling state that is responsible for producing the most intense desperation and suicidality.

Cognitive Vulnerability to Anxiety: Its Developmental Origins

In our model, we characterize early experience and development as critical to the formation of the LMS and a common cognitive liability to future anxiety disorders. For example, the LMS may have its roots in faulty modeling and parenting, unresolved childhood fears, or insecure attachment experiences. Some individuals are brought up, from their earliest remembrance, being exposed to events and experiences that promote the development of the cognitive vulnerability. Moreover, some of their most “self-defining” or “life-defining” memories may be laden with such representations of intensifying danger. For example, it is not unusual for anxious clinical patients to recall alarming childhood memories of scenarios that involve “looming entrapment” -- such as

emotional memories of listening to an approaching abusive or drunken parent coming up step-by-step of a set of stairs to verbally harass or physically injure them (Riskind & Williams, 1999a).

Several lines of relevant empirical research suggest a role for the developmental learning history in creating a cognitive liability to later anxiety. The first line of relevant research indicates that parental anxiety contributes to a vulnerability to anxiety, over and beyond the effects of genetic factors (e.g. Judd, 1965). It is likely that faulty parental modeling or parenting behaviors that involve excessive control or that promote avoidance of anxiety-eliciting situations may lead to the development of the LMS. A second line of relevant research suggests that behavioral inhibition and negative emotional reactivity may contribute to the development of the LMS and later vulnerability to anxiety (e.g., Kagan et al., 1987). In this developmental trajectory, behaviorally inhibited and emotionally reactive children may limit their exposure to anxiety-eliciting or novel situations, and consequently retain exaggerated beliefs about the magnitude and severity of environmental threat and underestimations of their own ability to cope with threat.

A third line of research indicates that negative life events of childhood, including parental maltreatment, abuse (physical, sexual, or emotional), neglect, and poor grades could be tied to the development of cognitive vulnerability to anxiety and later risk of anxiety (e.g., Berstein, Garfinkel, & Hoberman, 1989; Tweed, Schoenbach, & George, 1989). It has been suggested that it is not just the incidence of negative life events, but also the controllability with which such events were appraised that contribute to cognitive risk for anxiety (e.g., Chorpita & Barlow, 1998; Rapee, 1991). Given the fact that uncontrollability is a nonspecific factor, linked to both anxiety and depression, we would advance the hypothesis that anxiety is particularly related to perceived uncontrollability over rapidly intensifying future danger; whereas depression is related to perceived uncontrollability that is tinged with the hopeless permanence of past losses.

A fourth line of relevant research suggests that faulty attachment relationships are likely to

contribute to the development of a cognitive vulnerability to anxiety. According to Ainsworth and colleagues (1978) model of childhood attachment, an anxious/ambivalent attachment reflects the infant's perceptions of the caregiver as inconsistent in responding to his or her needs, particularly during times of distress. Several recent studies in the CVA Project provide evidence that insecure attachment styles (Williams & Riskind, 2004b), impaired parental bonding (Riskind, Williams, Altman, Black, Balaban, & Gessner, 2004), and retrospective reports of maternal attachment insecurity (Riskind et al., 2004) may represent developmental antecedents of the LMS

The occurrence of negative events or situations (e.g., faulty modeling, abuse, maltreatment, attachment disruptions) can have a profound effect on the child's developing cognitive-affective schemas and can profoundly influence the information processing. Though any significant negative events or disruptions during childhood have the potential to produce vulnerability to later pathology, it is possible that the quality of the child's subjective interpretation of these disruptions will determine the specific type of vulnerability that is created (e.g., anxiety versus depression). The extent and quality of these disruptions varies across individuals such that some may experience the loss of a key attachment figure (i.e., an avoidant attachment style resulting from a host of factors ranging from neglect to death), whereas others may experience a sense of ambivalence toward the permanence of the attachment figure (i.e., an anxious-ambivalent attachment style resulting from inconsistent care). Consistent with these predictions, cognitive vulnerability to anxiety has been associated with an anxiety dimension of adult romantic attachment, whereas cognitive vulnerability to depression has been associated with an avoidant dimension of adult romantic attachment (Williams & Riskind, 2004b). Moreover, we contend that since much of the integration of childhood experience occurs with the development of formal operational thought in early adolescence, intervening experience between the time of the event and the time at which the event is interpreted and integrated within the self-concept may play a role in determining the

resultant vulnerability.

The Generality and Specificity of the LMS to Anxiety Disorders

In our model, the *universal* aspects of anxiety and its cognitive phenomenology are captured by the theme of looming vulnerability or rapidly intensifying or approaching anticipated future threat. To this end, the sense of looming vulnerability to a potentially uncontrollable threat is viewed both as a *necessary cause* of the experience of anxiety (i.e., it must be above a minimal threshold for any anxiety to occur), and a *sufficient cause* for the experience of anxiety (i.e., its occurrence guarantees the anxiety → self-protective response sequence).

The LMS, as a schema-driven, evolutionarily-based process of threat/harm appraisal, elaboration, and anticipation, is likely to increase the probability and frequency of such states of looming vulnerability, and thus confer heightened risk for developing an anxiety disorder. The actual form of the disorder(s) that emerges depends on the interaction of the overarching LMS with situational factors (e.g., specific traumas or learning histories) that create ‘lower order’ and more proximal disorder-specific cognitive mechanisms (e.g., inflated responsibility for the suppression of threatening intrusive thoughts in OCD). In some cases, individuals may have a “stimulus-specific” form of looming vulnerability without developing the LMS. For example, some persons with specific phobias may have a restricted, stimulus-specific looming style (e.g., for representing spiders or social rejections as rapidly approaching or rising in risk). But in the majority of cases, we postulate that the general LMS cross-situationally biases the ways in which individuals mentally represent the temporal and spatial progression of a range of possible dangers (e.g., spreading contamination, or impending social rejections; e.g., Riskind et al., 2000; Williams et al., in press).

Panic Disorder

In current cognitive models, panic is viewed as an acute “alarm reaction” in response to catastrophic cognitions about bodily sensations or about the threat of having future panic attacks

(Antony & Barlow, 1996; Clark, 1988). The proximal cognitions that are believed to induce panic typically involve catastrophic misinterpretations of bodily sensations (e.g., faintness, heart palpitations) or anxiety reactions as much more threatening than they really are (e.g., as having a heart attack; Clark, 1988). The trait of anxiety sensitivity appears to be central to panic disorder, such that individuals evidence fears of anxiety symptoms that are based on beliefs that these symptoms have harmful or catastrophic consequences.

Our model includes several processes by which the LMS is likely to confer vulnerability to the development of panic disorder. First, cognitively vulnerable individuals, because of the impaired mental and emotional control that they are likely to suffer, may find it more difficult to cope effectively with catastrophic cognitions (e.g., “rationally respond” to them) and thereby engage in faulty compensatory strategies (e.g., Riskind & Williams, 1999b). Second, individuals with the LMS are more likely to mentally play out scenarios in which relatively mundane physical sensations may lead to looming catastrophes, such as hospitalization or death. In many cases, the individual’s learning history contains experience with self or significant others who have befallen illness or injury, which becomes a focal point of their LMS. Third, individuals with the LMS are likely to evidence heightened sensitivity and/or hypervigilance for signs of potential threats. These consequences of the LMS can be transmitted, through stimulus-specific forms of looming vulnerability, to fear of the threat of rapidly intensifying bodily sensations (e.g., Riskind & Chambless, 1999). Finally, results of a recent study suggest that both the LMS and anxiety sensitivity contribute uniquely to the prediction of general anxiety symptoms and anxiety-related constructs such as worry (Williams & Reardon, 2004).

Generalized Anxiety Disorder

Cognitive perspectives on GAD have suggested that the hyperactivation of danger schemata produces negative automatic thoughts that involve overestimates of danger and elicit somatic

distress (e.g., Beck & Clark, 1997). Recent models have extended these perspectives by including additional cognitive processes that are initiated by threatening automatic thoughts and images (Borkovec, 1994; Wells, 1995). Following the proximal automatic thoughts/images, individuals are postulated to engage in compensatory neutralization responses such as maladaptive worry. These models have suggested that worry represents either a type of cognitive avoidance that reduces the emotional and somatic distress evoked by danger-related imagery (e.g., Borkovec & Inz, 1990), or a process that absorbs cognitive capacity and results in less available resources for lower-level processing of fear (Wells, 1995). Worry has also been related to catastrophizing and an “automatic questioning style” (e.g., a what if x happens style of thinking) that leads to further distortion of threat-related appraisals (e.g., Borkovec & Inz, 1990; Riskind, 1997b).

The LMS is likely to confer vulnerability to GAD by (1) impairing mental control mechanisms required to deal with upsetting thoughts; (2) increasing hypervigilance for threat-related information; and, (3) leading individuals to engage in faulty, catastrophic, looming mental simulations of even relatively mundane events or stimuli (Riskind & Williams, in press). Further, the schematic processing bias produced by the LMS would likely increase recall and cognitive accessibility for threatening material, as well as distort the individual’s initial appraisals of threat. To this end, results of a recent mentation sampling study (similar to the Borkovec & Inz (1990) study) provides evidence that the LMS is associated with a predominance of imagery-based mental experience (Williams, McDonald, & Riskind, 2004). Thus, cognitively vulnerable individuals are likely to experience more fear-related dynamic imagery that leads to the over-utilization of worry as a self-protective process.

Social Phobia

In cognitive models of social phobia, maladaptive proximal cognitions and cognitive processes related to the threat of potential public embarrassment, criticism, or scrutiny is seen as

central to the production of acute fear responses (Heimberg & Fresco, this volume). According to the LVM, the LMS is likely to confer vulnerability to social phobia by mechanisms similar to those above, which, when coupled with early formative experiences involving acceptance or worthiness based on perfection, lead the individual to envision rapidly intensifying danger of humiliating social rejection or catastrophe in social and performance situations (e.g., Riskind & Mizrahi, 2000; Williams et al., in press). Again, the individual suffers from impaired mental control mechanisms that make it difficult to dismiss thoughts or images about failure in such situations and that consequently may increase both worry and meta-worry about performance in these situations.

Obsessive Compulsive Disorder

Cognitive models of OCD have included that exaggerated appraisals about the over-importance of intrusive thoughts and inflated personal responsibility to prevent such thoughts or their consequences as central to both the experience of distress and the urge to engage in activities such as compulsive behavior, neutralizing, thought suppression, reassurance seeking, and avoidance (Rachman et al., this volume; Rachman, 1997; Salkovskis, Shafran, Rachman, & Freeston, 1999). Research has amply indicated that individuals with OCD commonly attach exaggerated negative significance to their intrusive thoughts and regard them as horrific, repugnant, threatening, and/or dangerous. Moreover, such individuals typically demonstrate paradoxical increases in intrusive thoughts associated with their efforts at cognitive avoidance (e.g., Salkovskis et al., 1999).

As with the other anxiety disorders, the LMS is likely to confer vulnerability to obsessive-compulsive disorder by producing a cognitive load that impairs the person's mental control resources. Cognitively vulnerable individuals who more generally overestimate the magnitude and severity of threat in the environment and experience higher levels of anxiety and distress should have more difficulty suppressing thoughts (e.g., Williams et al., 2004b). This tendency would

likely manifest in ascribing higher levels of negative significance to intrusive thoughts and images, increased difficulty with thought suppression and neutralization, and greater risk for the development of obsessional thinking. Appraisals of rapidly rising risk are an important antecedent condition that is likely to increase the negative significance that individuals attach to their intrusive thoughts, as well as the responsibility for suppressing the thoughts or their consequences (Riskind, Abreu, Strauss, & Holt, 1997; Williams et al., 2004b). Thus, individuals who experience intrusive thoughts that involve content depicting rapidly unfolding action or outcomes may be more likely to experience increased responsibility and perfectionistic concerns, and ascribe greater import to intrusive thoughts, the controllability of such thoughts, and the threat that such thoughts represent (see Riskind, Williams, & Kyrios, 2002 for a review).

Post-traumatic Stress Disorder

Cognitive models of PTSD have generally emphasized the individuals' failures to incorporate or process traumatic experiences into their conceptual systems or the meaning that individuals make out of traumatic experience (see Feeny & Foa, this volume). In an attempt to separate the self from the catalyzing traumatic experience, or to prevent their assumptive systems from being shattered, these individuals engage in self-protective processes, such as cognitive avoidance, which have the benefit of maintaining the desired separation of self from experience, but the liability of requiring enormous cognitive resources and taxing the individual's cognitive system. The LMS is likely to confer vulnerability to the development of PTSD after exposure to traumatic events in several ways. First, this style is likely to place an additional cognitive load on the individual and make efforts at effective coping and emotion regulation more difficult (Riskind et al., 2000). Second, the LMS is likely to provide a mental filter that schematically biases and molds the individual's fearful predictions about the *rapidly rising risk that similar frightful events will reoccur*. Such fearful predictions include both the rapidly intensifying danger of "re-victimization"

(e.g., by events such as being raped or physically assaulted anew), and of “re-traumatization” (e.g., by subjective responses such as being engulfed anew by the same frightful body sensations). In the latter instance, the LMS may amplify the detrimental effects of lower-level mechanisms such as anxiety sensitivity and meta-worry that lead persons to fear their bodily sensations and anxiety reactions. Evidence of a link of the LMS to PTSD is provided by a recent study with college students (Williams et al., in press) and a study of young adult female survivors of sexual assault, in which females high in the LMS reported significantly higher levels of general anxious symptoms and PTSD-specific symptoms (Williams & Elwood, 2004).

Research Findings of the CVA Project

This section now turns to the main findings of the CVA Project that provide evidence for the predictions generated by the LVM. Over the past decade, numerous studies conducted as part of our project have examined the validity of the LMS and, more generally, the LVM of anxiety (e.g., Riskind, 1997; Riskind et al., 2000; Riskind & Maddux, 1993; Riskind, Moore, & Bowley, 1995; Riskind & Wahl, 1992, Riskind & Williams, 1999a & b; Riskind & Williams, in press; Williams, 2002; Williams et al., in press; Williams et al., 2004a & b). These studies have employed a variety of methodologies to investigate the validity of the LVM, including self-report assessments, computer-simulated movement of objects (e.g., moving spiders vs. moving rabbits), the presentation of video-taped scenarios (e.g., a campus mugging, possible contamination scenarios, etc.), and the presentation of moving and static visual images. Further, these studies have investigated a range of cognitive-clinical processes (e.g., anxiety, thought suppression, coping styles, uncontrollability, catastrophizing, worry, attachment styles, memory bias, etc.) across a wide range of stimuli (e.g., individuals with mental illness, individuals with HIV, contamination, spiders, weight gain, social and romantic rejection, performance mistakes, etc.) and a diversity of populations (e.g., individuals with subclinical obsessive-compulsive disorder, social phobia,

generalized anxiety disorder, post traumatic stress disorder, panic disorder, depression, specific phobias, and subclinical eating disorders).

These studies have provided uniformly consistent evidence for the looming vulnerability formulation (Riskind, 1997; Riskind et al., 2000). Several studies, using video-taped or computer generated stimuli or scenarios, have found evidence that phobic individuals exaggerate the extent to which their feared stimuli (spiders or germs) are changing, advancing, or moving rapidly forward towards them (e.g., Riskind et al., 1992; Riskind & Maddux, 1993; Riskind et al., 1995; Williams et al., 2004a). Moreover, these studies indicate that perceptions of looming danger predict stimulus-specific levels of anxiety, even when controlling for stimulus-specific fear. The reverse was not true, however. For example, spider phobics exhibit a bias to imagine spiders as rapidly approaching or likely to approach them (Riskind et al., 1992; Riskind et al., 1995), even when controlling for their level of spider-phobia. Individuals with subclinical obsessive-compulsive disorder exhibit a specific sense of rapidly intensifying danger to contamination (i.e., representing germs as rapidly approaching or spreading; Riskind et al., 1997). Comparable associations exist between a sense of looming vulnerability and fears of Auto-Immune Deficiency Syndrome (Riskind & Maddux, 1994), fears of the public for psychiatric patients (Riskind & Wahl, 1992), and fears of performance mistakes by socially anxious professional musicians (Riskind & Mizrahi, 1999).

Evidence also supports the assumption that a sense of looming vulnerability acts to instigate or exacerbate anxiety, and that it is not just a correlate of anxiety. For example, several studies have *experimentally manipulated* looming movement. Riskind and colleagues (1992) examined the effects of such a manipulation by presenting research participants with videotaped scenarios in which tarantulas and rabbits either moved toward the camera, moved away, or were still. The importance of looming vulnerability was evidenced by the fact that the looming movement of tarantulas enhanced fear and threat-related cognitions and did this far more than it did for neutral

stimuli like rabbits. The importance of looming vulnerability for fear was shown by the fact that these effects were far stronger for the high-fear-of-spider participants than for the low-fear participants.

Based on these, and similar studies using experimental methods, Riskind and colleagues devised a self-report questionnaire, the Looming Maladaptive Style Questionnaire (LMSQ), to assess the extent to which individuals appraise threat as rapidly rising in risk, progressively worsening, or actively accelerating and speeding up (i.e., exhibit the LMS; Riskind et al., 1992; Riskind et al., 2000). Participants are presented with six brief vignettes describing different types of stressful situations, and asked to complete a three-item list of questions for each vignette. The stressful situations include: threat of illness, risk of physical injury, romantic rejection, public speaking, and social humiliation.

Numerous studies in our CVA project provide support for the convergent validity of the LMS, indicating that higher scores on the Looming Maladaptive Style Questionnaire (LMSQ) are related to higher levels of anxiety as measured on the Beck Anxiety Inventory and the Spielberger trait and state anxiety scales (r 's range from 0.39 to 0.49), and have found usually consistent evidence that the LMS is significantly associated with several correlates of anxiety, including worry, thought suppression, and behavioral avoidance (e.g., Riskind et al., 2000; Williams et al., in press). However, it is important to point out that the LMS is *not* simply another measure or proxy for trait anxiety. For example, Riskind and colleagues (2000) demonstrated with structural equation modeling that while the LMS and anxiety are correlated, their measurement properties clearly distinguish between them. Likewise, studies have shown that the LMS, though correlated with measures of anxiety sensitivity, neuroticism, negative affect, or negative life events, can clearly be distinguished from these variables, and that the LMS predicts distinct variance in anxiety over and above that predicted by these measures (Riskind et al., 2000; Williams & Reardon, 2004; Williams

et al., in press). These findings are critical because they provide evidence that the LMS assesses a cognitive construct that has incremental value in predicting distinct and significant variance in anxiety, even when other variables such as neuroticism or negative affectivity are controlled.

Remarkably consistent evidence has also been found for the *discriminant* validity of the LMS, suggesting that scores on the LMSQ can differentiate between anxiety and depression (despite the high correlation between these). That is, the significant correlation between the LMS and anxiety remains highly significant when the variance due to depression is statistically controlled, whereas the correlation between LMS and depression is reduced to nonsignificance when the variance due to anxiety is controlled (Williams et al., in press). These findings on discriminant validity are unique because past investigators have found it difficult to find self-report measures of presumed cognitive characteristics of anxiety that are not also strongly correlated with depression, and this is especially the case in nonclinical populations (Riskind et al., 1992; Riskind, 1997). Equally important are results indicating that the proposed cognitive vulnerability predicts significant unique variance in anxiety, even when relevant cognitive variables are controlled. That is, the claim that the cognitive vulnerability has incremental value is upheld by the fact that it predicts significant variance in anxiety measures beyond the effects accounted for by static predictions of unpredictability, uncontrollability, likelihood, or imminence of threat (e.g., Riskind et al., 2000).

A cluster of studies has also supported the temporal stability of the LMS and its predictive validity as a cognitive vulnerability measure. In one recent longitudinal study, results suggested a high degree of temporal stability for the LMS ($r = 0.82$), as measured by the LMSQ, over an eight week time period (e.g., Williams, 2002). Further, in several other longitudinal studies (with follow-ups ranging from one week to four months in duration), the cognitive vulnerability significantly predicted residualized gains in anxiety and anxiety-relevant constructs when controlling for

baseline levels of anxiety (e.g., Riskind & Williams, 1999b; Riskind et al., 2000; Williams, 2002; Williams & Riskind, 2004c).

A group of short term prospective studies also support the postulated effects of the cognitive vulnerability on self-protective responses. These studies have shown that the LMS seems to stimulate worry over time intervals ranging from one week (Riskind et al., 2000) to six weeks (Riskind, in press), after controlling for initial levels on standard measures of pathological worry. Similarly, several studies have confirmed predictions that the LMS predicts residualized gains in thought suppression of threatening material over time. These results converge with a recent study using experimental methods (Williams et al., 2004b), in which cognitively vulnerable individuals reported significantly more intrusive thoughts on an instructed thought suppression task. Indeed, the LMS was the single strongest predictor of thought intrusions and distress. Finally, a recent field study with college athletes found that the cognitive vulnerability predicted residualized gains in wishful thinking in the week immediately before, and just after, competition with other college teams (Murphy, Riskind, & Williams, 2000). Thus, several studies have found strong evidence that the cognitive vulnerability is related to self-protective strategies.

Cognitive Vulnerability to Anxiety Disorders

An additional cluster of studies supports the relevance of the LMS to a variety of different anxiety disorders. For example, Riskind and Williams (in press) showed that scores for the LMS were significantly more elevated in a community sample of patients with GAD, than in a sample of patients with depressive disorders or normal controls. Riskind, Gessner, and Wolzon (1999) found in a study of inpatients in a detoxification unit for alcohol and substance abuse that those who were diagnosed with GAD had significantly higher scores on the LMS than similar patients who did not have GAD. Williams and colleagues (in press) found similar results in a sample of college students screened with a measure of GAD, as well as significant associations between the LMS and

measures used for screening OCD, social phobia, simple phobias, and PTSD. Riskind and Mizrahi (2000) found evidence that professional musicians who had higher performance anxiety tended to envision public performances in terms of a rapidly intensifying danger of making humiliating mistakes. Similarly, Riskind and Chambless (1999) found that the sense of looming vulnerability to the rapid intensification of somatic symptoms predicted significant variance in panic symptoms and agoraphobic cognitions, beyond the effects of other relevant variables.

LMS and Schematic Processing Bias

To examine the extent to which the LMS produces a schematic processing bias, we have conducted several recent studies to investigate its effects on memory. This cluster of studies examined memory for lexical and visual threat-related stimuli on both explicit memory tasks (which make direct reference to studied materials) and implicit memory tasks (which make no direct reference to such materials). First, results of a study using a homophone task suggested that the LMS is significantly and uniquely related to the tendency to process and interpret ambiguous verbal information (e.g., “dye versus “die”) in a threatening manner (e.g., Riskind et al., 2000).

Insert Figure 3 about here

As demonstrated by the results of structural equation modeling depicted in Figure 3, the standardized coefficient representing the path between the LMS and the homophone measure was significant, whereas the coefficient representing the path between anxiety and the homophone measure was not. Further, elimination of the path between the LMS and the homophone measure resulted in a significant decrement in model fit, whereas elimination of the path from anxiety to the homophone variable did not. A second set of analyses conducted to distinguish the effects of the LMS from likelihood estimates and the latent anxiety variable on the prediction of homophone spelling revealed a similar outcome: only the path between the LMS and the homophone measure

was significant and it was only the elimination of this path that produced a significant decrement in model fit.

These results indicate that the LMS produces a schematic bias for ambiguous information that cannot be accounted for by static expectations of threatening situations (e.g., likelihood estimates). Further, they suggest that anxiety may primarily exert an effect on schematic processing via the LMS. Finally, these results were all replicated in even a *low anxiety* sample, based on a median split of the participants performed on the latent anxiety variable. Thus, these results suggest that the LMS produces a schematic bias in implicit memory, even for individuals who are *demonstrably* not currently anxious. These results are particularly exciting because they support the postulated role of the LMS as a cognitive vulnerability that can affect information processing, much like what has been found for the depressive explanatory style.

Riskind and colleagues (2000) investigated the effects of the LMS on memory for visual threat-related stimuli, using a laboratory task in which a series of visual images were presented. Participants were presented with 45 neutral (e.g., fish), positive (e.g., flowers), or threatening visual images (e.g., a house fire or auto crash) and asked to rate the extent to which each image was threatening to ensure attention to the stimuli. We included two measures of explicit memory (a free recall task, a frequency estimation task), and a measure of implicit memory (a word stem completion task). Structural equation modeling, replicated the pattern of the preceding study. Again, the standardized coefficient representing the path between the LMS and the dependent variables was significant, whereas the coefficient representing the path between latent anxiety and these dependent variables was not. Further, omission of the path from the LMS to each of these dependent variables resulted in a significant decrease in model fit, whereas elimination of the path between anxiety and the dependent variables did not. The findings of this study, which have been recently replicated, indicate that cognitively vulnerable individuals do not suppress anxiety-

provoking stimuli shortly after being oriented towards them, but rather are absorbed by them.

A study by Williams, Riskind, Olatunji, and Elwood (2004a) recently investigated the schematic processing effects of the cognitive vulnerability for visual stimuli that differed in both their valence (threatening, neutral, positive) and their level of movement (moving vs. static). A series of visual images were presented on computer, some moving and some static (e.g., a video clip of an accident occurring vs. a picture of a wrecked car). Participants rated each image for level of threat on computer and their reaction times were recorded in milliseconds, and then completed the series of memory tasks used in the previous study. The more cognitively vulnerable subjects evidenced faster reaction times when presented with moving stimuli (regardless of valence) and faster reaction times for threatening stimuli (regardless of movement). Moreover, high LMS subjects recalled more moving than static images and recalled more threatening than neutral or positive images.

Taken together, these converging sets of findings provide strong evidence that cognitively vulnerable individuals exhibit a pervasive bias for threat-related information in schematic information processing, and that this occurs across several different types of laboratory tasks. The results suggest that the LMS is associated with heightened vigilance for threat-related information and for movement, heightened accessibility of cognitive danger schemas, and a systematic bias that is manifested in both implicit and explicit memory.

Furthermore, these results have underscored the important differences between the LVM and the standard cognitive model of anxiety. In general, the standard cognitive model conceptualizes the mental representation of threat in terms of probability estimates about aversive outcomes and their consequences, whereas our model focuses on dynamic mental representations of the rapidity with which danger is intensifying. Like the LVM, Gray's (c.f., 1987) theory of anxiety would view the dynamic nature of a threat stimulus as important for maintaining activation of the

Behavioral Inhibition System that generates anxiety. Indeed, Gray lists novel stimuli as inputs that activate the Behavioral Inhibition System because they are perceived as unfamiliar or unpredictable. The person does not easily habituate to novel stimuli because this system is activated by “mismatches” or violations of expectations. To the extent that a threat is perceived as changing, the expectations that the person has formed about the environment are less applicable and generate anxiety.

Implications of the Looming Vulnerability Model: Differentiation of Anxiety and Depression

Recent investigators have suggested that anxiety and depression represent the same disorder, emphasizing findings that highlight overlap in affective, cognitive, and biological features. However, we are compelled to demur at accepting such a conclusion and staunchly disagree with its logical basis. In much the same way that the 97% overlap in DNA sequences does not demonstrate that *chimps* and *human beings* are indistinguishable, the overlap between anxiety and depression does not unequivocally demonstrate that anxiety and depression are synonymous. Moreover, there seem to be significant differences between both sets of comparisons (chimps vs. humans & anxiety vs. depression) when they are examined with more refined levels of discrimination. Our CVA Project, together with similar research on depression (see Alloy, Abramson et al., Chapter 2), provides strong empirical evidence for distinguishing between anxiety and depression via a focus on cognitive content and cognitive processes.

Differences Between the Looming Vulnerability and Standard Cognitive Models of Anxiety

The conceptual modification in our model, highlighting the role of rapidly intensifying danger in anxiety, represents a significant advance over the standard cognitive model. Our findings are unique in showing that the LMS is strongly, but rather precisely, correlated with anxiety but not depression in both clinical and nonclinical samples. Such evidence of discriminant validity stands in contrast to past results that have indicated that anxiety-related cognitions (i.e., threat cognitions)

are often as highly correlated with depression as with anxiety symptoms. The LVM also has implications for assessment and treatment, and could facilitate improved treatment outcome and efficacy. For example, cognitive-behavior therapy has demonstrated efficacy in treating anxiety disorders, but its success with some disorders --such as GAD (Riskind, 1997b; Riskind & Williams, 1999a) and OCD (Rachman et al., Chapter 10) – has been moderate and many patients do not respond to current cognitive protocols. Further, even the most efficacious cognitive treatments may benefit from consideration of looming vulnerability and the LMS, particularly when working with resistant clients or clients for whom standard cognitive treatment is not producing the expected gains (Riskind & Williams, 1999a).

Clinical Implications

The set of etiological chains that we propose for anxiety in the LVM provide multiple points for therapeutic or preventative intervention. Our framework implies that immediate, temporary relief may be provided by cognitive interventions that target the proximal aspects of dysfunctional thinking about intensifying danger; whereas more durable improvement may be provided by changing underlying cognitive vulnerabilities, such as the LMS. As depicted in Figure 4, the typical utterances of anxious patients reflects this sense of looming vulnerability to threat in their dysfunctional automatic thoughts. As is evident from this clinical material, automatic thinking in anxious patients is characterized not only by over-estimations of danger, but also by a sense of *rapidly rising risk and intensifying danger as one projects the self into some anticipated future*. Moreover, the LMS seems to predispose individuals to interpret mundane and ambiguous situations in threatening ways and leads to hypervigilance for threat-related information.

Insert Figure 4 about here

We coined the term *looming management* to refer to the various therapeutic clinical uses of

the LVM (Riskind & Williams, 1999a). As we described in that article, clinicians can address the content and quality of dynamic representations of intensifying danger, particularly imagery based components, rather than only address the individual's biased way of looking at static predictions or outcomes of potential threats, as implied by the standard cognitive-clinical model. For example, in a sample of subclinical obsessive compulsives, Riskind and colleagues (1997) provide evidence that teaching such individuals to freeze or arrest their mental representations of "looming" contaminants can reduce their level of anxiety.

As Riskind and Williams (1999a) proposed, the clinician could modify the variable of *distance* (either physical or temporal), stretching out or lengthening patients' perceptions of distance from danger in their dynamic mental representation. A second variable the therapist can try to modify is *motion*. For example, by using imagery based techniques and other cognitive-behavioral interventions, the clinician could attempt to interrupt or arrest the forward movement of seemingly intensifying danger. A third variable a therapist could modify is *speed*-- the velocity with which anxious patients perceive potential threat to be intensifying, moving, or changing for the worst. The variable of speed can often be modified using behavioral experiments, hypothesis testing, imagery, or other methods, the end goal of which are to reduce the patient's perceptions of the rapid rise or approach of potential threat. For instance, a patient with social phobia can be instructed to "test" the objective escalation of risk in social situations. Finally, the therapist can modify the patients' perspectives on the role of the self as *target of threat* ---rather than observer. This technique can reduce the self-focused nature of perceiving threat and increase their objectivity.

In addition to focusing on the variables involved in anxious patients' mental representations of dynamically intensifying danger, the therapist could attempt to reduce coping rigidity in several ways (e.g., Williams, 2002; Williams & Riskind, 2004a). For example, if anxious patients understand that generating dynamic representations in which potential threats are rapidly

intensifying leads to a sense of inflated urgency and a constriction in their possible avenues of coping, they may be more likely to be able to effectively use the aforementioned strategies.

Second, the therapist can help anxious patients to generate proactive coping strategies to neutralize potentially intensifying threats, and to use rehearsal exercises to modify their coping flexibility (their ability to reevaluate and apply multiple coping strategies in response to changes in the veridical conditions of threat; Williams, 2002). Hence, the LVM of anxiety, and the LMS more specifically, are likely to have implications for developing more refined case conceptualizations and increasingly effective treatment strategies for the range of anxiety disorders.

Summary

This research conducted in our CVA project makes several unique contributions to our understanding of dysfunctional cognitive processes in anxiety. First, the empirical data so far indicate that the LMS may constitute a distinctive cognitive vulnerability for anxiety and that it fills the same distinctive niche for anxiety as the depressive explanatory style does for depression. Second, evidence has supported the key proposition that the LMS is an overarching cognitive vulnerability that is common to many particular aspects of anxiety and anxiety disorders (e.g., PD, SP, OCD, GAD, and PTSD; Williams et al., in press). Moreover, considerable research indicates that the LMS is linked to many of the specific cognitive mechanisms involved in different anxiety disorders (e.g., exaggerated responsibility, anxiety sensitivity, etc.). Third, and related to the above points, the LMS produces a strong schematic processing bias for threat-related information, even when people are demonstrably not currently anxious.

Although the CVA Project has entered an exciting new phase in research on cognitive vulnerability to anxiety, we face several future challenges. While there is strong evidence to support the role of the LMS in many particular forms of anxiety disorder, much additional work on clinical populations is necessary. Second, whereas work has begun to examine the interactions

between the LMS and specific mechanisms implicated in the pathogenesis of particular disorders (e.g., links from LMS to responsibility in OCD) more steps in this direction are needed. Third, it is essential to have studies that use behavioral high-risk designs (similar to those used by the Temple-Wisconsin Cognitive Vulnerability to Depression project- see Alloy et al., Chapter 2) to examine the prospective development of anxiety disorders in cognitively vulnerable individuals who have the LMS. Fourth, future research may benefit from the inclusion of additional information processing tasks (such as tasks of preattentive bias, signal detection, or priming) that can provide added ways to test predictions of the LVM. In addition, little is known about whether there is a synergistic interaction between objectively assessed stressful events and the cognitive vulnerability (which the model implicitly predicts). We are also pursuing several suggestive findings that indicate the existence of a possible subtype of anxiety symptoms related to the LMS (i.e., “looming vulnerability anxiety”), analogous to “hopelessness depression” as a subtype of depression.

Much remains to be learned about the developmental antecedents (e.g., attachment styles, parenting styles, self-defining and emotional memories), and personality correlates (e.g., harm avoidance, as in Gray, 1987) of the LMS, as well as the possible role it plays in enhancing fear conditioning. For example, the LVM suggests that individuals with the cognitive vulnerability are likely to be more “psychologically prepared” for rapid and persisting fear conditioning (Riskind, 1997) -- particularly when the fear-relevant stimuli involved are presented in dynamic states of intensification and/or motion (i.e., such individuals are already prone to appraise fear-relevant stimuli as rapidly intensifying in danger). Additionally, research is required to examine the physiological mechanisms that accompany the LMS and the experience of looming vulnerability. Finally, it may be important to examine the possible moderating effects that different self-protective responses (e.g., worry or other cognitive avoidance strategies) have on the impact of the cognitive vulnerability on information-processing and fear reactions. For example, several recent

studies in the CVA Project provide intriguing evidence that worry or meta-worry can attenuate or even eliminate the typical effects of the LMS on future anxiety and fear-related schematic processing biases. That is, individuals who “pay a price” by engaging in pathological worry may avoid the fear-related symptoms associated with this cognitive vulnerability. Alternatively, a coping repertoire that is characterized by coping flexibility may operate as an adaptive protective factor against anxiety and worry.

References

- Abramson, L. Y., Alloy, L. B., Hogan, M. E., Whitehouse, W. G., Cornette, M., Akharan, S., & Chiara, A. (1998). Suicidality and cognitive vulnerability to depression among college students: A prospective study. *Journal of Adolescence, 21*, 473-487.
- Ainsworth, M. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale, NJ: Erlbaum.
- Antony, M. M., & Barlow, D. M. (1990). Emotion theory as a framework for explaining panic attacks and panic disorder. In R. M. Rapee (Ed.), *Current controversies in the anxiety disorders* (pp. 55-76). New York: Guilford Press.
- Baumeister, R. F. (1990). Suicide as escape from self. *Psychological Review, 97*, 90-113.
- Baumeister, R. F., Dale, K., & Sommer, K. L. (1998). Freudian defense mechanisms and empirical findings in modern social psychology: Reaction formation, projection, displacement, undoing, isolation, sublimation, and denial. *Journal of Personality, 66*, 1081-1124.
- Beck, A. T., & Clark, D. A. (1997). An information processing model of anxiety: Automatic and strategic processes. *Behaviour Research and Therapy, 35*, 49-58.
- Beck, A. T., & Emery, G. (1985) *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic Books.
- Berstein, G. A., Garfinkel, B. D., & Hoberman, H. M. (1989). Self-reported anxiety in adolescents. *American Journal of Psychiatry, 146*, 384-386.
- Bieling, P. J., Antony, M. M., & Swinson, R. P. (1998). The Stait-Trait Anxiety Inventory, Trait version: Structure and content re-examined. *Behaviour Research and Therapy, 36*, 777-778.
- Borkovec, T. D. (1994). The nature, functions, and origins of worry. In G. C. L. Davey & F. Tallis (Eds.), *Worrying: Perspectives on theory assessment, and treatment*. New York: Wiley.
- Borkovec, T. D., & Inz, J. (1990). The nature of worry in generalized anxiety disorder: A predominance of thought activity. *Behaviour Research and Therapy, 28*, 153-158.
- Brown, T. A., Campbell, L. A., Lehman, C. L., Grisham, J. R., & Mancill, R. B. (2001). Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. *Journal of Abnormal Psychology, 110*, 585-599.
- Chorpita, B. E., & Barlow, D. H. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin, 124*, 3-21.
- Clark, D. M. (1988). A cognitive model of panic attacks. In S. Rachman and J. Maser (Eds), *Panic: Psychological Perspectives*. Hillsdale, NJ: Lawrence Erlbaum Associates Inc.

- Davey, G. C., & Levy, S. (1998). Catastrophic worrying: Personal inadequacy and a perseverative iterative style as features of the catastrophizing process. *Journal of Abnormal Psychology, 107*, 576-586.
- Dupont, R. L., Rice, D. P., Miller, L. S., Shiraki, S. S., Rowland, C. R., & Harwood, H. J. (1996). Economic costs of anxiety disorders. *Anxiety, 2*, 167-172.
- Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston, MA: Houghton-Mifflin.
- Gray, J. A. (1987). *Psychology of fear and stress* (2nd edition). Cambridge: Cambridge University Press.
- Judd, L. L. (1965). Obsessive-compulsive neurosis in children. *Archives of General Psychiatry, 12*, 136-143.
- Kagan, J., Reznick, S., & Snidman, N. (1987). The physiology and psychology of behavior inhibition in children. *Development Psychology, 58*, 1459-1473.
- Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., Wittchen, H., & Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry, 51*, 8 – 19.
- Leon, A. C., Portera, L., & Weissman, M. M. (1995) The social costs of anxiety disorders. *British Journal of Psychiatry, 166*, 19 – 22.
- Murphy, B., Riskind, J. H., & Williams, N. L. (2000). Cognitive vulnerability and avoidance in college athletes. *Unpublished Manuscript*.
- Rachman, S. (1998). *Anxiety*. East Sussex, United Kingdom: Psychology Press Ltd.
- Rachman, S. (1997). A cognitive theory of obsessions. *Behavioral Research and Therapy, 35*, 793-802.
- Rapee, R. M. (1991). Psychological factors involved in generalized anxiety. In R. M. Rapee & D. H. Barlow (Eds.), *Chronic anxiety, generalized anxiety disorder, and mixed anxiety-depression* (pp. 76-94). New York: Guilford Press.
- Riskind, J. H. (1997). Looming vulnerability to threat: A cognitive paradigm for anxiety. *Behaviour Research and Therapy, 35*, 5, 386-404.
- Riskind, J. H., (1997b). Generalized anxiety disorder. In R. Leahy (Ed.), *Practicing cognitive therapy: A guide to interventions* (pp. 123-150). New Jersey: Jason Aronson, Inc.
- Riskind, J. H. (in press). *Looming and loss: Cognitive factors in emotional dysfunction*. Plenum press.

- Riskind, J. H., Abreu, K., Strauss, M., & Holt, R. (1997). Looming vulnerability to spreading contamination in subclinical OCD. *Behaviour Research and Therapy*, 35, 5, 405-414.
- Riskind, J. H. & Chambless, D. L. (1999). Exploring cognitive antecedents of panic: Effects of looming vulnerability, perceived control, and causal attributions. *Unpublished Manuscript*.
- Riskind, J. H., Gessner, T. D., & Wolzon, R. (1999). Cognitive vulnerability to alcohol dependence in an inpatient sample: Implications of the looming maladaptive style. *Unpublished Manuscript*.
- Riskind, J. H., Kelly, K. Moore, R., Harman, W., & Gaines, H. (1992). The looming of danger: Does it discriminate focal phobia and general anxiety from depression? *Cognitive Therapy and Research*, 16, 1-20.
- Riskind, J. H., Long, D. G., Williams, N. L., & White, J. C. (2000). Desperate acts for desperate times: Looming vulnerability and suicide. In T. Joiner and D. M. Rudd (Eds.), *Suicide science: Expanding the boundaries* (pp. 105 – 115). New York: Plenum Press.
- Riskind, J. H., & Maddux, J. E. (1994). The loomingness of danger and the fear of AIDS: Perceptions of motion and menace. *Journal of Applied Social Psychology*, 24, 5, 432-442.
- Riskind, J. H., & Maddux, J. E. (1993). Loomingness, helplessness, and fearfulness: An integration of harm-looming and self-efficacy models of fear and anxiety. *Journal of Social and Clinical Psychology*, 12, 73-89.
- Riskind, J. H., & Mizrahi, J. (1999). Mediating Cognitive Processes in Musical Performance Anxiety: The Role of Looming Vulnerability. *Unpublished Manuscript*.
- Riskind, J. H., Moore, R., & Bowley, L. (1995). The looming of spiders: The fearful perceptual distortion of movement and menace. *Behaviour Research and Therapy*, 33, 171-178.
- Riskind, J. H., & Wahl, O. (1992). Moving makes it worse: The role of rapid movement in fear of psychiatric patients. *Journal of Social and Clinical Psychology*, 11, 349-364.
- Riskind, J. H., & Williams, N. L. (in press). The Looming Cognitive Style and generalized anxiety disorder: Distinct danger schemas and cognitive phenomenology. *Cognitive Therapy and Research*.
- Riskind, J. H., & Williams, N. L. (1999a). Cognitive case conceptualization and the treatment of anxiety disorders: Implications of the looming vulnerability model. *Journal of Cognitive Psychotherapy*, 13, 4, 295-316.
- Riskind, J. H., & Williams, N. L. (1999b). Specific cognitive content of anxiety and catastrophizing: Looming vulnerability and the looming maladaptive style. *Journal of Cognitive Psychotherapy*, 13, 1, 41-54.

- Riskind, J. H., Williams, N. L., Altman, A., Black, D. O., Balaban, M. S., & Gessner, T. L. (2004). Developmental antecedents of the looming maladaptive style: Parental bonding and parental attachment insecurity. *Journal of Cognitive Psychotherapy, 18*, 43 – 52.
- Riskind, J. H., Williams, N. L., Gessner, T., Chrosniak, L., & Cortina, J. (2000). A Pattern of Mental Organization and Danger Schema Related to Anxiety: The Looming Maladaptive Style. *Journal of Personality and Social Psychology, 79*(5), 837-852.
- Riskind, J. H., Williams, N. L., & Kyrios (2002). Experimental Methods for Studying Cognition. In R. O. Frost and G. Steketee (Eds.), *Cognitive Approaches to obsessions and compulsions: Theory, assessment, and treatment* (pp. 139-164). Amsterdam, Netherlands: Pergamon/Elsevier Science Inc.
- Roy-Byrne, P. P., & Katon, W. (2000). Anxiety management in the medical setting: Rationale, barriers to diagnosis and treatment, and proposed solutions. In D. I. Mostofsky & D. H. Barlow (Eds.). *The management of stress and anxiety in medical disorders* (pp. 1 – 14). Boston: Allyn & Bacon.
- Salkovskis, P. M., Shafran, R., Rachman, S. & Freeston, M. H. (1999). Multiple pathways to inflated responsibility beliefs in obsessional problems: Possible origins and implications for therapy and research. *Behaviour Research and Therapy, 37*, 1055-1072.
- Shneidman, E. S., (1989). Approaches and commonalities of suicide. In R. F. W. Diekstra & R. Maris (Eds.). *Suicide and its prevention: The role of attitude and imitation* (pp. 14-36). Netherlands: E. J. Brill.
- Tweed, J., Schoenbach, V., George, L. K. (1989). The effects of childhood parental death and divorce on six-month history of anxiety disorders. *British Journal of Psychiatry, 154*, 823-828.
- Vasey, M. W., & Borkovec, T. D. (1992). A catastrophizing assessment of worrisome thoughts. *Cognitive Therapy & Research, 16*, 505-520.
- Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review, 101*, 34-52.
- Wells, A. (1995). Meta-cognition and worry: A cognitive model of generalized anxiety disorder. *Behavioural and Cognitive Psychotherapy, 23*, 301-320.
- Williams, N. L. (2002). *The cognitive interactional model of appraisal and coping: Implications for anxiety and depression*. Unpublished doctoral dissertation, George Mason University, Fairfax.
- Williams, N. L., & Elwood, L. S. (2004). *Cognitive vulnerabilities to anxiety and depression in female victims of sexual assault*. Manuscript in preparation.

- Williams, N. L., McDonald, T., & Riskind, J. H. (2004). *Mentation sampling during instructed anticipation and worry: The LCS is associated with a predominance of imagery-based mentation*. Manuscript in preparation.
- Williams, N. L., & Reardon, J. (2004). *A comparison of vulnerabilities to anxiety: The Looming Cognitive Style and anxiety sensitivity*. Manuscript submitted for publication.
- Williams, N. L., & Riskind, J. H. (2004a). *The cognitive interactional model of appraisal and coping: Coping styles and coping flexibility*. Manuscript in preparation.
- Williams, N. L. & Riskind, J. H. (2004b). Adult romantic attachment and cognitive vulnerabilities to anxiety and depression: Examining the interpersonal basis of vulnerability models. *Journal of Cognitive Psychotherapy*, 18, 7 – 24.
- Williams, N. L. & Riskind, J. H. (2004c). *A prospective investigation of cognitive vulnerability to anxiety*. Manuscript in preparation.
- Williams, N. L., Riskind, J. H., Olatunji, B. O., & Elwood, L. S. (2004). *Cognitive vulnerability to anxiety and information processing: Implications of the Looming Maladaptive Style*. Manuscript in preparation.
- Williams, N. L., & Riskind, J. H., Olatunji, B. O., & Tolin (2004a). *Cognitive vulnerabilities to contamination fears and obsessional thoughts*. Manuscript submitted for publication.
- Williams, N. L., Shahar, G., Riskind, J. H., & Joiner, T. E. (in press). The looming cognitive style has a general effect on an anxiety disorder symptoms factor: Further support for a cognitive model of vulnerability to anxiety. *Journal of Anxiety Disorders*.
- Zuckerman, M. (1999). *Vulnerability to psychopathology: A biosocial model*. Washington, D.C.: American Psychological Association.

Figure 1.

Conceptual model of vulnerability to anxiety disorders.

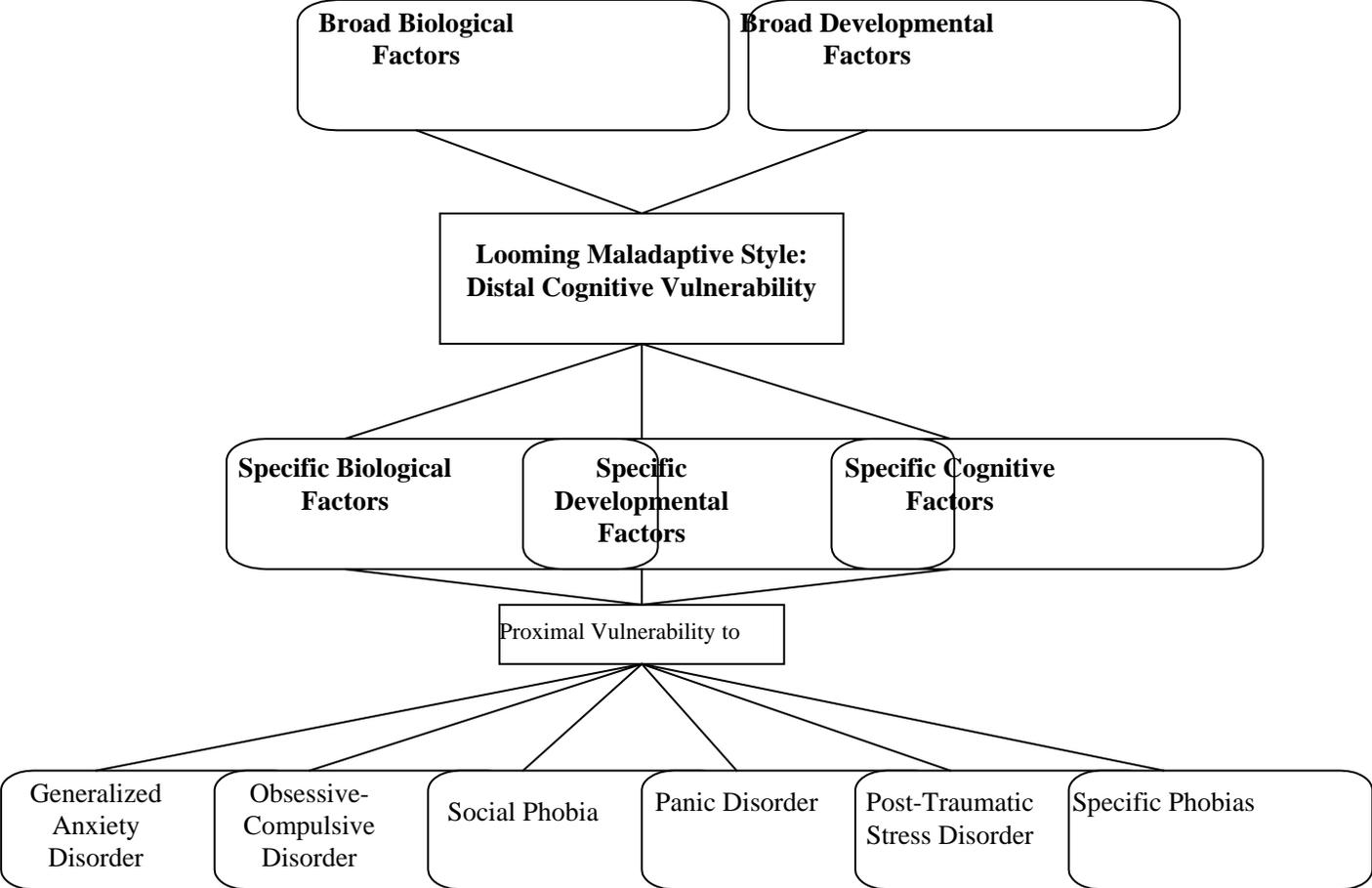


Figure 2.

Etiological model of the Looming Maladaptive Style as a cognitive vulnerability to anxiety.

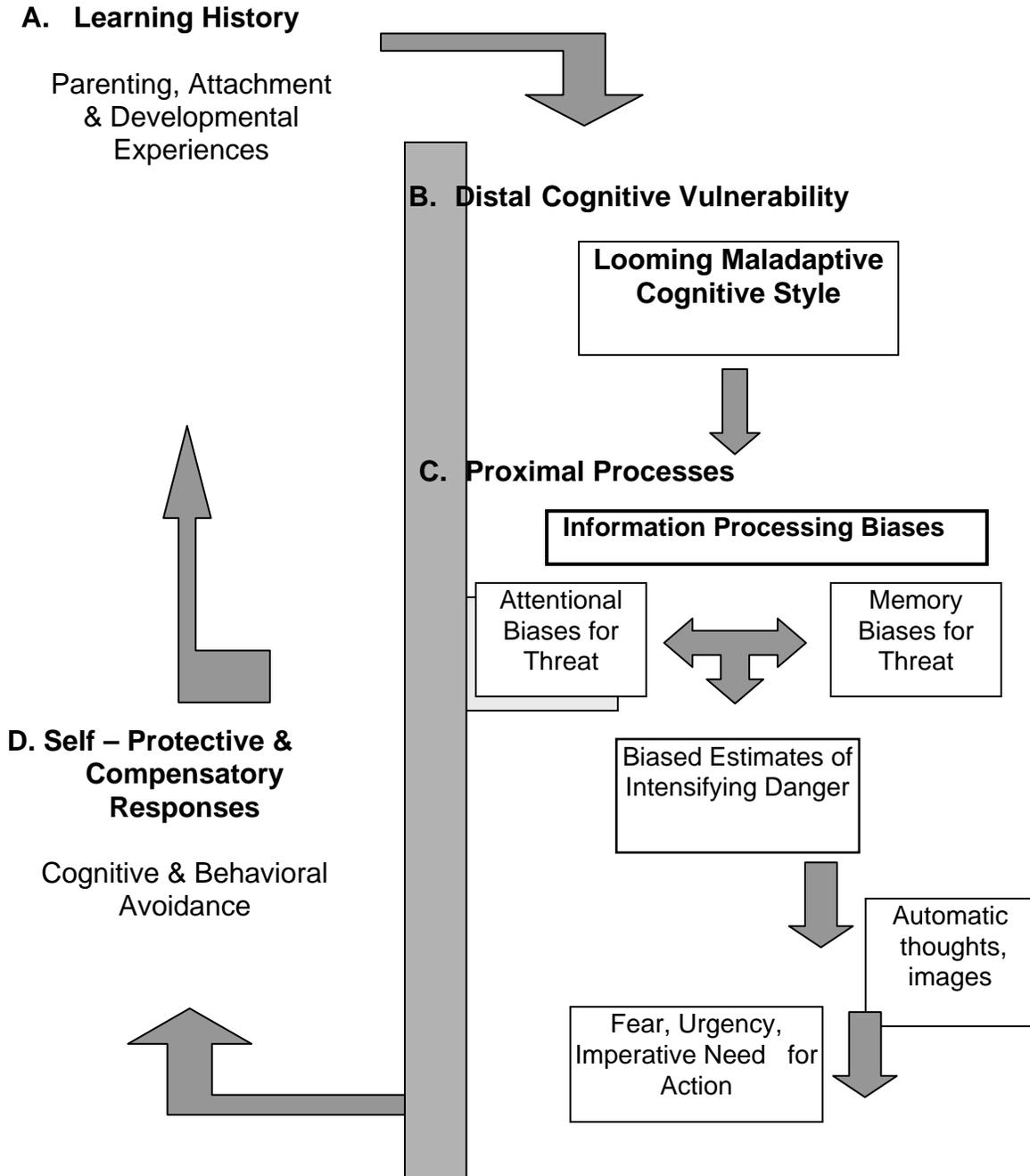


Figure 3.

Structural Model of homophone prediction for the LMS and latent anxiety.

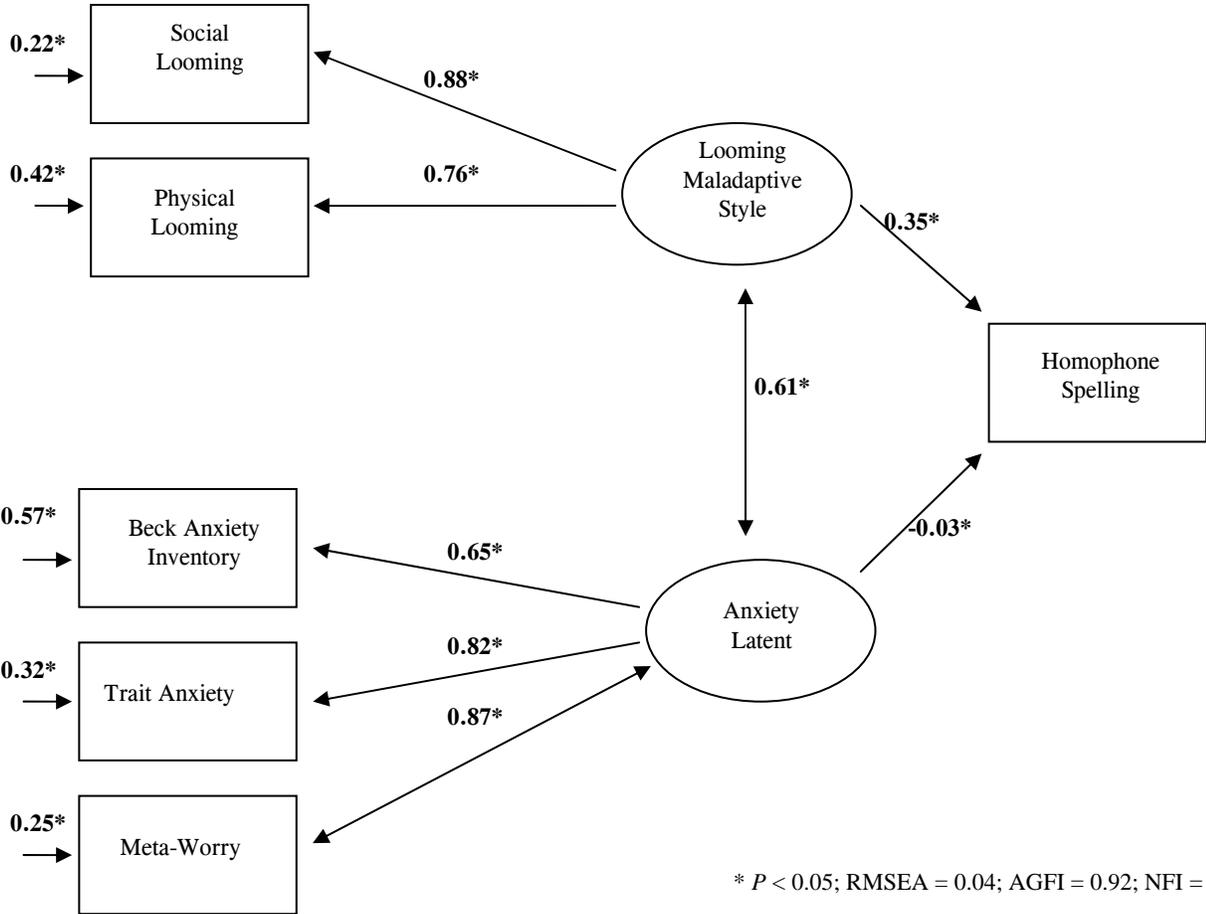


Figure 4.

Utterances of patients with generalized anxiety disorder.

“My position in my firm is not very secure.
My bosses are looking at me, saying ‘Is he crazy?’”

“The clock is ticking away. Any day now my client could sue me.”

"You can lose everything at any moment,"

"The rug can be yanked from beneath you at any time"

“Change is always dangerous. There are higher expectations with changes.
There is insurmountable work to be done.”

“My fears of death, danger, etc., are essentially a fear of change.”

Example from Beck’s Cognition Checklist

“I am going to have an accident.”