Chapter 1
Introduction

"The evidence is overwhelming … that men and women of today live in an 'age of anxiety.' If one penetrates below the surface of political, economic, business, professional, or domestic crises to discover their psychological causes, or if one seeks to understand modern art or poetry or philosophy or religion, one runs athwart the problem of anxiety at almost every turn."

—Rollo May, 1950, p. v., (italics added)

Anxiety touches all our lives and, as most of us are aware, anxiety disorders are a great public health problem (Kessler, Walters, & Wittchen, 2004). In recent years, anxiety disorders have become recognized as one of the most debilitating forms of mental illness in Western Society (Kessler, Mickelson, Barber, & Wang, 2001; Rovner, 1993) and affect as many as 46 million individuals in the United States alone (Kessler et al., 1994). Indeed, they are among the most common and prevalent types of psychological maladies in the United States (Shepherd, Cooper, Brown, & Kalton, 1996). Certainly, approximately 32% of the population develop anxiety disorders at some point in their lives, and in any given 12 months almost 19% have anxiety disorders (Kessler et al., 2012). Such disorders tend to produce significant impairment in occupational, social, and family functioning (Kessler & Greenberg, 2002; Kessler & Wittchen, 2002) and cost billions of dollars each year, making them among the most expensive of all mental health problems (Greenberg, Sisitsky, Kessler, et al., 1999; Kessler & Greenberg, 2002; Rovner, 1993). Also, such disorders can also lead to other severe mental and physical disorders, such as depression, alcoholism, and heart disease (Kessler et al., 2001; Kessler et al., 2004).

Exacerbating the problems, in addition to individuals who meet the full criteria for anxiety disorders, there are countless more individuals who suffer from anxiety symptoms that are below the threshold for current criteria. Such persons suffer from limitations similar to those with full anxiety disorders on important measures of disability and dysfunction (Kessler et al., 2005; Ruscio et al., 2005).

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Also making the matter worse, serious anxiety problems also seem to be on the increase. In a series of ingenious studies, Twenge (2000) examined trends in scores of common psychological tests of anxiety and other characteristics over four decades. She found that Americans have shifted toward substantially higher levels of anxiety during recent decades (p. 1007). Both college student (adult) and child samples reported greater anxiety levels between 1952 and 1993. These findings were so striking that "the average American child in the 1980s reported more anxiety than child psychiatric patients in the 1950s." Twenge's findings are corroborated by epidemiological findings of the World Health Organization (2000). They found in a study of six countries—Canada, Mexico, Turkey, Netherlands, and the United States—that anxiety and stress disorders are becoming increasingly prevalent over time (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012).

Anxiety and Fear

Most psychological theories of anxiety are built on the assumption that it is a response to the perception or anticipation of a potentially threatening or injurious situation or event. Anxiety can be seen as an extension of the basic emotion of fear which is also a response to the perception that a situation or event represents a source of danger. Anxiety is a form of fear that is usually characterized by physiological symptoms such as autonomic reactions, increased heart rate, and tension.

Anxiety and fear are believed to be emotions. As Hofmann (2016) has recently stated, an emotion such as anxiety or fear is a multidimensional rather than unidimensional experience. Put another way, an emotion is not simply a particular cognitive appraisal or thought but includes physical sensations, motivational tendencies, a conscious experience, and feelings. Frijda, the emotions theorist, put a similar idea in this way: "Emotions are, or can be matters of the body; of flesh, brain, and the veins" (Frijda, 1986, p. 5).

Coupled with this, anxiety and fear can be manifested in diverse ways in different circumstances (e.g., freezing, fighting, flight). Frijda (1986) illustrated this idea with the example of fear in rats. He suggested that the specific manifestations of fear that are present depend on what makes sense for the organism under the circumstances. For example, *freezing* is more likely in the open field, which might allow the animal to avoid notice by a predator, *running* is more likely when the animal perceives clear exits or paths of escape, and *fighting* when there are other rats around. The implication is that different forms of anxiety and anxiety disorder (e.g., panic, generalized anxiety, phobias) can be seen as representing different manifestations of fear.

Although normal anxiety and fear is dependent on the specifics of the surrounding circumstances, anxiety disorders are associated with disproportionate reactions. Disordered cognitive processes likely play a role in anxiety disorders and emotions. Frijda (1986) suggested that when emotions such as fear, anger, sadness, or love are at lower to moderate levels of intensity, individuals still have varying degrees of ability to inhibit, regulate or influence the emotional reactions or their expression,

and calibrate the expression to the situation. However, very intense emotional reactions can reach a "point of no return" in which they are let loose of control and inhibitory restraint. As Frijda aptly put it, "Violent anger, violent fear, and violent desire are blind." By this, he meant that when fear or anger intensity reach a point of no return, as in panic attacks, there is a weakness in the process of stimulus control, and individuals lose all control of the emotions or their ability to terminate the emotional reactions or calibrate them to be appropriate, as in panic or rage attacks.

A somewhat similar idea was expressed by Clark and Beck (2010) in their distinction between normal and abnormal anxiety. In normal anxiety, individuals are more balanced in the attunement to positive and negative stimuli, while abnormal anxiety is characterized by disproportionate sensitivity to negative stimuli and exaggerated perceptions of threat. Moreover, similar to Frijda (1986), Clark and Beck pointed to a role of lack of controlled cognitive processes when anxiety is abnormal.

Cognitive Models of Anxiety

Cognitive models of emotion (e.g., Frijda, 1986; Lazarus, 1991; Moors, Ellsworth, & Scherer, 2013; Ortony, Clore, & Collins, 1988; Roseman, 2013; Scherer, 2001, 2005) and anxiety (Beck, Emery, & Greenberg, 2005; Clark & Beck, 2010; Clark & Purdon, 1993; Clark & Wells, 1995; Ehlers & Clark, 2000; Heimberg, Brozovich, & Rapee, 2010; Rachman, 1997; Salkovskis, 1985; Wells, 2000) assume that cognitive appraisals and interpretations of events are central to these disorders. Lazarus (e.g., Lazarus, 1966, 1991; Lazarus & Folkman, 1984) distinguished between primary appraisals (e.g., of the harm potential of a stimulus) and secondary appraisals (of one's options and resources for averting or escaping the harm). This distinction was incorporated into Beck et al.,'s (2005) cognitive model and subsequent revisions of Beck's model (e.g., Clark & Beck, 2010). Building on Lazarus's seminal model, Beck, Emery, and Greenberg proposed that anxiety is associated with a tendency to (1) overestimate threat or danger (i.e., primary appraisal) and (2) underestimate their degree of control or effectiveness in coping with this threat (i.e., secondary appraisal).

Recently, Clark and Beck (2010) stated, much like other CBT models (Carr, 1974; Foa & Kozak, 1986; Rapee & Heimberg, 1997), that cognitive appraisals that overestimate the temporal/physical *proximity*, the *probability of occurrence*, and the *severity* (or cost) of outcomes are the crucial core components of threat appraisals in anxiety. Although such factors are important, we shall presently argue that perceptions of the dynamic experience of threats, that they are that growing and approaching ("looming vulnerability"), captures critical aspects of cognitive factors in anxiety that the other factors don't. The extent to which something is threatening is not just proximity- or probability-dependent, but dependent on whether it appears to be making rapid dynamic gains in these values. Moreover, we will contend that the LVM addresses an evolutionary-based but inflated cognitive bias in anxiety that other models have overlooked.

Dysfunctional Danger Schemas

In Clark and Beck's (2010) model of anxiety and earlier formulations of Beck's model, danger schemas are knowledge structures or cognitive frameworks for evaluating potential threat stimuli and processing threat-related information. Danger schemas are individual's enduring personal frameworks that provide mental lens for understanding and appraising threats and are a product of their past experiences. When encountering a potential source of threat (e.g., of rejection), the individuals' immediate cognitive appraisals and automatic thoughts are a product of how the stimuli are interpreted in the context of the person's danger schemas.

Cognitive Vulnerabilities

Danger schemas are a source of cognitive vulnerability and are underlying mechanisms for anxiety (Beck, 1976; Beck et al., 2005; Clark & Beck, 2010). Danger schemas are thought to influence tendencies to allocate selective attention to some stimuli as opposed to others, guide the priority given to some stimuli as opposed to others in memory, and influence recall. They also lead to differences in interpreting the same ambiguous situations, forming expectations and generating mental simulations of the potential future. Some individuals, more than others, are predisposed to develop anxiety or other emotional disorders because of cognitive vulnerabilities. Often, these are conceptualized as dysfunctional attitudes or faulty beliefs (Clark & Beck, 2010). Some concrete examples are provided by work on anxiety sensitivity (beliefs about the harmful consequences of anxiety) (Reiss & McNally, 1985; Taylor, 1999) and intolerance of uncertainty (beliefs about the harmful consequences of uncertainty; e.g., Dugas & Ladouceur, 2000). In addition, cognitive vulnerabilities can be represented by negative cognitive styles, the nature of which leads to systematic dysfunctional patterns of interpreting events and drawing inferences from such events. An example is the depressive inferential style that has received extensive support in the depression literature (Alloy, Abramson, Safford, & Gibb, 2006; Alloy et al., 2000).

Automatic and Strategic (Controlled) Processes

The cognitive activities that underlie anxiety involve both automatic and controlled processes (Clark & Beck, 2010; Mathews & MacLeod, 1994). The distinction between these is important because they differ in the degree to which specific cognitive activities are conscious, purposeful, and effortful or to which they occur effortlessly on their own and cannot be intentionally terminated.

Automatic processes run on their own and occur without conscious awareness. They are rapid and cannot be terminated by intention. Controlled processes, on the other hand, are purposeful, resource demanding, and effortful. One can see automatic thoughts as the cognitive products of automatic processes, while the anxious person's attempts to control or deal with these thoughts reflect the activity of strategic or controlled processes. To give examples, a fear response is likely to be evoked by an automatic process. Once fear is evoked, an individual might use worry or thought suppression as a strategic process for curtailing or avoiding the fear.

Cognitive Underpinnings of Normal and Abnormal Anxiety

Clark and Beck (2010) have also drawn a distinction between normal and abnormal anxiety. Abnormal anxiety is associated with a disproportionate sensitivity to negative stimuli, while normal anxiety is associated with a balanced sensitivity to positive and negative stimuli. Abnormal anxiety is associated with more exaggerated and unbalanced danger appraisals, threat cognitions, and cognitive biases in threat processing, as well as more automatic, inhibitory self-protective behaviors. In their view, abnormal anxiety is also associated with a greater focus on weakness and low self-efficacy and expectations of negative outcomes as well as poor processing of safety cues. As a result, there is less accessibility to a "constructive mode" of thinking as well as more uncontrollable worry in abnormal anxiety. In contrast, in normal anxiety, danger appraisals are less "likely to be exaggerated and more appropriate to the situation at hand."

Clark and Beck (2010) suggest that the greatest differences between abnormal and normal anxiety occur at a stage when strategic controlled processes take place. For individuals with abnormal or clinical anxiety, these processes result in persistent and even escalated anxiety, whereas the same strategic or controlled processes result in reduction and possible termination of anxiety for nonclinical individuals. Abnormal and clinical anxiety is also associated with the persistence of maladaptive compensatory and self-protective mechanisms such as pathological worry.

Cognitive Theory and Therapy: In Ongoing Development

Cognitive therapy (or cognitive-behavior therapy, as it is often now known) represents a rigorous and systematic perspective for conceptualizing anxiety disorders and other disorders, identifying and assessing potential treatment targets, and generating appropriate interventions. As the reader no doubt knows, cognitive therapy has been very successful and is often regarded as the current "Gold Standard" in treating many anxiety disorders. Yet, despite its proven efficacy (Hofmann & Smits, 2008), there is

still ample room for improvement. Many anxious patients do not fully respond and for some disorders such as GAD response rates are only 50% so far (Nathan & Gorman, 2002). Given this, there has been growing interest in developing new ideas and approaches within the general theoretical umbrella of CBT (Dugas & Koerner, 2005; Borkovec, Newman, & Castonguay, 2003; Wells, 2000). Examples of these new lines of inquiry include work on meta-cognitive processes by Adrian Wells (2000), worry by Borkovec and others (Borkovec, Alcaine, & Behar, 2004; Newman, Llera, Erickson, & Przeworski, 2014), intolerance of uncertainty by Dugas and colleagues (Dugas & Koerner, 2005; Dugas & Robichaud, 2007), experiential avoidance (Hayes, Strosahl, & Wilson, 1999), OCD beliefs and cognitions (Clark & Purdon, 1993; OCCWG, 2001, 2003; Rachman, 1997; Salkovskis, 1985), anxiety sensitivity (Reiss & McNally, 1985), mental imagery (Hirsch & Holmes, 2007; Holmes & Matthews, 2010), and transdiagnostic processes (Harvey, Watkins, Mansell, & Shafran, 2004; Paulus, Talkovsky, Heggeness, & Norton, 2015).

The LVM represents another new line of such nuanced inquiry that presents new ideas that may further refine cognitive conceptualizations and assessments of mechanisms in anxiety as well as identify novel targets for possible intervention. There is a strong link between new ideas and the continued progress of cognitive-behavior therapy (Wells, 2000).

Brief Sketch of the Looming Vulnerability Model

Cognitive models have identified cognitive appraisals involving the overestimation of threat or danger as key factors that contribute to the development and maintenance of anxiety disorders. As we stated earlier, such models have focused on threat appraisals of the probability, proximity of threats and the costs of their negative consequences should they occur. However, while such judgments can contribute to anxiety, we submit that perceptions of the dynamism and growth rates of threats are also independently important in their own right. As Beck (1976) has stated, anxiety is a response to a negative event that "could happen—but *hasn't* happened yet." Thus, the LVM submits that threats must make *dynamic gains* in their probabilities, proximities, or other threat values for them to happen. In contrast to other models, then, the LVM underscores the important role of perceptions and simulations of dynamic growing threat in anxiety. As we will see, two threats may be of equal magnitude in terms of proximity, probability cost, and so forth, but the one that is perceived as showing rapid dynamic gains will create greater anxiety, over and above the absolute levels of these judgments in a given time frame.

As Cosmides and Tooby (2013) and other evolutionary psychologists have argued, the mechanism behind many kinds of psychopathology has had evolutionary value (Buss, 1991; Confer et al., 2010; Gilbert, 1998; Hoffman, Moscovitch, & Heinrichs, 2004; Marks & Nesse, 1994). We will attempt to show that animals (and humans) must be sensitive to movement and change—for these cues provide information about whether threat—locomoting predators, flying branches,

wildfires—are dynamically growing or getting closer (i.e., looming). Thus, throughout evolution, a sensitivity to approach movement and looming stimuli has been essential to our survival. Further, the brain and perceptual systems were designed to detect change (Cacioppo & Fredberg, 2012).

A tenet of the LVM is that when someone makes threat appraisals that they want to know whether the threatening situation is dynamically growing, escalating, and moving toward them, and if so, how quickly—or whether the danger is static or even dissipating. As a preliminary definition, the construct of *looming vulnerability* refers to a person's perceptions that threats are dynamically growing, approaching and making rapid gains. We contend that such perceptions are a fundamental component in the experience of anxiety. The early detection of the "approach movement" of dynamic growing threats allows an individual to prepare for the harmful stimuli and to engage in compensatory or self-protective behaviors.

Brief Overview of Convergent Literature

The LVM (Riskind, 1997; Riskind, Rector, & Taylor, 2012; Riskind & Williams, 2006; Riskind, Williams, Gessner, Chrosniak, & Cortina, 2000; Riskind, Williams, & Joiner, 2006) is supported by an enormous and diverse literature that includes work on fear and defensive behavioral reactions in animals (Ball & Tronick, 1971; Eilam, 2005; Gill, Sutherland, & Watkinson, 1996; Stankowick & Blumstein, 2005; Stankowich & Coss, 2006), as well as by neurobiological (e.g., Anderson, 2010; Bach, Neuhoff, Perrig, & Seifritz, 2009; Billington, Wilkie, Field, & Wann, 2011; Coker-Appiah, White, Clanton, Yang, Martin, & Blair, 2013) and perceptual studies (Freyd and Rinke 1984) of human adults and their young (Ball & Tronick, 1971; Kayed & Van der Meer, 2007). Also included are experimental studies on the effects of approach movement/movement on attention (Franconeri & Simons, 2003; Judd, Sim, Cho, von Muhlenen, & Lleras, 2004; Lin, Murray, & Boynton, 2009) and memory (DeLucia & Maldia, 2006; Matthews, Benjamin, & Osbourne, 2007; Matthews, Buratto, & Lamberts, 2010; Pilz, Vuong, Bülthoff, &Thornton, 2011). There is work on social cognition (Aspinwall & Taylor, 1997; Hsee & Abelson, 1990; Hsee, Tu, Lu, & Ruan, 2014) and emotional reactions (Davis, Gross, & Ochsner, 2011; Mühlberger, Neumann, Wieser, & Pauli, 2008), as well as work on relevant evolutionary theory (Dixon, 1998; Fanselow & Lester, 1988; Haselton & Buss, 2000; Haselton & Nettle, 2006; Gilbert, 2001; Marks & Nesse, 1994; Nesse, 2001), as well as work emotions theory (Baumeister & Bratslavsky, 1999; Lazarus, 1991; Ortony et al., 1988; Scherer, 2001), embodied cognition (Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005; Williams, Huang, & Bargh, 2009) and metaphor (Lakoff & Johnson, 1980; Landau, Meier, & Keefer, 2010). Insofar as cognitive models of anxiety are concerned, these diverse lines of research have been separately siloed and disconnected from each other into separate lines of research and neglected. We argue that this dissociation of factors that should properly be linked has precluded a more integrated and unified understanding of anxiety and threat and their evolved cognitive mechanisms.

Links to Cognitive, Behavioral, and Emotion Processing Models

Cognitive Models

The LVM is strongly rooted in cognitive-behavioral theoretical perspectives such as Beck's (Beck, 1976; Clark, 1988; Clark & Beck, 2010) and others (e.g., Clark & Wells, 1995; Ehlers & Clark, 2000; Heimberg et al., 2010; Rachman, 1997). It is unique from such models, however, in the major emphasis it places on the crucial role of perceptions of dynamic gains and approaching movement by threats. At the same time, we will see that a handful of cognitive clinical models and related theories have some recognizable points of correspondence with the postulated importance of perceptions of dynamic gains in threat values, over and above their absolute levels, to anxiety and fear (for discussion, see Chap. 4). Among these models are Llera and Newman's "emotion contrast" model of worry in GAD (Llera & Newman, 2010; Newman & Llera, 2011; Newman et al., 2014), Mineka and Kihlstrom's (1978) account of experimental neurosis, and Gray's (1982, 1987) and Gray and McNaughton's (2000) models of anxiety. Also, it will be seen that some cognitive theories of emotion in the wider literature (e.g., Lazarus, 1991; Scherer, 2001; Scherer, 2005) have points of correspondence that make them compatible with the LVM's emphasis on dynamic cues in threat appraisal. Also, the LVM has direct implications for research on threat processing in terms of memory, interpretative biases, and cognitive vulnerability.

Behavioral Conditioning

Cognitive-behavioral models have also ignored the role of dynamic parameters of to-be-conditioned stimuli in the learning and unlearning of fear. As we will see, individuals likely acquire and *sustain* anxiety and fear longer for stimuli that are displaying dynamism, movement, or change than if they are having entirely static stimulus properties (See discussion in Chaps. 4 and 6). The greater the perceived or simulated potential for approach movement, the more readily a neutral stimulus can be fear-conditioned. Or, to put this differently, the dynamism of stimuli may be a fundamental feature that makes them biologically prepared for fear (Ohman & Mineka, 2001; Ohman & Wiens, 2004; Seligman, 1971).

Emotion Processing Models

It will also be seen that the LVM also has implications for understanding aspects of emotion regulation (e.g., Gross, 1998a, 1998b; Mennin, Heimberg, Turk, & Fresco, 2005; Mennin, Fresco, O'Toole, & Heimberg, 2018; Roemer & Orsillo, 2007;

Roemer, Salters, Raffa, & Orsillo, 2005). Gross has distinguished between antecedent and response-focused emotion regulation. Antecedent emotion regulation involves cognitive strategies such as cognitive reappraisal, that manipulate the input to the emotion system, while response-focused emotion regulation, in contrast, deals with strategies such as emotion suppression that target the output. We will suggest that antecedent and response-focused strategies are not purely separate and independent. For example, exaggerated perceptions of approach movement and threat escalation may elicit more intense emotion and fears of loss of emotional control and thereby lead to selection of different response-focused strategies than other (Riskind & Kleiman, 2012). For example, such dynamic perceptions can help drive elevated fears of loss of emotional control and experiential avoidance, as well as intensify and prolong worry episodes and fears of loss of self-control.

Implications for Vulnerability and Treatment of Anxiety and Anxiety Disorders

Ultimately, our aim in this book is to demonstrate that dynamic perceptions of growing threat and the LVM have important ramifications for improving our understanding of anxiety, fear, and worry—including the information processing and cognitive biases associated with them, the cognitive vulnerabilities that put a person at risk for these, and possible remediation of these in treatment. As we will see, the LVM has implications for conceptualizing and understanding cognitive mechanisms, assessing cognitive mediators and vulnerabilities, and developing innovative strategies for designing novel treatment targets.

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