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A cognitive model of suicidal behavior: Theory and treatment

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ABSTRACT

With some prominent exceptions, much of the research designed to elucidate the nature, prevalence, and correlates of suicidal behavior has been conducted from an atheoretical perspective. Conversely, psychological theories to explain suicidal behavior are largely untested by rigorous experimental designs. We propose a cognitive model of suicidal behavior that is grounded in the empirical literature on cognitive and behavioral correlates of and risk factors for suicidal behavior. In addition, we demonstrate the manner in which the theoretical components are targeted in cognitive therapy for suicidal patients. We highlight aspects of the model with less empirical support, and we propose ways those constructs can be tested in future research.

1. A Cognitive model of suicidal behavior: theory and treatment

The public health significance of research into the causes and treatment of suicidal behavior is profound—suicide is the 11th leading cause of death among all age groups and the second leading cause of death among adults between ages 25 and 34 (Centers for Disease Control, 2007). Surviving family members and friends struggle to understand why their loved one resorted to suicide and what they could have done to prevent it, often experiencing complicated bereavement for an extended period of time (de Groot et al., 2007; Knieper, 1999). Mental health practitioners who experience the suicide of a patient agonize over feelings of shock, shame, anger, and betrayal; a sense of inadequacy; and fear of blame or lawsuit (Chemtob, Bauer, Hamada, Pelowski, & Muraoka, 1989; Gitlin, 2003; Hendin, Lipschitz, Maltsberger, Haas, & Whynecoop, 2000). Thus, research designed to understand suicidal behavior and evaluate the effectiveness of treatments for suicidal patients has great potential in saving lives and alleviating the suffering of patients and their close others.

The past 50 years has witnessed a surge of scientifically based research designed to identify the correlates of and risk factors for suicidal behavior. Although many psychological theories of suicidal behavior have been advanced (e.g., Baumeister, 1990; Joiner, 2005; Linehan, 1993; Rudd, 2004; Shneidman, 1996), much of the empirical work in this field, with some noteworthy exceptions, is conducted from an atheoretical, exploratory perspective and identifies an array of demographic, diagnostic, psychological, and environmental variables that are associated to a greater degree with suicidal behavior than with psychopathology in general. We believe that this body of literature has advanced the field; for example, results from a multitude of studies have converged to implicate many variables as risk factors for death by suicide, such as male gender, older age, depression, psychosis, alcohol and substance dependence, Axis II pathology, and social isolation (see Joiner, Brown, & Wingate, 2005; Mościcki, 1999; Oquendo, Currier, & Mann, 2006; Wenzel, Brown, & Beck, 2008, for reviews). These variables are factors that are now routinely considered in suicide risk assessments in clinical practice (Canapary, Bongar, & Cleary, 2002). However, the vast majority of people with these characteristics do not go on to commit suicide, and researchers find that models incorporating these variables fail to classify correctly even one patient who died by suicide (e.g., Goldstein, Black, Nasrallah, & Winokur, 1991). Moreover, these risk factors are usually identified over a period of months to years, when clinicians are called upon to determine patients' risk of suicidal behavior in the ensuing minutes or days (Pokorny, 1983). Thus, more work is needed to elucidate the processes underlying suicidal behavior in individual patients in real time, based on their clinical presentations.

We advocate for a unification of theoretical and empirical approaches to understanding suicidal behavior. A well-articulated theory of suicidal behavior has the potential to explain the mechanism underlying the cognitions, emotions, and behaviors that are observed at the time a person engages in a suicidal act (i.e., a suicide attempt or a completed suicide). Not only will such a theory help people understand why their loved one engaged in a suicidal act, but from a clinical standpoint, it will also illuminate logical points for intervention with a person who has survived a suicide

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attempt. Yet, any theory that explains suicidal behavior must be grounded firmly in the empirical literature. That is, it must incorporate the variables that have been found time and again to be associated with, or to predict, suicidal behavior. In this paper, we describe a cognitive model of suicidal behavior that is based on Beck's general cognitive theory of psychopathology and that integrates key psychological constructs that have been demonstrated in the empirical literature to be important in distinguishing suicidal from non-suicidal individuals.

In addition, we believe that theory should play a central role in developing new psychotherapy packages. Theory can guide the practitioner in understanding the individual patient in the context of constructs that empirical research indicates are important in conceptualizing pathological behavior. It can point to particular intervention strategies that would most directly target the symptoms associated with life interference and distress. It can provide a framework to ensure that treatment proceeds in a coherent manner, such that progress toward long-term goals is achieved, and session-by-session diversions are minimized. Over 40 years ago, Beck's cognitive therapy emerged from a theoretical approach suggesting that faulty perceptions and misinterpretations are a core feature of psychopathology. We adopt that framework in cognitive therapy for suicidal patients, and we augment this protocol with strategies that are influenced by our cognitive model and the empirical literature.

2. A cognitive model of suicidal behavior

Our cognitive model of suicidal behavior (Wenzel, Brown, et al., 2008) is presented in Fig. 1. The large ovals represent the three main constructs that underlie suicidal behavior from a cognitive perspective. The ovals become darker as the constructs become more directly relevant to understanding suicidal behavior, rather than abnormal behavior in general. We propose that d*ispositional vulnerability factors* are long-standing, trait-like variables that confer non-specific risk for psychiatric disturbance (i.e., diagnoses or symptoms of psychiatric disorders) as well as for suicidal behavior. *Cognitive processes associated with psychiatric disturbance* are the maladaptive cognitive contents (i.e., *what* people are thinking) and information processing biases (i.e., *how* people are thinking) that are associated with many types of psychiatric disorders and symptoms (cf. Ingram & Kendall, 1986). The arrows next to this oval indicate that a suicidal crisis is more likely to be activated as the frequency, intensity, and/or duration of these cognitive processes increase. *Cognitive processes associated with suicidal acts* are maladaptive cognitive contents and information processes that we

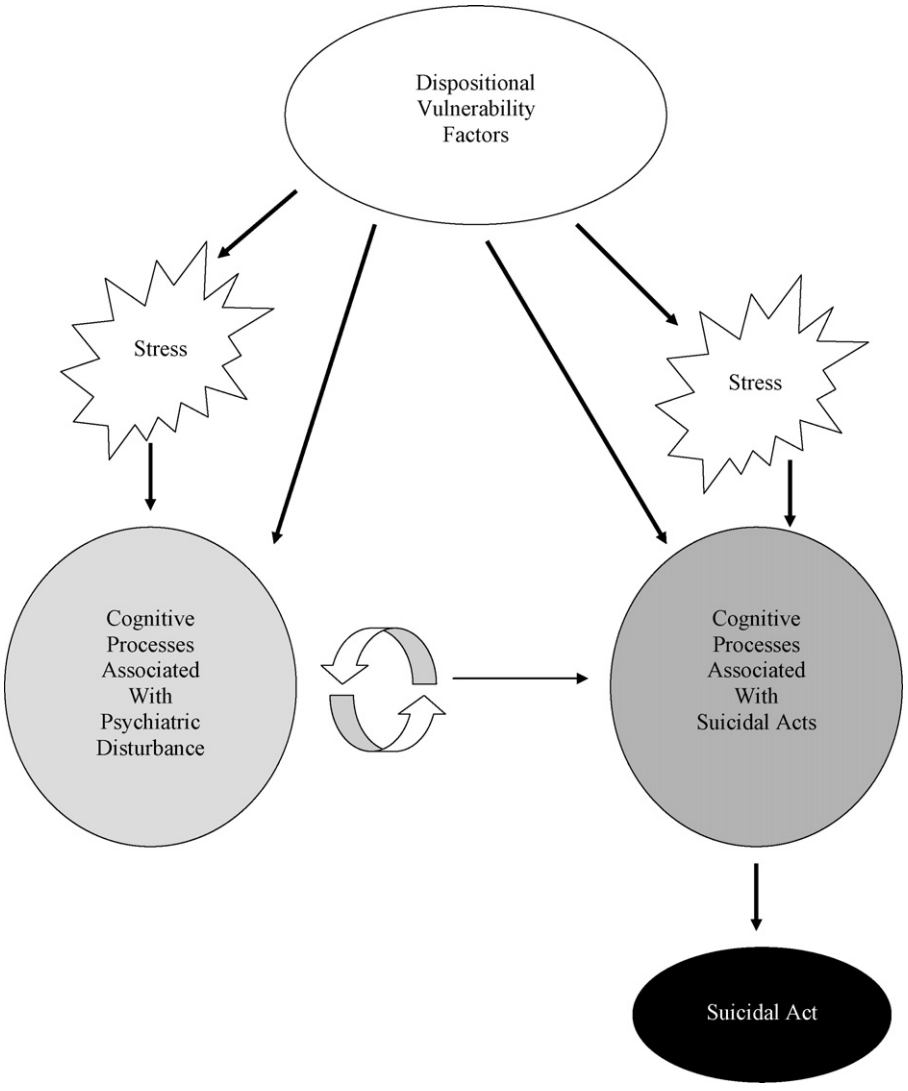

Fig. 1. A cognitive model of suicidal behavior.

hypothesize are at work when a person is in a suicidal crisis. We view a person as being in a suicidal crisis when he or she is experiencing suicide ideation (i.e., the person is experiencing thoughts, images, beliefs, voices, or other cognitions about intentionally ending one's life; Wenzel, Brown, et al., 2008) and/or engaging in behavior that indicates an intent to end one's life. These suicide-relevant cognitive processes culminate in the suicidal act, and we propose that the precise time at which a person moves forward with engaging in the suicidal act depends on the point at which he or she can no longer tolerate the distress associated with the overwhelming cognitions and emotions that emerge in the course of this crisis (i.e., the *threshold of tolerance*).

Like other diathesis-stress models to understanding abnormal behavior (e.g., Caspi et al., 2003), we view cognitive processes associated with psychiatric disturbance and suicide-relevant cognitive processes as being activated in the context of life stress. Life stress often prompts the onset of psychiatric symptoms (i.e., icon denoting stress on the left side of the figure). However, additional life stress is usually necessary for cognitive processes associated with psychiatric disturbance to activate suicide-relevant cognitive processes (i.e., icon denoting stress on the right side of the figure). The number of severity of dispositional vulnerability factors is related to the amount of life stress it takes to activate a suicidal crisis (cf. Mann, Waternaux, Haas, & Malone, 1999; Oquendo et al., 2004). For people who have few dispositional vulnerability factors and are experiencing mild psychiatric disturbance, it takes a great deal of life stress to activate suicide-relevant cognitive processes. Conversely, for people who have many dispositional vulnerability factors and are experiencing severe psychiatric disturbance, much less life stress is needed to activate suicide-relevant cognitive processes.

This model is a heuristic that can be used as a starting point for understanding a suicidal act in any one individual. Each person is characterized by a unique constellation of dispositional vulnerability factors and cognitive processes associated with psychiatric disturbance, and the greater the "loading" of these variables, the greater the likelihood that a person will engage in suicidal behavior in the context of life stress (cf. Rudd, 2004). However, there is no one combination of dispositional vulnerability factors and psychiatric symptoms that "guarantees" that a person will engage in suicidal behavior. If fact, the likelihood of engaging in suicidal behavior varies *between* individuals as well as *within* individuals, such that a person's history of suicidal behavior (e.g., Joiner & Rudd, 2000), current level of social support, and other factors pertaining to his or her current situation likely influence the threshold at which he or she can no longer tolerate the distress associated with the acute suicidal crisis.

In the next sections, we describe the specific details associated with our three main constructs – dispositional vulnerability factors, cognitive processes associated with psychiatric disturbance, and cognitive processes associated with suicidal acts – and relevant empirical research that supports their inclusion in our model.

2.1. Dispositional vulnerability factors

As stated previously, dispositional vulnerability factors are long-standing psychological characteristics of a person that increase the likelihood that he or she will engage in a suicidal act. We do not regard these variables as risk factors because the majority of empirical research examining them in relation to suicidal behavior has adopted cross-sectional designs to compare suicidal and non-suicidal patients at one point in time. In order for a variable to be regarded as a risk factor, it must be established that it preceded suicidal behavior in a prospective design, where research participants are assessed at the time they enroll in the study and are tracked longitudinally to determine the degree to which the variable predicts future suicidal behavior (Kraemer et al., 1997). We use the term "vulnerability" because we *hypothesize* that these variables increase the likelihood that a suicidal crisis will emerge during life stress. We have identified five main categories of dispositional vulnerability factors that have been considered in the empirical literature: (a) impulsivity and related constructs, (b) problem solving deficits, (c) an overgeneral memory style, (d) a trait-like maladaptive cognitive style, and (e) personality.

2.2. Impulsivity and related constructs

Impulsivity is a perhaps the most widely studied psychological characteristic in suicidal populations. However, the literature is far from conclusive in pointing to a specific mechanism by which impulsivity increases the likelihood of suicidal behavior. One major limitation of this literature is that there is wide variability in the operational definition of impulsivity (Endicott & Ogloff, 2006). Some scholars regard impulsivity as a personality trait characterized by a focus on the present and a lack of planning, which can be measured by paper-and-pencil tests (e.g., Barratt, 1959). Others define impulsivity more specifically as the inability to inhibit responding, which can be measured by reaction time tasks on the computer (e.g., Dougherty et al., 2004; Swann et al., 2005). Oftentimes, performance on one but not both of these measures indicates that suicidal patients are more impulsive than non-suicidal patients (e.g., Swann et al., 2005), raising the possibility that these types of measures are assessing different constructs.

Many studies using paper-and-pencil measures of impulsivity find that patients with a history of suicide attempts report higher levels of impulsivity than patients without a history of suicide attempts (e.g., Brodsky et al., 2001; Corruble, Benyamina, Bayle, Falissard, & Hardy, 2003; Michaelis et al., 2004). However, others have failed to replicate this finding (e.g., Roy, 2001, 2004), and a recent study found that patients who made impulsive suicide attempts (defined as a lack of pre-meditation) scored no higher on a self-report measure of impulsivity than patients who had planned their attempts (Baca-Garcia et al., 2005). Although fewer studies have been conducted using laboratory-based reaction time tasks, the literature to date suggests that suicidal patients have more difficulty inhibiting responding, resulting in more commission errors, than non-suicidal patients (e.g., Dougherty et al., 2004; Horesh, 2001; Kashden, Fremouw, Callahan, & Franzen, 1993; Swann et al., 2005). At a very general level, we can conclude that impulsivity is a correlate of suicidal behavior. However, this conclusion must be regarded as tentative because several studies have failed to find a significant association between impulsivity and suicidal behavior, and it is unclear whether the same construct is being measured in different studies that purport to be investigating impulsivity.

One reason for the unclear pattern of findings in this literature may be that impulsivity is only one part of a broader construct that is more directly associated with suicidal behavior. For example, Mann et al. (1999) found that when self-reported impulsivity was examined in conjunction with measures of self-reported hostility and aggression, patients who had attempted suicide were clearly distinguished from patients who did not attempt suicide, suggesting that a broader "disinhibitory psychopathology" characterizes suicidal patients. Brent and Mann (2005, 2006) indicated that impulsive aggression, a hybrid of these three constructs that is defined as the tendency to respond to aggravation with aggression, is highly heritable and increases the likelihood that a person will actually act on suicidal thoughts. Recently, Keilp et al. (2006) found that, after controlling for the presence of a borderline personality disorder diagnosis, aggression was the only one of the three constructs to distinguish between patients who did and did not

attempt suicide. Thus, it is possible that impulsivity in and of itself is a peripheral construct in understanding suicidal behavior and that a mechanism with more explanatory power to account for suicidal behavior is aggression, or the confluence of aggression, hostility, and impulsivity.

2.3. Problem solving deficits

A second psychological variable that has been implicated in understanding suicidal behavior is problem solving deficits. Empirical research suggests that, relative to non-suicidal individuals, suicidal individuals generate fewer solutions to problems (Pollock & Williams, 2004), are less likely to use the alternatives they generate (Schotte & Clum, 1987), estimate a greater likelihood of negative consequences associated with proposed solutions (Schotte & Clum, 1987), and are more likely to use denial or avoidance strategies in dealing with their problems (Orbach, Bar-Joseph, & Dror, 1990). Like impulsivity, problem solving is a broad category that can have many distinct operational definitions, and there is some evidence that problem solving is associated with the broad spectrum of suicidality differently depending on the manner in which it is conceptualized. For example, when problem solving is defined as the ability to generate multiple solutions to problems, it is associated with suicide ideation but not hopelessness (Schotte & Clum, 1982) and interacts with stress to predict suicide ideation over time (Priester & Clum, 1993). However, when problem solving is defined as confidence in one's ability to solve problems, it is strongly associated with hopelessness and moderately associated with suicide ideation (Dixon, Happner, & Anderson, 1991; Rudd, Rajab, & Dahm, 1994). Reinecke, DuBois, and Schultz (2001) reported that depression and hopelessness mediated the relation between three aspects of problem solving, one of which involved low problem solving self-efficacy, and suicide ideation, raising the possibility that having a positive attitude toward problem solving buffers a person from the depression and hopelessness that would in turn prompt suicide ideation.

Thus, problem solving deficits are a robust characteristic of suicidal individuals, although, as we saw with impulsivity, it is important to specify the precise type of problem solving deficit in work designed to elucidate mechanisms that underlie suicidality. Unlike the literature on impulsivity, however, a much greater percentage of studies focus on suicide ideation as an outcome, rather than suicide attempts, and use undergraduate students rather than patients as participants. Moreover, work in this area has been guided by an early model by Clum, Patsiokas, and Luscomb (1979), which theorizes that problem solving deficits emerge in cognitively rigid people under conditions of high stress, which should in turn prompt hopelessness and suicide ideation. Empirical research has failed to confirm the mediational role of problem solving deficits (e.g., Schotte & Clum, 1982), and instead, we propose that problem solving deficits generate undo life stress, creating a context that is ripe for a host of psychiatric symptoms, hopelessness, and eventually, suicide ideation to emerge. In other words, we view problem-solving deficits as a dispositional characteristic that is associated with a host of adverse outcomes, including psychiatric disturbance and suicidal crises.

2.4. Overgeneral memory style

One could speculate that problem solving impairment in suicidal patients is due, in part, to a third dispositional vulnerability factor, an overgeneral memory style. Patients characterized by an overgeneral memory style have difficulty retrieving specific personal memories from their past. When prompted to retrieve one of these memories, they make vague responses that summarize a number of similar events (i.e., categoric memories; e.g., "When I spent summers at the lake as a child"). This cognitive style is problematic because it prevents people from adequately accessing their store of personal memories when they are called upon to make judgments and decisions in specific situations (Williams, Barnhoffer, Crane, & Duggan, 2006). Williams and Dritschel (1988) suggested that suicidal patients can access general information when solving problems but that their search for specific information is truncated before they arrive upon the necessary details. Indeed, empirical research confirms that there is a significant association between the failure to retrieve specific memories and problem solving deficits in suicidal patients (Evans, Williams, O'Loughlin, & Howells, 1992; Pollock & Williams, 2001; Sidley, Whitaker, Calam, & Wells, 1997). Williams et al. (2006) suggested that an overgeneral retrieval style exacerbates hopelessness and suicide ideation because suicidal individuals perceive that there is no escape from their distress.

2.5. Trait-like maladaptive cognitive style

A fourth category of dispositional vulnerability factors is a trait-like maladaptive cognitive style. This construct refers to the tendency to make non-specific cognitive distortions (e.g., dichotomous thinking, jumping to conclusions, and magnification) and endorse non-specific dysfunctional attitudes. We emphasize the term "trait-like" because we believe that (a) some patients who are vulnerable to suicidality have the tendency to respond with this cognitive style even when they are not experiencing current psychiatric symptoms or a current suicidal crisis, and (b) the content is more similar to a general approach to viewing the world, rather than a specific cognitive style associated with a particular type of psychiatric disturbance. Empirical research demonstrates that suicidal patients endorse these cognitive distortions and dysfunctional attitudes to a greater degree than non-suicidal psychiatric patients (Ellis & Ratliff, 1986), even when they are not in a suicidal state (Neuringer & Lettieri, 1971). In fact, in his consideration of dichotomous thinking as a stable characteristic of suicidal individuals, Neuringer (1988) stated that ". . . dichotomous cognitions are an ingrained and resistant-to-change way of seeing the world and of relating to the self and environment . . . dichotomous thinking is an essential characteristic of people (i.e., it is a dispositional quality, very much like 'intelligence') (p. 50)." Thus, a trait-like maladaptive cognitive style may reflect a chronic cognitive pattern that exacerbates distress in the context of life stressors.

2.6. Personality

Finally, certain personality traits can be viewed as dispositional vulnerability factors for suicidal behavior (see Brezo, Paris, & Turecki, 2006, for a review).[1] A multitude of studies have demonstrated that suicide ideation and suicide attempts are associated with neuroticism, psychoticism, and introversion (e.g., Benjaminsen, Kraruo, & Lauritzen, 1990; Farmer et al., 2001; Lester & Lindsey, 1987; Lolas, Gomez, & Suarez, 1991; Maser et al., 2002; Nordstrom, Schalling, & Asberg, 1995; Roy, 2002, 2003). In addition, other personality traits have been identified in samples of ideators and attempters in select studies, such as self-criticalness (Cox, Enns, & Clara, 2004), novelty seeking (Fergusson, Beautrais, & Horwood, 2003; Fergusson, Woodward, & Horwood, 2000),

[1] Although many scholars examine impulsivity amongst other traits with the aim of identifying personality correlates of suicidality (e.g., Brezo et al., 2006), we omit consideration of these variables in this section because they were examined in a previous section.

harm avoidance (Brent, Johnson, Bartle, & Bridge, et al., 1993; Ruchkin, Schwab-Stone, Koposov, Vermeiren, & King, 2003), cynicism (Nierenberg, Ghaemi, Clancy-Colecchi, Rosenbaum, & Fava, 1996), sensitivity (Fritsch, Donaldson, Spirito, & Plummer, 2000), dependency (Benjaminsen et al., 1990; Pallis & Jenkins, 1977), passivity (Benjaminsen et al., 1990), and the decreased tendency to be warm, gregarious, and experience positive emotions (Useda, Duberstein, Conner, & Conwell, 2004). Moreover, empirical research has established that there is an increased likelihood for suicide attempters to be characterized by borderline traits (Joffe & Regan, 1989) or borderline personality disorder (Soloff, Lis, Kelly, Cornelius, & Ulrich, 1994; Yen et al., 2003). The few studies that have considered personality traits associated with completed suicides have found that many of these same variables are relevant (e.g., Duberstein, Conwell, & Caine, 1994).

Perfectionism is the most widely studied personality trait in the suiciology literature. Like impulsivity and problem solving, there are several facets of perfectionism. The facet that empirical research has been identified as being most relevant to suicide ideation and suicidal behavior is *socially prescribed perfectionism*, which is defined as "an interpersonal dimension involving perceptions of one's need and ability to meet the standards and expectations imposed by others" (p. 216; Hewitt, Flett, Sherry, & Caelian, 2006). Empirical research demonstrates that socially prescribed perfectionism predicts suicide ideation above and beyond depression and hopelessness (Dean, Range, & Goggin, 1996; Hewitt, Flett, & Turnbull-Donovan, 1992). There is a paucity of research examining socially prescribed perfectionism's relation to suicide attempts and completions, although one study (i.e., Hewitt, Norton, Flett, Callender, & Cowan, 1998) reported that alcoholic inpatients who had made a serious suicide attempt scored higher on this dimension than alcoholic inpatients who had not made a suicide attempt. Hewitt et al. (2006) speculated that perfectionism increases suicide ideation by creating stress, accentuating the adversity of stress, and focusing people's attention on their flaws or failures rather than on their strengths and successes. We suspect that many personality styles in a similar manner and note that there is overlap between trait-like maladaptive cognition and personality in many instances, such as perfectionism.

From this cursory review of the personality-suicide literature, it is evident that many personality characteristics, particularly those associated with perfectionism and the higher-order dimension of neuroticism, are associated with the broad spectrum of suicidality. Nearly all of these studies compared scores on measures assessing these traits between suicidal and non-suicidal psychiatric patients, which suggests that these traits are elevated above and beyond what is typically observed in people with psychiatric disturbance. However, the precise role that personality plays in prompting suicidal crises is unclear, and we suspect that many of these personality traits are especially distal from suicidal crises and create a context for many of the other dispositional vulnerability factors to emerge.

2.7. Summary

In all, we have identified five hypothesized psychological dispositional vulnerability factors that empirical research has demonstrated are elevated in suicidal patients relative to non-suicidal psychiatric patients—impulsivity (and aggression and hostility), problem solving deficits, an overgeneral memory style, a trait-like maladaptive cognitive style, and many personality variables, particularly perfectionism and neuroticism. We propose that they are associated with suicidal behavior in three ways. First, they have the potential to create life stress, which can activate symptoms of psychiatric disturbance, suicidal crises, or both (i.e., both icons denoting stress in Fig. 1). Second, they have the potential to exacerbate the course of psychiatric disturbance, increasing the frequency, intensity, and/or duration of cognitive processes associated with psychiatric disturbance that could, in turn, initiate a suicidal crisis (i.e., the arrows next to this oval in Fig. 1). Third, they have the potential to reduce one's ability to cope and disrupt adaptive cognitive processing during a suicidal crisis (i.e., the dark gray oval representing suicide-relevant cognitive processes in Fig. 1). For example, dispositional impulsivity could affect the speed at which a person decides to attempt suicide; dispositional problem solving deficits could prevent a person from identifying a solution other than suicide; and a trait-like maladaptive cognitive style could set the stage for a person to draw rigid, erroneous, and extreme conclusions about his or her life during a suicidal crisis. Thus, we view many of these dispositional vulnerability factors as being both distal and proximal to suicidal behavior, as they operate in both trait- and state-like manners (e.g., Corruble, Damy, & Guelfi, 1999; Schotte, Cools, & Payvar, 1990).

2.8. Cognitive processes associated with psychiatric disturbance

According to Beck (2005), "the cognitive model of psychopathology stipulates that the processing of external events or internal stimuli is biased and therefore systematically distorts the individual's construction of his or her experiences, leading to a variety of cognitive errors (pp. 953–954)." Implicit in this model is that distorted cognition is intricately related to negative emotional experiences and maladaptive responses. Beck originally developed this theory with depression (e.g., Beck, 1967) but has since applied it to many other domains of psychiatric disturbance, such as anxiety disorders (Beck & Emery, 1985), substance abuse (Beck, Wright, Newman, & Liese, 1993), personality disorders (Beck, Freeman, & Davis, 2004), and schizophrenia (Beck & Rector, 2005). These cognitive processes associated with psychiatric disturbance, as captured in the left oval in Fig. 1, are different than the dispositional vulnerability factor of trait-like maladaptive cognition because they largely vary with symptom severity, and their content is more specific to the particular pathology expressed (i.e., are characterized by cognitive content specificity; Beck, Brown, Steer, Eidelson, & Riskind, 1987; Westra & Kuiper, 1997).

The specific type of biased information processing and maladaptive cognitive content that is expressed depends upon the nature of a person's underlying schema. According to Clark and Beck (1999), schemas are "relatively enduring internal structures of stored generic or prototypical features of stimuli, ideas, or experience that are used to organize new information in a meaningful way thereby determining how phenomena are perceived and conceptualized" (p. 79). That is, schemas are hypothetical cognitive structures that help people organize and make sense of stimuli that they encounter in their daily lives. Metaphorically, we view schemas as the "lens" through which people view the world. Cognitive theory indicates that schemas are highly ingrained, are rooted in early experiences, and develop from messages received from significant others during childhood and adolescence.

Cognitive theory also suggests that schemas associated with psychiatric disturbance facilitate biased information processing, such that concerns associated with the domain of pathology are given preference. For example, it is proposed that depressive schemas contain negative attitudes about loss and failure and influence depressed individuals to place greater importance on processing negative information than positive information (Beck, 1967) and that danger schemas contain exaggerated beliefs about harm or suffering and one's ability to cope with it, which influences anxious individuals to place greater importance on processing indications of threat than indications of neutrality or safety (Beck & Emery, 1985). According to cognitive theory, these schemas often

lay dormant until they are activated in times of life stress (i.e., the icon denoting stress on the left side of Fig. 1), at which time they prompt negative cognitive content and facilitate biased information processing. Over 90% of suicidal individuals are diagnosed with at least one psychiatric disorder (cf. Bertolote, Fleischmann, De Leo, & Wasserman, 2003), suggesting that that are characterized by at least one schema associated with psychiatric disturbance. However, we propose that suicidal individuals are also characterized by *suicide* schemas that are specific to suicidal behavior. The nature of these suicide schemas is described in the next section.

We have highlighted two central tenets of Beck's cognitive theory of psychopathology—(a) that there are strong associations among biased information processing, negative cognitive content, mood, and behavior, and (b) that underlying schemas determine the particular nature of biased information processing and negative cognitive content. Although some aspects of this model of have received more empirical support than others (see Haaga, Dyck, & Ernst, 1991, for a review on the empirical support for the cognitive model of depression), we incorporate it into our cognitive model of suicidal behavior because critical reviews suggest that the majority of work designed to test aspects of the cognitive model are supportive (e.g., Clark & Beck, 1999). The cognitive model of psychopathology characterizes most suicidal individuals, and pathology-relevant cognitive processes increase the risk for suicidal behavior (cf. Harris & Barraclough, 1997). However, these processes are not unique to suicidal individuals, as the vast majority of people characterized by psychiatric disturbance do not engage in suicidal acts. We propose that cognitive processes associated with psychiatric disturbance have the potential to activate cognitive processes associated with suicidal acts. Specifically, we posit that a greater frequency, intensity, and/or duration of negative cognitions associated with psychiatric disturbance increase the likelihood that a suicide schema will be activated, which in turn facilitates suicide-specific cognitive processes. The cognitive processes at work in suicidal crises are described in the next section.

2.9. Cognitive processes associated with suicidal acts

Many of the constructs associated with our conceptualization of suicide-relevant processes emerged from the consideration of the central role of hopelessness in understanding suicidal behavior. Hopelessness is defined as negative expectations for the future (Minkoff, Bergman, Beck, & Beck, 1973). Beck and his colleagues have conducted over 30 years' worth of empirical research indicating that hopelessness is more strongly related to suicidal intent than is depression (e.g., Beck, Kovacs, & Weissman, 1975; Kovacs, Beck, & Weissman, 1975; Minkoff et al., 1973) and that it is a robust predictor of eventual suicide in psychiatric inpatients hospitalized for suicide ideation (Beck, Steer, Kovacs, & Garrison, 1985) and in psychiatric outpatients (Beck, Brown, Berchick, Stewart, & Steer, 1990). This body of research demonstrates that hopelessness is a cognitive orientation that is especially pronounced in suicidal patients, rather than in psychiatric patients in general.

Research also has shown that stable levels of hopelessness that persist over time are particularly strong predictors of eventual suicide (Dahlsgaard, Beck, & Brown, 1998; Young et al., 1996), which has prompted some clinical scientists to distinguish between state and trait hopelessness. State hopelessness is the degree of hopelessness that is activated at any one moment (e.g., during a suicidal crisis), whereas trait hopelessness is the degree to which an individual has stable, negative expectancies for the future (Beck, 1986). We regard trait, or chronic, hopelessness as one type of suicide schema that can prompt suicide-relevant cognitive processes when activated by life stress. That is, when trait hopelessness is activated, it interacts with environmental stressors to escalate state hopelessness.

Although results from empirical studies demonstrate a strong association between hopelessness and suicidality, there are many instances in which hopelessness has little relevance in explaining suicidal behavior. For example, hopelessness is not elevated in people who make attempts with a low intent to die and with the intent of getting the attention or communicating something to others (Skogman & Öjehagen, 2003). We argue that hopelessness is most relevant to people who make premeditated attempts with a high intent to die, but that its role is diminished in people who make impulsive attempts with a low intent to die. In the latter instance, it is likely that life stressors accumulate to a point where the person perceives that they are unbearable and cannot tolerate the associated distress, thereby increasing state hopelessness. Thus, in our cognitive model there are (at least) two types of suicide schemas—those characterized by chronic hopelessness, and those characterized by perceptions of unbearability (cf. Fawcett, Busch, Jacobs, Kravitz, & Fogg, 1997). There is some indirect support for this distinction, as empirical research suggests that impulsivity correlates negatively with hopelessness in suicidal patients (Suominen, Isometsa, Henriksson, Ostamo, & Lonnqvist, 1997) and that those who make impulsive attempts (i.e., attempts that were contemplated for less than 5 min) are less depressed than those who make non-impulsive attempts (Simon et al., 2001).

Regardless of which suicide schema is triggered, we suggest that once it is activated, there is an increasingly large likelihood that the person will experience state hopelessness in times of continued stress and adversity. That is, we view state hopelessness as an outcome associated with the activation of any suicide schema, not only a suicide schema characterized by chronic hopelessness. This process is illustrated in Fig. 2. State hopelessness may comprise ideas that one's future will not improve (e.g., "Things will never get better."), which is indicative of chronic hopelessness, or instead, it may comprise ideas such as "I can't take this anymore," which is indicative of unbearability. As the level of state hopelessness increases, so does the probability that the individual will experience acute suicide ideation.

State hopelessness is a type of cognitive content, in that it reflects the conclusion that one's current situation is intolerable and cannot be changed. As mentioned previously, maladaptive cognition also involves biased information processing. We propose two suicide-relevant information processing biases that operate in suicidal crises. Fig. 3 displays a model that conceptualizes the manner in which state hopelessness and these information processing biases work in conjunction to escalate suicide ideation and increase the likelihood of a suicidal act.

First, there is evidence that patients who have recently made a suicide attempt demonstrate attentional biases toward suicide-relevant stimuli (e.g., the word "suicide") on the emotional stroop task (Becker, Strohbach, & Rinck, 1999; Williams & Broadbent, 1986). In these studies, patients who had made recent attempts named the colors of suicide-relevant stimuli more slowly than non-suicidal psychiatric patients and more slowly than they named the colors of non-suicide-relevant, negative stimuli. It is reasoned that slowed color-naming of these stimuli is indicative of an attentional biases toward suicide-relevant words, as the contents of the words capture patients' attention from the color-naming task at hand. Participants in both the Becker et al. (1999) and Williams and Broadbent (1986) studies completed the Emotional stroop task after they were stabilized and the suicidal crisis had passed; thus, there we cannot say with certainty that this process was at work at the time of a suicidal crisis. Nevertheless, we hypothesize that attentional biases toward suicide-relevant stimuli accelerate suicidal crises when suicide-relevant cues are detected when a person

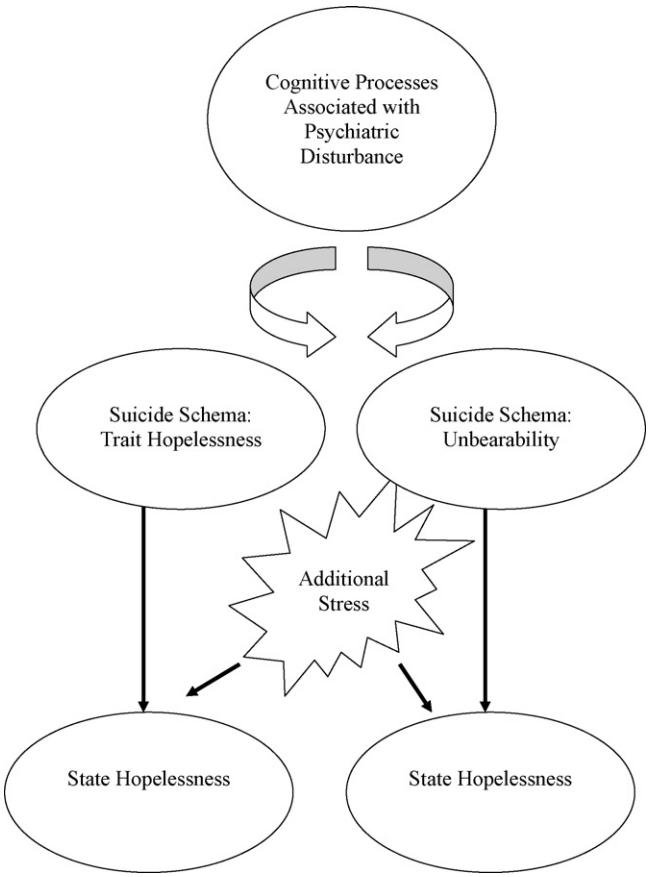

Fig. 2. Suicide-relevant schemas, state hopelessness, and suicide ideation.

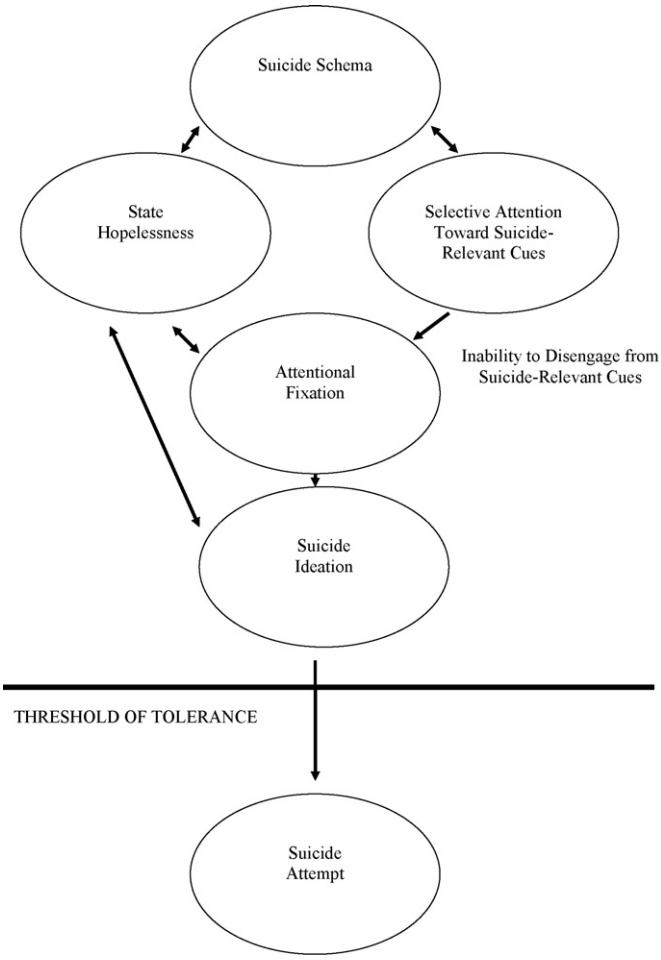

Fig. 3. Suicide-relevant cognitive processes.

is experiencing state hopelessness. When these conditions converge, we posit that the person will have difficulty disengaging from suicide-relevant stimuli, become overwhelmed by them, and fixate on escape and suicide.

Second, we have observed clinically that many patients describe a state of cognitive disorientation in the time immediately preceding their suicide attempt. They experience racing thoughts, often accompanied by acute restlessness and agitation, and "tunnel vision," focusing on suicide as the only answer to their problems at the expense of less harmful options. They are preoccupied by the idea that there is "no way out" and report that they are in a state of desperation. Others have observed similar phenomena; for example, Silverman (2006) noted many suicide attempters' "cognitions were impaired and they were in such psychological pain that it was impossible to make rational choices or decisions about ending their lives" (p. 528). Baumeister (1990) theorized that suicidal people exhibit cognitive deconstruction, or a narrow focus on the present that precludes more sophisticated information processing and problem solving. Shneidman (1985) observed that suicidal patients are characterized by cognitive constriction, such that there is a "tunneling or focusing or narrowing of the range of options usually available to that individual's consciousness" (p. 138). We believe that these comments are indicative of a cognitive phenomenon we label *attentional fixation*. Attention fixation includes not only the narrow focus of attention that is captured in cognitive deconstruction and cognitive constriction, but also a preoccupation with suicide as a solution. Although attentional fixation has not yet been measured systematically and prospectively in samples of patients who attempt suicide, studies examining correlates of inpatient suicide find that significant anxiety and/or agitation in the 7 days preceding the attempt is characteristic of the majority of inpatients who complete suicide (Busch, Clark, & Fawcett, 1993; Busch, Fawcett, & Jacobs, 2003; Sharma, Persad, & Kuneneman, 1998). It is likely that anxiety and agitation are the emotional and behavioral expressions of attentional fixation.

We propose that attentional fixation interacts with state hopelessness to create a downward cognitive-affective spiral, exacerbating suicide ideation and creating a context that is ripe for a suicidal act. When suicidal individuals are in a hopeless state, they perceive that they have few options to solve their problems. Thus, they are at increased risk of identifying suicide as an appropriate solution, rather than systematically considering alternative means to solving their problems. The more they fixate on suicide as the only solution, the more hopeless they are about their life circumstances or the more likely they are to perceive their life circumstances as unbearable. Increased state hopelessness further overwhelms suicidal individuals, clouds their judgment, and increases the likelihood that they will conclude that "there's no way out." In other words, there is a bidirectional association between state hopelessness and attentional fixation—state hopelessness increases attentional fixation, and the narrow focus on suicide as the only option increases state hopelessness.

Although we believe that this cognitive-affective-behavioral characterization of attentional fixation is relevant to many individuals who engage in suicidal acts, we acknowledge does not pertain to *all* of these people. For example, some individuals, characterized by high levels of trait hopelessness, carefully plan their attempts

over a long period of time, and demonstrate relief rather than anxiety, agitation, or confusion. We still believe these individuals exhibit the cognitive aspects of attentional fixation in these instances, as they are convinced that suicide is the only solution and fail to entertain other alternatives. However, these individuals lack many of the affective and behavioral correlates indicative of the desperation associated with attentional fixation.

To summarize, cognitive processes associated with suicidal acts are triggered when a suicide schema is activated. In most cases, suicide schemas are activated as a function of three sets of variables—dispositional vulnerability factors; frequent, intense, and/or prolonged cognition associated with psychiatric disturbance; and life stress. In the small minority of suicidal patients without psychiatric disturbance, suicide schemas are activated from a high loading of dispositional vulnerability factors and substantial life stress. Although we focused on two main suicide schemas – those associated with chronic hopelessness, and those associated with perceptions of unbearability – we suspect there are other suicide schemas that would activate suicidal crises (see Fawcett et al., 1997). Regardless of the particular type of suicide schema, once that schema is activated, it creates a context for state hopelessness to emerge. Suicide ideation emerges from a combination of state hopelessness and biased processing of suicide-relevant cues, such as attentional biases toward reminders of suicide and attentional fixation on suicide as the only relief to one's distress. Also, dispositional vulnerability factors can exert acute effects during suicidal crises, influencing the intensity and duration of suicide-relevant cognitive processes. A suicidal act results when a person can no longer tolerate the despair that results from this cognitive-emotional state (i.e., the threshold of tolerance).

Although a comprehensive review of existing psychological theories of suicidal behavior is beyond the scope of this article, we briefly comment on similarities and differences between our model and some others. We believe that our cognitive model of suicide is compatible with existing theoretical perspectives on suicidal behavior; rather than contradicting them, it specifies more precisely the mechanism by which (a) dispositional vulnerability factors put individuals at risk for suicidal acts, (b) cognitive processes associated with psychiatric disturbance build to activate cognitive processes relevant to suicidal acts, and (c) psychological events unfold once a suicidal crisis is in motion. For example, Rudd (2004) proposed that a person's loading on risk factors increases the likelihood that suicide-relevant cognitive processes are activated. This idea is incorporated in our cognitive model, in that we hypothesize that a greater loading on dispositional vulnerability factors increases the likelihood of suicidal crises. The notion of the suicidal mode is central to Rudd's model, and one could argue that the specific constructs presented our model are a more precise representation of the cognitive components of the suicidal mode. Joiner (2005) suggested that three conditions must be in place before a person engages in a suicidal act: (a) the ability to enact lethal self-harm, (b) failed belongingness, and (c) perceived burdensomeness. We suggest that these perceptions of failure feed into suicide schemas, particularly the hopelessness-based schema. Although we do not explicitly include the acquired ability to enact lethal self-injury into our model, it could be argued that this is another dispositional vulnerability factor. As one's acquired ability to enact lethal self-harm increases, it is more likely that the direct path from dispositional vulnerability factors to cognitive processes associated with suicidal acts would be activated and that this construct would assume central importance, relative to the other dispositional vulnerability factors. Finally, we agree with Mann et al. (1999) and Oquendo et al. (2004) that some dispositional vulnerability factors could act as diatheses that interact with stress to facilitate suicidal crises.

3. Cognitive therapy for suicidal patients

Cognitive therapy for suicidal patients is an active, targeted psychosocial intervention that aims to provide patients skills to (a) modify suicide schemas, (b) interrupt cognitive processes associated with suicidal crises, and (c) modify dispositional vulnerability factors that played a central role in the recent suicidal crisis that brought them into treatment. By developing strategies to achieve these aims, it is hoped that patients will be less likely to engage in future suicidal behavior and better able to cope with distress that, in the past, would have prompted a suicidal crisis. This treatment has been evaluated empirically in a randomized controlled trial (Brown et al., 2005) and described in other venues (Berk, Henriques, Warman, Brown, & Beck, 2004; Henriques, Beck, & Brown, 2003; Wenzel, Brown, et al., 2008). We briefly describe the treatment here to illustrate the manner in which it achieves its aim – suicide prevention – in light of our cognitive model.

A unique aspect of cognitive therapy for suicidal patients is that it comprises three main phases. The *early phase* of treatment is devoted to (a) socializing patients into the structure and process of cognitive therapy, (b) engaging patients in treatment, (c) conducting a suicide risk assessment, (d) developing a safety plan, (e) having patients provide a narrative description of the events prior to their suicidal crisis, and (f) conveying a sense of hope (Wenzel, Brown, et al., 2008). Engaging patients in treatment and conveying a sense of hope are particularly important to address when working with suicidal patients, as research suggests that only a minority of people who attempt suicide follow through with outpatient treatment after hospitalization (e.g., O'Brien, Holton, Hurren, & Watt, 1987), and that many suicidal patients are ambivalent or hopeless about treatment because previous courses of treatment had been unsuccessful (Wenzel, Jeglic, Levy-Mack, Beck, & Brown, in press). In addition, clinicians should be sure to complete a thorough suicide risk assessment (see American Psychiatric Association, 2003) to identify the risk and protective factors that characterize the patient, determine the level of risk the patient poses, and decide upon the appropriate level of care (e.g., frequency of sessions, partial hospitalization). In the first session of treatment, the clinician and patient collaboratively develop a safety plan, or a hierarchically arranged list of coping strategies that the patient can use during a suicidal crisis consisting of (a) warning signs that lead to suicidal crises, (b) coping strategies that can be used without the assistance of others, (c) names and contact information of close friends and family members that can be relied upon for support during suicidal crises, and (d) contact information for mental health professionals during business hours and after hours (Wenzel, Brown, et al., 2008). The clinician and patient add to the safety plan in subsequent sessions as additional coping strategies are developed. In the remaining sessions of the early phase of treatment, patients provide a detailed narrative description of the external and internal events that led to the suicidal crisis that brought them into treatment so that the clinician can develop a cognitive case conceptualization that will, in turn, identify specific points of intervention.

The *intermediate phase* of treatment aims to help patients develop cognitive and behavioral strategies to manage suicide ideation and reduce the likelihood of engaging in future suicidal behavior. In the sections that follow, we describe some of the strategies that were developed to modify the maladaptive cognitive patterns that are included in the cognitive model of suicidal acts. Finally, in the *later phase* of treatment the clinician and patient prepare for the termination of the acute phase of treatment. Although termination may mean discontinuation of regularly scheduled sessions, more often it involves a referral to other mental health practitioners to address other issues or moving into the continu-

ation phase of treatment with the same clinician to address these other issues. In order to assess whether the patient is ready for termination, the clinician initiates a relapse prevention protocol, which involves a series of guided imagery exercises in which the patient vividly imagines the series of events leading to the recent suicidal crisis and describes, in detail, the manner in which he or she would use the coping strategies learning in treatment to reduce distress. If the patient successfully completes the relapse prevention protocol, termination or transition to a maintenance phase of treatment may be indicated. Conversely, if the patient is unable or unwilling to complete the relapse prevention protocol, then the intermediate phase of treatment is extended to develop additional skills to manage suicide-relevant cognitive processes and behaviors that emerge in the context of suicidal crises (Wenzel, Brown, et al., 2008).

3.1. Reasons for living

One protective factor that has been demonstrated consistently in the literature is reasons for living; that is, a greater number of reasons for living are associated with a decreased probability of engaging in a suicidal act (e.g., Linehan, Goodstein, Nielsen, & Chiles, 1983). Reasons for living correlate negatively with hopelessness (Malone et al., 2000), suggesting that a focus on reasons for living will decrease the strength of a hopelessness-based suicide schema. In addition, focusing on reasons for living can interrupt many of the cognitive processes associated with suicidal acts, such as directing attention away from suicide-relevant cues. During a suicidal crisis, reminders of reasons for living have the potential to reduce attentional fixation on suicide as the only option.

One straightforward way of reminding patients of their reasons for living is to have them list their reasons on an index card and keep the index card close by so that they can consult it in times of crisis. However, many patients indicate that such a list is not compelling when they are in severe distress and that more vivid reminders of their reasons for living are necessary. To address this concern, clinicians can encourage patients to create a *Hope Kit.* The Hope Kit is a memory aid consisting of a collection of meaningful items that remind patients of reasons for living and that can be accessed in times of crisis. Patients locate a container, such as a shoebox, and they fill it with items such as pictures of close others, letters from close others, and inspirational or religious sayings. The concept of the Hope Kit can be individualized depending on the particular interests of the patient, such that that it can take the form of a scrapbook, collage, painting, or web page. After the patient constructs a Hope Kit, the clinician works with him or her to identify an easy-access location and situations where consulting it would reduce the likelihood of a suicidal crisis.

3.2. Problem solving

As mentioned previously, problem solving deficits constitute a dispositional vulnerability factor that can create stress, contribute to psychiatric disturbance, and/or exacerbate suicidal crises once they are motion. Thus, problem solving is a central activity in cognitive therapy for suicidal patients. Problem solving can be addressed through both indirect and direct means. Indirectly, the clinician models problem solving during each session by collaboratively setting an agenda, systematically attending to agenda items, and providing periodic summaries. This process demonstrates to patients that their problems are able to be organized logically and broken down into manageable pieces that have the potential to result in meaningful life changes.

Directly, the clinician works with patients to enhance their problem solving skills in two main areas (Reinecke, 2006). First, the clinician uses cognitive strategies to identify and evaluate patients' negative attitudes toward life's problems and their ability to handle them, with the goal of increasing problem solving self-efficacy. According to the empirical research described in the previous section, improvement in problem solving self-efficacy would have the potential to reduce hopelessness and suicide ideation. Second, the clinician focuses on specific aspects of the problem solving process where the patient exhibits deficits. These aspects might include identifying the problem, defining the problem using clear, objective language, developing realistic goals, generating solutions, evaluating the short- and long-term advantages and disadvantages of each solution, deciding upon a solution, implementing the solution, and evaluating the solution's effectiveness.

Many interventions focused solely on problem solving have been evaluated empirically (e.g., Gibbons, Butler, Urwin, & Gibbons, 1978; Hawton et al., 1981, 1987; Lerner & Clum, 1990; McLeavey, Daly, Ludgate, & Murray, 1994; Salkovskis, Atha, & Storer, 1990; van der Sande et al., 1997). Results of these studies indicate that problem solving interventions did *not* reduce suicide ideation and suicidal behavior to a statistically significant degree, relative to usual care. However, many of these studies used small sample sizes, and the problem solving interventions often yielded clinically significant reductions in suicide ideation and suicidal behavior. For example, McLeavey et al. (1994) found that only 10.5% of their patients in the problem solving intervention made a repeat suicide attempt during a 12-month follow-up period, whereas 25% of their patients in their control condition (i.e., brief problem-oriented counseling) made a repeat attempt during this time. Moreover, many of these interventions reduced depression and hopelessness to a greater degree than usual care. Thus, we view problem solving as an important component of a cognitive approach to treating suicidal patients, but that other components must be integrated to address other aspects of suicidal behavior that have empirical and theoretical importance.

3.3. Reducing impulsivity

Like problem solving deficits, impulsivity has the potential to contribute to suicidal crises at several points in the proposed cognitive model. Clinicians attempt to illustrate that the suicidal crisis will pass and that often these crises come in "waves," such that suicide ideation is sure to decrease if patients make the commitment to "ride out the wave." Some patients do not readily accept this explanation, and in these cases, it is helpful to create a diagram in which the clinician charts the patient's mood and suicide ideation over time. This sort of visual aid provides compelling evidence to support the clinician's stance that the patient will not remain suicidal indefinitely. Some patients respond to thinking about deterring suicidal acts as "procrastinating suicide." Others respond to implementing a "two-person" rule, such that they must consult with two people before acting on any decision. Finally, the clinician can draw upon the coping skills developed throughout the course of therapy to identify the most potent strategies for deterring impulsive behavior. Short-term coping strategies for this purpose include those listed on their patient's safety plan (e.g., methods of distraction, people who can provide support). Impulsive suicidal patients are strongly encouraged to implement the long-term strategy of safeguarding their environment and disposing of lethal means within their reach.

3.4. Improving social support

Many suicidal patients believe that they are alone and that no one cares about them (Fridell, Ojehagen, & Träskman-Bendz, 1996). Thus, helping patients to mobilize their social support system is a key component of this intervention. Although social support is

not a construct that is explicitly included in our cognitive model, there are many ways in which improving suicidal patients' social support network can modify the factors that contribute to suicidal crises. For example, there is a negative correlation between perceived social support and hopelessness (Tan & Karabulutlu, 2005), suggesting that improving one's social support network would reduce the strength of hopelessness-based suicide schemas. In addition, people in one's social support network can provide comfort and guidance that could, in turn, buffer against stress and reduce the strength of unbearability-based suicide schemas. Cognitive therapists often involve members of patients' social support network in removing lethal means from the home (Wenzel, Brown, et al., 2008), which safeguards their loved ones' environments and eliminates suicide-relevant cues. Finally, people in patients' social support network can support them in regularly attending therapy sessions, holding them accountable for their attendance and helping them to make their appointments if they are unable to do so themselves.

3.5. Increasing compliance with other services

Suicidal patients often present with a wide array of problems, including those requiring psychiatric treatment, addiction treatment, and social services. These other problems may serve as additional dispositional vulnerability factors, pertain directly to psychiatric disturbance, or create life stress that increases the risk of a future suicidal crisis. Unfortunately, suicidal patients often fail to follow through with interventions that are prescribed (O'Brien et al., 1987). Clinicians working with suicidal patients can use cognitive and behavioral strategies to encourage compliance with other services that target important aspects of their presenting problem. From a cognitive standpoint, the clinician can use guided discovery to identify and modify misinterpretations and perceived stigma associated with receiving these services. From a behavioral standpoint, the clinician can identify skills deficits in compliance (e.g., disorganization) and develop strategies for making adherence to other treatment regimen more manageable for these patients. Successful compliance with treatment regime can reduce the strength of suicide schemas associated with hopelessness and unbearability, as well as model effective problem solving in order to modify problem solving deficits.

4. Conclusion and future directions

Our cognitive model of suicidal behavior was designed to (a) incorporate relevant constructs that have been demonstrated in the empirical literature to be associated with suicide ideation, attempts, and completions, and (b) differentiate between distal and proximal factors associated with suicidal crises, such that it provides a template for understanding long-standing vulnerabilities as well as the cognitive phenomena experienced by suicidal patients in crisis. This model should be viewed as a flexible heuristic in conceptualizing suicidal behavior in individual patients. Although we speculate that a greater number and severity of these variables increases the likelihood that a person will engage in a suicidal act (cf. Rudd, 2004), we regard each suicidal act as unique and acknowledge that any particular variable in our model will be more or less relevant to the suicidal crisis depending on the degree to which the person is currently experiencing psychiatric disturbance, the nature of the person's current life stress, and other specific aspects of the crisis that are operative at that time (e.g., access to lethal means). Despite the fact that this model advances our understanding of suicidal behavior from a cognitive perspective, it would be premature to implicate the model in predicting suicidal behavior in any one person. A person's standing on these factors should be considered with other characteristics of his or her disposition, personal and family history, and environment in conducting a suicide risk assessment and in determining risk.

Many of the constructs included in our model have an empirical basis. We know that suicidal individuals are generally characterized by the dispositional vulnerability factors to a greater degree than non-suicidal individuals and that the vast majority of suicidal patients are characterized by psychiatric disturbance, which is associated with a host of maladaptive cognitive processes in and of itself. However, it will be important for prospective research to establish that these variables temporally precede suicidal crises. In addition, much more empirical research is needed to identify a more precise mechanism by which dispositional vulnerability factors and cognitive processes associated with psychiatric disturbance activate suicidal crises and to verify that the suicide-relevant cognitive processes we propose in our model (e.g., attentional fixation) are indeed at work during suicidal crises. We are in the process of developing measures that ask patients to estimate the degree to which these cognitive processes were at work in a recent suicidal crises, but those measures will be inherently limited by their reliance on memory of an event that took place in a very different state than patients will be in when they complete the inventory. An alternative to self-report measures that require insight into one's cognitive processes is to use laboratory reaction time tasks that provide quantitative estimates of biased information processing toward suicide-relevant cues (cf. Becker et al., 1999; Nock & Banaji, 2007; Williams & Broadbent, 1986). These tasks have the greatest potential to capture cognitive processes associated with suicidal acts particularly when they are administered in times of stress, or active suicide ideation preceding suicidal behavior (cf. Arffa, 1983). However, there are obvious logistical and ethical constraints to research that includes such a challenge in its design. We await future research with innovative designs to capture these cognitive processes in a state that is most relevant to a suicidal crisis, so that we can refine strategies used in cognitive therapy with suicidal patients in order to more directly target suicide-relevant cognitive processes.

It is proposed that cognitive therapy lowers patients' risk for engaging in a future suicidal act by helping them to recognize the warning signs when they are in crisis and to use cognitive and behavioral coping strategies that are specific to the idiosyncratic cognitive case conceptualization of their suicidal crises. Clinicians who work with suicidal patients can intervene on a number of psychological levels by targeting the dispositional factors that increase patients' vulnerability for suicidal crises, the suicide schemas that prompt suicidal crises, and the cognitive processes that occur during suicidal acts. There is evidence that this treatment is efficacious, as Brown et al. (2005) found that the reattempt rate was cut approximately in half patients who had made a suicide attempt and received this cognitive intervention, relative to patients who had made a recent attempt and received only usual care. It is our hope that understanding suicidal patients through these multiple lenses will allow clinicians to modify both distal and proximal processes at work in times of distress, which will ultimately contribute to reducing the rate of suicide attempts and completions in vulnerable patients.

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