ABC’S OF SUICIDOLOGY:
THE ROLE OF AFFECT IN SUICIDAL
BEHAVIORS AND COGNITIONS

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ABC’S OF SUICIDOLOGY:
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Dissertation

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ABSTRACT

The study of affect and cognition has been important in understanding suicide; however, the research and literature historically have placed more emphasis upon cognitive factors. Clearly, cognitive processes play a significant role in suicidal thoughts and behaviors, but it is also important to increase the focus on affect. There is support for the role of affect and the fact that cognition and affect combine with one another to impact suicidal behaviors. These findings may be advanced through the application of a theoretical model of affect in order to gain insight into the manner in which cognition and affect specifically relate to one another to impact suicidal thoughts and behaviors. Other goals of the current study were to examine the relationship between affect and cognition in suicidal individuals, to determine if different patterns of affect exist for different subtypes of suicidal individuals (i.e., no suicidality, suicidal ideation only, suicidal behaviors), and to assess the unique role of affect in relation to cognition.

Participants in this study ($n = 104$) completed a series of questionnaires to measure suicidal thoughts and behaviors, hopelessness and affect. Results supported the hypothesis that positive affect and negative affect were related to suicidal thoughts and behaviors, and it was found that negative affect plays a more important role. Statistical analyses did not support the hypothesis that there were different patterns of affect for the various forms of suicidal behaviors, but visual analysis of graphs offered preliminary
support for some unique patterns. An additional result of this study was that affect accounted for a significant amount of the variance in suicidal ideation, but not suicidal behaviors, above the cognitive variable of hopelessness. This means that it is important to study both cognitive and affect variables in order to gain more understanding about suicidal ideation.

Some implications of this study are that therapists may gain more information about suicidal thoughts and behaviors if they assess both positive and negative affect, and it is possible that incorporating affect may enhance treatment outcomes. Follow up research is required to test these implications. In conclusion, affect is important to study in relationship to suicide, and it may provide additional information not gleaned from the more customary focus upon cognition in the suicide literature.
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CHAPTER I
INTRODUCTION AND OVERVIEW OF THE PROBLEM

Affect and cognition both have been important in the study of suicide throughout history. Theories and research on suicide, however, have focused more upon the cognitive processes involved in ending one’s own life. This cognitive information has been beneficial in enhancing our understanding of suicide, but it is also important to increase the focus on affect and to do so through a theoretically-grounded approach. Words and cognitive processes alone may not paint a complete picture of the suicidal individual’s emotional pain, nor adequately convey the individual’s internal conflict. Instead, the interplay of affective and cognitive processes may better reflect the phenomenological experiences of those who are suicidal and enhance psychologists’ understanding of suicidal individuals. While it is true that suicide literature discusses the emotional and affective experience of those who are suicidal, this literature is not integrated with or informed by contemporary theories of affect. The circumplex theory of affect, which has arisen from social psychology has, in particular, been supported by methodologically strong research and has begun to be fruitfully applied to the study of psychological disorders (e.g., Beck, Perkins, Holder, Robbins, Gray, & Allison, 2001; Jolly, Dyck, Kramer, & Wherry, 1994; Lovejoy & Steuerwald, 1995; Watson, Clark, & Carey, 1988a). The application of this theory to the study of suicide could potentially
lead to a more holistic (including both cognitions and affect) and theoretically sophisticated view of the experiences of those who are suicidal.

The goals of the current study are to systematically organize the findings on the affect of suicidal individuals using a theoretical model (the circumplex model of affect), to examine the relationship between affect and cognition in suicidal individuals, to determine if different patterns of affect exist for different subtypes of suicidal individuals (i.e., no suicidality, suicidal ideation only, suicidal behaviors), and to assess the unique role of affect in relation to cognition. The overarching goal is a more holistic understanding of those who are suicidal and a more organized body of knowledge regarding the role of affect in suicidal thoughts and behaviors. Through the application of this theoretical model, psychologists may be able to advance assessment and treatment of suicide due to an improved understanding of the pain and affective experience of those considering ending their lives, how the affective states of individuals who are suicidal differ from those who are not suicidal, and the manner in which these feelings may relate to their thought processes and jointly impact suicidal behaviors.

The Problem: Prevalence, Theory and Research

Prevalence

Suicide is important to study due to the prevalence of suicidal thoughts and behaviors and their sometimes tragic results. The Center for Disease Control (2004) reported 30,622 suicides in the United States in 2001, which is equivalent to about 84 suicides per day. Suicide accounts for 1.3% of annual deaths, and it is the 11th leading cause of death overall and the 3rd leading cause of death for those 15-24 (CDC, 2004).
is estimated that for every suicide death, there are eight to 25 attempts (CDC, 2004). Suicidality involves more than taking action to end one’s life; each year approximately 5.6% of the United States general population experiences suicidal ideation, or thinking about killing oneself (Crosby, Cheltenham, & Sacks, 1999). In sum, each year about one out of every 20 people thinks about suicide, 0.7% of the population attempts suicide, and 0.01% die by suicide (American Psychiatric Association, 2003). These percentages of individuals attempting suicide and dying by suicide differ greatly due to individual differences in intent to die and the lethality of means (American Psychiatric Association, 2003).

Due to the high incidence of suicidal behavior in the United States, researchers across many disciplines have attempted to study suicide with the hope of preventing and understanding this phenomenon. The result has been an emphasis on risk factors and cognitive processes involved in suicide.

Role of cognitions in suicide

A majority of suicidal theory and empirical research has emphasized the role of cognition and the importance of intervening at the cognitive level. Cognition is defined as the process of transforming present or past sensory input through mental work (Zajonc, 1984). Some have even stated that suicidal behavior is “primarily a state of mind” (Freeman & Reinecke, 1993; p. 3). Based upon these theories and empirical studies of risk factors, the conclusion has been made that there are cognitive differences between suicidal and nonsuicidal persons, even after controlling for depression or degree of pathology (e.g., Weishaar & Beck, 1990). Some of these cognitive differences are hopelessness (e.g., Bonner & Rich, 1988; Cole, 1989; Ellis, 1986; Weishaar & Beck,
problem-solving (e.g., Bonner & Rich, 1988; Ellis, 1986; Linehan, Camper, Chiles, Strosahl, & Shearin, 1987; MacLeod, Williams, & Linehan, 1992; Weishaar & Beck, 1990; Westefeld, Range, Rogers, Maples, Bromley, & Alcorn, 2000), dichotomous thinking (e.g., Neuringer & Lettieri, 1971; Shneidman, 1986, 1987), negative or dysfunctional automatic thoughts (e.g., Bonner & Rich, 1987), cognitive rigidity (e.g., Ellis, 1986; Weishaar & Beck, 1990) and construction of meaning (Rogers, 2001).

Hopelessness is one of the more researched and supported cognitive factors involved in suicide. Hopelessness is characterized as a belief that life conditions will not improve, and this belief itself is a predictor of eventual suicide among suicidal ideators (Beck, Steer, Kovacs, & Garrison, 1985; Cole, 1989; Freeman & Reinecke, 1993; Weishaar & Beck, 1990). The exact relationship between hopelessness and suicidal behaviors has been examined also, and it appears that hopelessness is an important mediating variable between depression and suicide (Weishaar & Beck, 1990). Based on this finding, hopelessness may be the link between depression and suicide. This finding has been corroborated by other studies that found that hopelessness, rather than depression, predicted intent to die by suicide (summarized by Freeman & Reinecke, 1993).

Based upon these findings, the conclusion can be made that the manner in which a suicidal individual thinks is different than the way that a nonsuicidal person thinks. There is also emerging support that the affective states of those who are suicidal may differ from those who are not, but there is less research support for this conclusion. The majority of research in the field of suicidology has focused on these cognitive variables, and importantly, the affect-related research that does exist is not systematically organized.
within the circumplex model, the leading theoretical model of affect. Research and theory focusing on affect appear to be growing in the field of psychology, so it may be important for the field of suicidology to take note of this trend and to incorporate this construct into the study of suicide more systematically using this model. Prior to investigating the existence of affect in the suicide literature, the emergence of a focus on affect in psychology and the definitions of terminology will be discussed.

Emergence of affect emphasis

When studying the history of psychology, the predominant way of explaining the human experience and treating mental disorders has shifted from psychoanalytic, to behavioral, to existential and humanistic, and then to a cognitive focus (e.g., Hothersall, 2004). The “cognitive revolution” that occurred following World War II influenced the manner in which psychologists studied human behavior. Rather than accepting the radical behaviorist notion that mental representations do not exist or are not relevant to the study of behavior, many psychologists were beginning to study these mental processes (Galotti, 1994). The “revolution” sparked extensive cognitive research across many psychological domains and the new focus became thought processes. This “revolution” can also be noted in the treatment of psychological disorders, as Ellis’ (1973) rational-emotive therapy and Beck’s (1976) cognitive therapy became the common treatments of choice for a multitude of psychological concerns. Thus, the pendulum swung from one extreme of ignoring cognitive processes (behaviorism) to the other extreme of exclusively studying the role of mental and thought processes. The pendulum appears to be swinging again; theory, research and therapy are beginning to incorporate the study of emotion and affect, rather than more narrowly prioritizing
cognitive processes (e.g., emotion-focused therapy of Greenberg, 2002). This trend is noted in the following quote: “There can be little doubt that affect is one of the most important yet least understood influences on the way people think and behave in social situations” (Forgas, 2001; p. 2).

Despite its importance and this emerging trend, mention of affect is often overshadowed by the focus on cognition within the suicide literature, and the role of affect is not as well understood. Psychoanalytic theories of suicide incorporated affect by conceptualizing suicidal acts as a redirection of aggressive wishes towards another turned back on to self (Lees & Stimpson, 2002; Menninger, 1938). However, once the next wave of psychology, behaviorism, gained popularity, the focus upon affect became underemphasized. When affect is discussed in suicide literature, it is most often in regards to the prevalence of mood disorders or the term affect is used in inconsistent ways. In fact, the definitions of the terms affect, emotion and mood are often not mentioned and/or the terms are used interchangeably, and heated debate exists around the relationship between affect and cognition (e.g., Zajonc and Lazarus debate in American Psychologist in 1984). This debate appears to be fueled by the fact that terms are not clearly defined, they conceptually overlap, and people are using the same words to discuss different phenomenon and different words to discuss the same concept. As a result, these terms will be defined as they are used in the current study prior to discussing the presence of affect in the suicide literature.

Affect and emotion are two related, yet theoretically distinct, constructs, and a variety of definitions exist. Emotions can be conceptualized differently based upon one’s theoretical framework (Zajonc & Markus, 1984). The cognitive theories of emotions
(i.e., Lazarus, 1966, 1984; Schachter & Singer, 1962) state that cognitions are necessary factors in emotions. Based upon this view, emotions are believed to involve the individual assessing the personal meaning of an event or stimuli, either consciously or unconsciously, resulting in a response tendency that unfolds over a short period of time (Fredrickson, 2001). Others similarly operationalize emotions as having a cognitive involvement or basis (e.g., Forgas, 2001; Redding, 1999; Solomon, 1993). On the other hand, the somatic theories of emotion stress the importance of bodily or physiological processes in the experience of emotions (e.g., Ekman & Friesen, 1975; Izard, 1977). Those ascribing to the somatic theory of emotion also believe that cognitions play a role, but they focus more upon the somatic factors.

This matter is further complicated because the words affect and emotion are typically used interchangeably. Russell and Feldman Barrett (1999) attempted to differentiate these two terms, and they concluded that the term emotion is a broad umbrella term that included many concepts, including core affect and prototypical emotional episodes. Russell and Feldman Barrett define core affect as “the most elementary consciously accessible affective feelings (and their neurophysiological counterparts) that need not be directed at anything” (p. 806). Even though core affect need not be directed at an object, it is still caused (e.g., weather, diurnal cycles) and always present. Prototypical emotional episodes include core affect, but are reactions to stimuli that involve attending to and appraising that stimuli, overt behavior in reaction to that stimuli, experiencing oneself as having the emotion, and the underlying somatic events. In other words, prototypical emotional episodes, unlike core affect, are directed at an object, and they involve cognitive processes. This conceptualization of prototypical
emotional reactions incorporates elements of the cognitive and somatic theory of emotion. These two concepts are related but also separate entities, as explained in the following quote:

We believe that core affect is at the heart of any emotional episode, prototypical or not, which typically begins as an abrupt change in core affect in response to some event but develops further once cognitive structures are invoked, an object identified, and behavioral plans are quickly formed and enacted (p. 806).

Based upon this description, a hierarchical arrangement exists for these terms. “Emotion” is the superordinate category that includes the concept of prototypical emotional episode, and core affect is one aspect of the prototypical emotional episode. Affect then is a building block of emotion. Affect also has been conceptualized as the subjective component of biobehavioral systems (Watson, Wiese, Vaidya, & Tellegen, 1999) and capable of being elicited rapidly and automatically without effort, and perhaps even unconsciously (summarized by Cacioppo, Gardner, & Berntson, 1999). Affect may influence cognitive processes, but affect itself does not require cognition. In summary, the term affect refers to an elementary component of emotion that has a physiological basis, does not have to be directed at a particular stimulus, and that exists in a separate system from cognition. Affect is not separate from emotion, rather it is one element of emotion.

While affect and emotion are distinguishable based upon theory and definitions (emotions involve cognition while affect does not), the terms are most often used interchangeably within practical applications for several reasons. First, affect and cognition are closely linked within phenomenological experiences. Even though affect
and cognition can be independent from each other, they most often interact with each other to comprise an individual’s subjective experiences through emotions. Also, when assessing and then reporting affective states, one is appraising his or her physiological state and this involves cognition, creating the possibility that the state is now emotion because cognition/appraisal is involved. As a result, the distinguishing features and boundaries between affect and emotion become fuzzy. For present purposes, emotion and affect are conceptualized as overlapping constructs, but the term affect refers to reactions that are more automatic and require minimal cognitive appraisal and interpretation (more in line with the somatic theories of emotion). The amount of cognitive content involved in affective and emotional states is conceptualized to vary along a continuum. The states of interest are those that are less cognitive and more physiologic/somatic in nature. The term “affect” will be used to describe these states, even though the distinction between the terms affect and emotion is not always clear. The reason for this focus on the more somatic states of affect is that there has been less emphasis on this in the suicide literature and this represents the conceptualization followed in the circumplex model.

Another term that is often used interchangeably with emotion and affect is mood. Mood is defined as a low-intensity, diffuse and enduring affective state without an obvious antecedent cause and minimal cognitive content (Forgas, 2001). Affect can be measured over various time intervals (e.g., hour, day, week, month), and actually, mood is another word to describe long-term affect. In this study, the terms long-term affect and mood will be used interchangeably because they refer to the same phenomenon. Now
that the definitions of the terminology have been discussed, the presence of affect (including the more somatic-based emotions) in the suicide literature can be analyzed.

Affect in suicide literature

There have been a few studies that examine affect within suicidal individuals, and most often these studies investigate how affect interacts with cognition. Some of these studies are actually examining processes that are more cognitive in nature, based upon the definitions provided above. For example, hopelessness, helplessness, and mood disorders are often labeled as affective components of suicidal behavior (e.g., Nock & Kazdin, 2002; Zlotnick, Donaldson, Spirito & Pearlstein, 1997). Helplessness and hopelessness do not represent pure affect, and if anything, they fall on the more cognitive end of the spectrum. Hopelessness and helplessness primarily involve interpretation and appraisal about one’s situation and/or the future. These cognitive appraisals generally relate to more affective and emotional responses, like sadness and despair, but helplessness and hopelessness by themselves are primarily cognitive states. Mood disorders also are not purely affective or emotional states either because they include cognitive criteria for a diagnosis (e.g., concentration difficulties). Instead, helplessness and hopelessness should be considered cognitions relating to affective and emotional responses, and mood disorders should be conceptualized as incorporating more than only affect. Therefore, a great deal of the suicide literature that states that it is studying affect is actually studying a blend of affect and cognition, based upon this terminology.

Despite these examples, there are some studies that investigate the importance of affect in suicidal individuals and how these states may impact cognitive processes to influence behaviors. First, affect has been indirectly linked to suicide via problem
solving. As previously mentioned, a clear relationship has been established between problem-solving deficits and suicidal behavior (e.g., Bonner & Rich, 1988; Ellis, 1986; Linehan et al., 1987; MacLeod et al., 1992; Weishaar & Beck, 1990; Westefeld et al., 2000), and recent research has also demonstrated a link between problem-solving abilities and affect. The broaden-and-build theory of emotions/affect (both terms have been used) (Fredrickson, 2001) states that the experience of positive emotions “broadens people’s momentary thought-action repertoires” (p. 219) and this assists in building personal resources, including intellectual and psychological resources. Other research exists that supports this theory and suggests that positive affect leads to improvements in problem solving (Ashby, Isen, & Turken, 1999; Isen, Daubman, & Nowicki, 1987; Isen, Rosenzweig, & Young, 1991), among other areas. An indirect link may then be made between affect and suicidality based upon these findings, and this link has been empirically tested. Suicidal individuals prone to more positive moods (long term affect), as compared to those with lower levels of positive mood, demonstrated improved problem solving and displayed improved treatment outcomes in a treatment study (Joiner et al., 2001).

Second, the Reasons for Living Inventory (RFL; Linehan, Goodstein, Neilson, & Chiles, 1983), a measure of an individual’s reasons for living when thinking of killing him or herself, has been found to be inversely related to suicidal risk (e.g., Linehan, 1985; Linehan et al., 1983). In other words, the RFL measures protective factors against suicide that are cognitive in nature. Specifically, reasons for living seem to serve as a protective factor against acting upon suicidal thoughts. Reasons for living are not immune to change; rather, responses on the RFL are influenced by an individual’s mood
at the time of test administration (Ellis & Range, 1989; Turzo & Range, 1991). Since mood is a term for long-term affect, it may be the case that an individual’s affect may alter his or her reasons for living, and this in turn may influence, or at least be related to, suicidal behavior. In these first two examples, affect alone did not directly impact suicidal behaviors, but instead, an indirect relationship via cognition influenced suicidal behaviors.

Yet another interface for cognition and affect exists within the suicide literature, providing further support for the importance of systematically examining affect in addition to cognition. Most theories of suicide include a precipitating event or stressor that triggers suicidal behaviors when coupled with disrupted cognition, individual vulnerabilities, or the need to escape (e.g., Bonner & Rich, 1988; Linehan & Shearin, 1988; Schotte & Clum, 1982; Shneidman, 1996). For example, suicide may be viewed as an option to escape unbearable pain following a precipitating event; the option of suicide is more likely to be exercised when the individual is hopeless about the future or unable to problem-solve other alternatives (e.g., Clark & Fawcett, 1992; Freeman & Reinecke, 1993; Shneidman, 1992, 1996). When examining the pain that follows this trigger event or stressor more closely, the pain may include affective components (in fact, Baumister’s Escape Theory labels this as negative affect). So within these theories that may be labeled as cognitive in nature, affect may play a role via the pain that follows life stressors and the drive to escape this suffering.

Affect may also be important to examine in suicidal individuals due to possible deficits in affect regulation. Affect regulation involves an interaction between affect and cognitive processes, but it addresses the important role of affect in suicidal individuals.
In her work with patients with borderline personality disorder, Linehan and colleagues (Linehan, 1993, 1999; Linehan & Shearin, 1988) recognized the importance of and role of affect regulation in suicidal behaviors. In those who are “chronically suicidal,” or who frequently attempt suicide, a pattern of emotional and behavioral dysregulation is present and may be the result of an initial temperamental or biological disposition in combination with an “invalidating rearing environment” (Linehan, 1993; p. 150). This connection between affect dysregulation and suicidal behavior has been supported by others (MacLeod et al., 1992; Zlotnick et al., 1997). The suicidal behaviors of those with borderline personality disorder are usually referred to as parasuicide, because most often the intent is not to die. However, the suicidal behavior of those with borderline personality disorder is not limited to parasuicide, as they also demonstrate higher rates of completed suicide than average (e.g., Black, Blum, Pfohl, & Hale, 2004). This relationship between affect regulation and suicidal behavior may only be present for individuals with borderline personality disorder; therefore, future research is needed to determine if this finding applies to other groups of suicidal individuals as well.

Finally, there is strong support that mood disorders are related to suicidal behaviors (e.g., American Psychiatric Association, 2003; Black & Winoku, 1990; Clark & Fawcett, 1992; Houston, Hawton & Shepperd, 2001; Nierenberg, Gray, & Grandin, 2001), and as mentioned earlier, mood is another word for long-term affect. When reviewing the DSM-IV (American Psychiatric Association, 2000a) criteria for mood disorders, it is evident, as above, that there are affective, emotional, cognitive, and behavioral components to these disorders. Major depression, for example, includes among other criteria the affective component of depressed mood, emotions of guilt and
worthlessness, and cognitions characterized by diminished ability to concentrate. It is not clear which of these components—affect, emotion, cognition, or behavior—are the active ingredients that lead to suicide in mood disorders; however, it is possible that affect may play a key role. Further research is needed to support this hypothesis. It is important to keep in mind though, that this relationship could also be due to overlap in constructs; suicidal ideation is one of the possible criteria for major depression.

The above examples provide support for the possible connection between affect and suicide, but further research is needed in this area. While several suicidologists have already included affect in their theories and models of suicidal behavior (e.g., Linehan, 1999; Linehan & Shearin, 1988; Shneidman, 1992, 1996), some of the main postulates of theories of affect have not been incorporated into this existing research. For example, as is described later, affect has been conceptualized to not be a unidimensional construct with positive and negative poles, rather, affect is considered to include separate positive and negative affect dimensions. These theories of suicide do not differentiate between the two types of affect though; instead, affect is examined as a single entity with the focus on the negative end of the spectrum. As such, they do not allow the possibility that two individuals with equal levels of negative affect over a given time period may importantly differ in suicide risk based on their relative levels of positive affect during that same time period. Nonetheless, these theories of suicide do provide an explanatory framework that justifies the importance of incorporating affect into the study of suicide, and if the components of affect theory and the circumplex model are added into this framework, a stronger case may be made for the importance of this variable in understanding suicide. In general, this attention to theory may be the key to the
advancement of the study of suicide, as is explained in the following section, so it is important that the study of affect be guided by existing theory.

Importance of theory in suicidology

It is important to approach the study of suicide and the affect of those who are suicidal from a theoretical perspective. For the most part, the above examples of the presence of affect in the suicide literature do not exist as part of a theoretical framework, or if part of a theory, these examples do not incorporate many of the findings from research on the structure of affect. Past research has largely focused on the prediction of suicide through empirically derived risk factors, with less emphasis on the organizational framework underlying this phenomenon (Lester, 1988; Rogers, 2001). The following illustrates the limitations of this atheoretical approach.

Researchers across multiple disciplines have attempted to study suicide to gain information about risk factors in order to decrease the suicide rate. The list of risk factors has been generated mainly through correlational research and by comparing characteristics of suicidal and nonsuicidal individuals (Westefeld et al., 2000). The result is a list of empirically derived factors that are used to attempt to predict who is more likely to attempt and/or complete suicide. For example, based upon a comparison of suicidal and nonsuicidal individuals, researchers concluded that rates of suicide vary across age, gender, sexual orientation, and ethnicity groups (Westefeld et al., 2000). Despite all this research, the suicide rate has not decreased and suicidologists do not have a better organizational framework for understanding suicidal behaviors (Rogers, 2001; Westefeld et al., 2000). Perhaps one reason why suicide rates are not affected by the knowledge of these risk factors is that the factors are largely concerned with group
membership, and the differences within each of these groups is rather large (Range et al., 1999). Therefore, knowledge that a person belongs to one of the groups at higher risk does not provide much information about that person’s individual level of suicidal risk. Instead, some suicidologists (e.g., Lester, 1988; Maris, Berman, & Silverman, 2000; Rogers, 2001) are now advocating for the advancement of theory in the study of suicide in order to begin to understand suicidal behaviors rather than only predict them. Although theories of suicide already exist, they are usually characterized as micro-theories that were generated through post-hoc theorizing or the creation of theoretical explanations based upon the data (Rogers, 2001). Instead, these authors argue that more comprehensive theories are needed to generate and to test research hypotheses, rather than only explain research findings after the fact. The circumplex model of affect, the leading affective model in the current literature, offers one promising framework to examine the role of affect in suicidal thoughts and behaviors and to attempt to organize the information on affect that already exists under a theoretical framework.

Circumplex theory of affect

Within the field of social psychology, psychologists are actively researching affect theory and the primacy of affect, behavior and cognitions through rigorous scientific methods. This theory and scientific rigor in regard to affect is not evident in the literature on suicidal behaviors. By applying affect theory to the study of suicidality, perhaps a more holistic and integrated view of the suicidal individual will be evident, leading to a more comprehensive understanding of suicide.

Affect theories differ in their responses to the following question: Is positive affect the polar opposite of negative affect or independent of it? Prior to elaborating
upon this debate, positive and negative affect need to be defined. Positive affect is the “extent to which a person avows a zest for life” (Watson & Tellegen, 1985; p. 221), and negative affect is the “extent to which a person reports feeling upset or unpleasantly aroused” (Watson & Tellegen, 1985; p. 221). Debate still continues, but strong support exists for the independence of positive and negative affect (e.g., Bradburn, 1969; Nowlis & Nowlis, 1956; Russell, 1980; Schlosberg, 1952; Watson & Clark, 1992, 1997; Watson & Tellegen, 1985; Zevon & Tellegen, 1982). Independence means that these two types of affect operate separately and an individual can demonstrate any combination of high, neutral or low positive and negative affect, so the correlation between positive and negative affect is low to zero.

These two independent bipolar dimensions exist within a circular, or circumplex arrangement (see Figure 1.1). On this circumplex diagram, those terms in the same octant are highly positively correlated (e.g., active, elated) and those adjacent are moderately correlated (e.g., active, aroused). Those words that fall 90 degrees apart are unrelated (e.g., active, distressed), and those that are 180 degrees apart highly negatively correlated (e.g., active, drowsy) (Watson & Tellegen, 1985). Multiple rotations can be applied to this circumplex, which means that a different set of perpendicular axes can be chosen as and labeled as the primary axes. For example, Watson and colleagues (e.g., Watson, Clark, & Tellegen, 1984; Watson & Tellegen, 1985) decided to use the positive and negative affect axes, while other researchers use a separate set of perpendicular axes to describe affective experience. The other most common alternative rotation is a pleasantness-unpleasantness bipolar axis and a high and low arousal orthogonal axis (e.g.,
Figure 1.1

Circumplex model of affect from Watson & Tellegen (1985; p. 221)
Feldman, 1995; Larsen & Diener, 1992; Russell, 1980). These two rotations are two ways to describe the same affective space, as shown in Figure 1.1.

Positive and negative affect are the two separate systems of affect, but when experienced together, the result is a variety of more recognizable affective states. For example, those experiencing low positive affect in combination with high negative affect experience the subjective feeling of sadness and loneliness, while those experiencing both high positive and negative affect have the subjective experience of surprise, arousal and astonishment (see Figure 1.1). The orthogonality of positive and negative affect may be more subjectively apparent when considering affect over days or weeks rather than moments. For example, one individual may experience a near equal mix of strong positive and negative feelings, another may have primarily strong negative feelings, another primarily strong positive feelings, and still another be in a period of relative affective calmness.

Strong empirical support exists for this circumplex model of affect, and this model has been usefully applied to the study of depression and anxiety to assist in the differentiation of and treatment of these disorders (e.g., Beck et al., 2001; Jolly et al., 1994; Lovejoy & Steuerwald, 1995; Watson et al., 1988a). These studies have demonstrated that depression is related to low positive affect and high negative affect, and anxiety is related to variable levels of positive affect and high negative affect.

Perhaps this model can similarly be applied to the study of suicide to help advance suicidologists’ understanding of and treatment of a variety of suicidal behaviors. For example, those who have made a suicide attempt but did not intend to die may
demonstrate a different pattern of positive and negative affect than those who attempt suicide and intend to die.

Current study

In conclusion, most research on suicide is cognitive in nature, and although there is some support that affect is important to study, the study of affect must be approached in a systematic and organized theoretical manner. The current study is an attempt to empirically examine the link between affect and suicide within the theoretical framework of the circumplex model and an attempt to demonstrate that affect data may provide additional information not provided by cognitive variables alone. The goal is a more holistic understanding of those who are suicidal and a more organized body of knowledge regarding the role of affect in suicide. In sum, the nature of the relationship between positive and negative affect and suicidal thoughts and behaviors is examined empirically. With this additional information, treatment approaches to working with suicidal individuals may be better able to address the pain and affective experience of those considering ending their lives.
CHAPTER II
REVIEW OF THE LITERATURE

Suicidologists across multiple disciplines share the common goal of understanding and preventing deliberate self-harm and death by suicide. The risk factors, theoretical explanations and treatment suggestions for suicidal behaviors have historically focused largely upon cognitions. The result has been an expansive body of literature shedding light into the thought processes linked to suicidal ideation and behaviors, and treatment options aimed to change these thoughts. These internal mental processes do not subsume the entire human experience; rather, affect can be a separate process from cognition and together these two processes more accurately define our subjective experience. By placing more focus upon individuals’ affective states, the study of suicide may be better able to take into account the psychological pain experienced by many suicidal individuals. A more comprehensive picture of the suicidal individual may be provided through the examination of the role of affect in suicidal thoughts and behaviors. Although research exists investigating affect in the suicidal individual, these investigations are not as common as cognitive research and they most often do not approach the study of affect using a theoretical framework to organize the findings. The circumplex model of affect is an organizing framework that is based on methodologically rigorous research, and this model may enhance the understanding of the role and importance of affect in suicidal thoughts and behaviors, and the relationship between
these variables. Prior to examining these issues in more depth though, it is necessary to define the terminology concerning suicide.

Types of suicidal behaviors

In the field of suicidology, there are many different definitions of suicide and multiple ways to classify the various types of suicidal behavior. The definition of suicide is not only a mental health issue, but also a legal matter. The general consensus among mental health and legal experts is that a death can be defined as a suicide when the individual dies from self-inflicted injuries and the individual intended to die from these self-inflicted actions (American Psychiatric Association, 2003; Maris et al., 2000). The term ‘suicidal behavior’ refers to a wide variety of behaviors and includes more than killing oneself. Suicidal behavior may refer to different concepts including completed suicide, non-fatal deliberate self-harm with or without intent to die, suicide communications including suicide threats, and/or suicide thoughts/ideation. Most argue that these suicidal behaviors fall along a continuum of severity, ranging from risk-taking behaviors and thoughts about death, to the extreme of completed suicide (e.g., Barrios, Everett, Simon, & Brener, 2000; Zlotnick et al., 1997).

Two of the most important aspects of suicidal behaviors are intent to die and lethality of action. Individuals engaging in self-injurious behavior may or may not have the intent to kill themselves, and the existence of intent differentiates between different types of suicidal behaviors. If an individual engages in self-harm with the intent or hope to die, then this behavior is labeled a suicide attempt (e.g., American Psychiatric Association, 2003; Linehan & Shearin, 1988). If the individual does intentionally end his
or her life, then the behavior is called completed or committed suicide. The difference between attempted and completed suicide is usually the lethality of methods chosen. Although there are no exact research statistics, it is estimated that there are 25 suicide attempts for every completed suicide (American Association of Suicidology, 2005). If an individual engages in an action that is non-lethal but purposefully self-injurious, then this is frequently referred to as parasuicide (e.g., Kreitman, 1977; Linehan & Shearin, 1988; MacLeod et al., 1992). Even though the individual does not intend to die, parasuicide is still frequently included in the spectrum of suicidal behaviors.

In general, suicidal ideation is defined as “thoughts of serving as the agent of one’s own death” (American Psychiatric Association, 2003; p. 3). Suicidal ideation or thoughts range from milder forms that involve general thoughts about death (e.g., believing that it would be easier to be dead) and suicide (e.g., reactions of others if suicide were attempted) to more serious ideation that involves current plans and/or wishes to die by suicide (Reynolds, 1991). The prevalence of suicidal ideation is estimated to range from approximately 30% to 70% (e.g., Kann et al., 1998; Rich & Bonner, 1987; Rudd, 1989) depending upon the research methods used and the population that is sampled. Occasionally, individuals will communicate their thoughts about suicide to others, and suicidal ideation does not often lead to self-harm or suicide attempts. It is difficult to differentiate between those who will follow through with their thoughts and those who will not (Linehan & Shearin, 1988). All of these phenomena are usually classified as “suicidal behaviors” in the literature, even though the individual did not die or even take any action in many instances. However, the term behavior is defined as any observable response by an organism
(Weiten & Lloyd, 2003) and cognition is characterized as an internal mental process (Zajonc, 1984). In order to be more consistent with the definitions of cognition and behavior, suicidal behaviors from this point will refer to actions taken (i.e., suicide attempts), while suicidal cognitions will refer to mental processes focusing upon ending one’s own life. Suicidality is a general term that will refer to all types of suicidal thoughts and behaviors.

Not only are there a variety of types of suicidal behavior, individuals who engage in suicidal behaviors represent a diverse and heterogeneous group. Suicidal individuals are represented across the life cycle, various psychological/psychiatric diagnoses (e.g., mood disorders, drug and alcohol problems, personality disorders, schizophrenia), demographic groups (e.g., Westefeld et al., 2000) and physical health concerns (e.g., Maltsberger, 2001). Risk factors for suicidality derived through previous research include, among others, illness, pain, loss, psychiatric illness, previous attempts, sexual orientation, and age (i.e., Freeman & Reinecke, 1993; Shneidman, 1992; Westefeld et al., 2000).

Emphasis on cognition within the suicide literature

Cognition is defined as an internal mental process that requires the transformation of present or past sensory input. Cognition is not necessarily deliberate, rational, or conscious, but it must involve some minimum ‘mental work’ (Zajonc, 1984; p. 118). In the following sections, major theories of suicidality are reviewed, as are key variables of interest and their associated theories and empirical findings, and current treatment approaches. As will be evident through this review, a vast majority of the suicide
literature emphasizes the role of cognitive processes. Following this review, attention will be turned to the emergent role of affect and its interaction with cognition in the suicide literature and the prevailing social-psychological theory of affect that, it is proposed, may help to address the extant gaps in the theory, research, and treatment of suicidality.

**Major theories of suicidality**

Although the study of suicide most often examines empirical risk factors for suicidal behavior (i.e., age, ethnic background, diagnoses) in order to attempt to predict and prevent attempts and deaths, these efforts have been met with minimal success, as previously noted. When trying to predict suicidal behavior, false positives and negatives are somewhat frequent because the goal is to predict a behavior that is infrequent in the population. The best that one can do under this approach is to identify groups that are at a higher risk (Clark & Fawcett, 1992). Models have been created that organize these empirically-derived correlates of suicide, but their function is only to describe and not to guide research in an a priori way (Westefeld et al., 2000). This focus on risk factors has overshadowed the role of theory in understanding suicide. A theory of suicide should include definitions, basic concepts, hypotheses, models and research findings (Maris et al., 2000). Theory is important because it organizes and explains specific aspects of the environment, it leads to the creation of testable hypothesis, and it provides specific meaning to facts (Pedhazur & Schmelkin, 1991). The objective of science is the development of theory, and without it, science is only a simplistic search for answers without a framework of organization (Kerlinger, 1986).
Several suicide theories do exist within the literature, and one of those theories is the cubic model of suicide (Shneidman, 1987). This theory proposes that the probability for suicidal behavior is determined by three factors: pain, perturbation and press. Pain is psychological, or internal, in nature, and can range from minimal pain to intolerable pain. Unendurable psychological pain is a common stimulus in suicidal behavior (Shneidman, 1992) and is caused by frustrated psychological needs. The second factor, perturbation, is the state of being upset that can be caused by any number of factors and motivates one to action. The result is frequently dichotomous thinking and impaired problem solving, and these forms of thinking are often present in suicidal individuals. Press, the third factor, includes aspects of the inner and outer world that impact the individual. Press can be either or positive or negative, and it is the individual’s cognitive appraisal of these events that is important. These three factors, rated on an intensity scale of 1 to 5, are arranged cubically, and the result is a cube with 125 “cubelets.” Each cubelet represents risk for suicidal behavior, with the maximum risk being the 5-5-5 cubelet. Suicide risk can be minimized by reducing any one of the three dimensions (Shneidman, 1992).

Linehan and colleagues (Linehan, 1981; Linehan & Shearin, 1988) proposed a social-behavioral theory of suicidal behaviors. They suggest that suicidal behaviors are the result of an interaction between the individual and his or her environment, and between forces within the environmental system (e.g., negative life changes impacting social support) and person/behavioral systems (e.g., the effects of cognitive processes on physiological responses and their effect on overt behaviors) (Linehan & Shearin, 1988). They present a model that specifically suggests that suicidal behaviors are due to environmental and self-imposed/generated stress that combine with both individual
vulnerability (e.g., poor problem-regulating abilities, negative life expectations, low stress tolerance) and expectations that suicide may be an effective means of solving problems. In other words, this theory presents a diathesis-stress model and suicidal behaviors represent an individual’s attempt at solving problems.

Another theoretical approach is the existential-constructivist framework for understanding suicide (Rogers, 2001). This comprehensive theory of suicide integrates components of Yalom’s existential model and constructivism. Specifically, the existential concerns of death, meaninglessness, and isolation universally motivate humans to engage in activities to create personal meaning in their lives regardless of whether or not they are aware of these drives and motivations. When they become aware of the motivation to seek meaning, they also become cognizant of their freedom and personal responsibility in the construction of meaning in their lives. When meaning systems are threatened by interpretations or constructions of environmental barriers or challenges, individuals may maintain or alter their worldviews and personal constructions, or suicide may be chosen as a response. Treatment of suicidal individuals involves helping them understand their cognitive self-constructions and alter them so that they are not so rigid and unrealistic and a meaningful life may be sustained.

The escape theory of suicide (Baumeister, 1990) is another theoretical approach to studying suicide. Suicide is conceptualized as a means to escape from aversive self-awareness. First, an experience or life event occurs that falls short of the individual’s expectations or standards. This may take place either due to unrealistically high expectations, actual set backs and failures, or a combination of the two factors. Second, internal attributions are made about these disappointing outcomes, and the individual
blames him or herself for the shortcomings. Due to this self-blame, the individual then may be faced with a high level of aversive self-awareness. The fourth step in the escape theory is that this negative self-awareness may lead to negative affective states, and fifth, the individual may respond to this state of affect by trying to escape from awareness through the process of cognitive deconstruction (i.e., concrete thinking, cognitive rigidity, rejection of meaning). In a state of cognitive deconstruction, the individual may become irrational and disinhibited, and he or she may see suicide as an option for a further and more permanent escape. In conclusion, suicide is the end result of a causal chain of events, and it leads to an escape from self-awareness and the negative affect that is associated with it.

Westefeld and colleagues (2000) reviewed three additional theories of suicide (Overlap Model: Blumenthal & Kupfer, 1986; Three Element Model: Jacobs, Brewer & Klein-Benham, 1999; Suicide Trajectory Model: Stillion, McDowell & May, 1989). They noted that these theories were multidisciplinary in nature, but they were based on post hoc theorizing rather than being theoretical models that have been utilized to guide research on suicide. These theories, like the others reviewed, also all include an emphasis on the role of various cognitive/thought processes in suicidal behaviors. This is evident by the role of dichotomous thinking, problem-solving and cognitive appraisal in the cubic model; the role of problem-solving and self-expectations in Linehan’s model; and the role of interpretations and the personal construction of meaning in the existential-constructivist framework. The cubic model and the escape theory also acknowledge the role of affect in suicidal behaviors, but they emphasize the importance of cognitive processes in arriving at an affective state, so cognition is viewed as primary. In addition,
it is not clear if the affect states that these theories allude to fit within the circumplex model, characterized by two orthogonal dimensions, or if they are more unidimensional in nature. The emphasis on cognition in these theoretical examples is also seen in other suicide research and literature.

Major variables in suicide theory and research

In this section, closer attention is given to individual variables related to suicide that have received a great deal of attention, including hopelessness, problem solving, cognitive rigidity, dichotomous thinking, and several other variables. The variables are described, additional theories that relate specifically to them are noted, and the research associated with each variable is briefly reviewed.

Hopelessness. As previously noted, hopelessness is characterized as a belief that life conditions will not improve, and this belief itself is a predictor of eventual suicide among suicidal ideators (Beck, et al., 1985; Cole, 1989; Freeman & Reinecke, 1993; Weishaar & Beck, 1990). In some studies and literature, hopelessness is referred to as an affective and emotional state. Hopelessness appears to be largely a cognitive variable though because it is a thought and an appraisal about one’s conditions and life circumstances. Hopelessness may occur most often in conjunction with a variety of affective and emotional states, like despair and depression, but hopelessness itself is a cognitive variable.

The relationship between hopelessness and suicidal behaviors is well supported and documented in a variety of samples, including those with depression (e.g., Beevers & Miller, 2004), schizophrenia (e.g., Kim, Jayathilake & Meltzer, 2003; Nordentoft, Jeppesen, Abel, Petersen, et al., 2002), and bipolar disorder (e.g., Newman, Leahy, Beck,
Reilly-Harrington & Gyulai, 2002); college students (e.g., Abramson, Alloy, Hogan, Whitehouse, et al., 1998; D’Zurilla, Chang, Nottingham & Faccini, 1998); psychiatric inpatients (e.g., Beck, Brown & Steer, 1989; Beck et al., 1985; Bevers & Miller, 2004); and prisoners (e.g., Holden & Kroner, 2003; Holden, Mendonca & Serin, 1989). This list is not intended to be a comprehensive list of the populations or research that exists to support empirically the correlation between hopelessness and a variety of suicidal behaviors, but it is evident from the extent of this research that hopelessness is an important variable in understanding suicide.

Several attempts have been made to theoretically explain the relationship between hopelessness and suicide, including the hopelessness theory of suicidality (Abramson, Metalsky & Alloy, 1989), Beck’s theory of depression and suicide (1987), and the diathesis-stress-hopelessness model (Schotte & Clum, 1982, 1987). Both the hopelessness theory of suicidality and Beck’s theory (1987) hypothesize that a set of particular cognitive vulnerabilities lead to suicide, and this relationship is mediated by hopelessness. The cognitive vulnerabilities are slightly different in each theory: a depressogenic-inferential style in the hopelessness theory, and negative self-schema and dysfunctional attitudes in Beck’s theory. According to the hopelessness theory, those with a depressogenic-inferential style attribute negative life events to stable and global causes, believe that negative outcomes will follow from these negative life events, and the negative events will mean that they are worthless. These individuals are susceptible to developing hopelessness when they are faced with negative life events, and suicidality is a symptom of this hopelessness. In other words, according to the hopelessness theory, those with a depressogenic/negative style of inference will be at risk for suicide, and this
risk is mediated by hopelessness (Abramson et al., 1998). Beck’s theory (1987) states that negative self-schema (i.e., personal inadequacy, failure, worthlessness) results in vulnerability to depression. These negative thoughts are believed to develop into hopelessness, low self-esteem and depression when encountering negative life events, and due to this vulnerability to hopelessness, the individual is at an increased risk for suicide. Similar to the hopelessness theory, Beck also believed that cognitive vulnerability is a risk for suicide, and this risk is mediated by hopelessness.

The majority of the research conducted on the relationship between cognitive vulnerabilities and suicide supports the hypothesis of these two theories that hopelessness mediates the relationship (e.g., Beck, Kovacs & Weissman, 1975; Bevers & Miller, 2004; Weishaar & Beck, 1990). One specific example of this support can be seen in a longitudinal study of college students (Abramson et al., 1998). Participants were screened for cognitive vulnerabilities, and those scoring in the highest quartile on measures of cognitive vulnerability (i.e., attributional style, dysfunctional attitudes) were selected for a high-risk group (HR), and those in the lowest quartile were selected for a low-risk group (LR). Participants were followed for two and a half years, and findings at follow up were consistent with predictions based upon the hopelessness theory and Beck’s theory. The HR group demonstrated higher levels of suicidality than the LR group during the follow up period. In addition, the hypothesis that hopelessness mediated the relationship between cognitive vulnerability and suicide was supported, and other risk factors, like past history of suicidal behaviors, personality disorders, or history of depressive disorders, did not mediate this relationship.
The diathesis-stress-hopelessness model explores the relationship between problem-solving abilities, hopelessness and suicide. The ability to solve problems interacts with negative life stress to predict hopelessness, so the relationship between problem-solving abilities and suicide also may be linked by hopelessness in this model (Bonner & Rich, 1988). Because this model is focused more upon the role of problem solving in suicidal behaviors, this model is explained in more detail in the next section.

Additional empirical support for the importance of hopelessness exists that is not linked to these theories. Hopelessness continues to predict suicidality after controlling for a variety of other predictors, including psychiatric diagnosis (Conner, Duberstein, Conwell, Seidlitz, & Caine, 2001), depressed mood (e.g., Abramson et al., 1998; Bonner & Rich, 1988; Weishaar & Beck, 1990), and past suicidality (Abramson et al., 1998). Based upon the empirical support of these theories of hopelessness and suicide and the additional research testing the nature of the relationship between these two variables, it can be concluded that hopelessness is a key variable in understanding suicidality.

*Problem-solving*. Another important variable in understanding suicide is problem solving. The ability to solve problems is a well-documented cognitive process that is related to suicide. Suicidal individuals demonstrate limited abilities in finding solutions to interpersonal problems (e.g., Linehan, 1981; MacLeod et al., 2000; Schotte & Clum, 1982, 1987; Weishaar & Beck, 1990). Their weak problem-solving skills result in a lack of personal resources that are needed when experiencing strong negative feelings (Westefeld et al., 2000). Those with poor interpersonal problem solving may consider or opt for suicide as an attempt to solve their problems or to get rid of their problems rather than to attempt to manage them. Suicidal behavior may serve the purpose of seeking a
solution, so suicide may be a problem-solving behavior and may seem to be the only available answer to the individual (Shneidman, 1992).

Problem-solving is conceptualized and studied in two ways: actual abilities and perceived abilities. When studying actual problem-solving abilities, participants’ skills are directly examined, and when studying perceived abilities, the participants’ beliefs about their abilities, not their abilities themselves, are thought to be most important. Actual problem-solving abilities are most often measured using the Means-Ends Problem Solving Procedure (MEPS; Platt, Spivak & Bloom, 1971). Participants read 10 vignettes that provide a problem and the outcome, and then the participant is asked to complete the middle of the story, emphasizing the way that the character arrived at the ending. One of the most commonly used measures of perceived or self-appraised problem solving abilities and attitudes is the Problem-Solving Inventory (PSI; Heppner & Petterson, 1982). Those completing the PSI rank their agreement with 35 statements using a Likert scale, and these statements load upon three factors: problem-solving confidence, approach-avoidance style, and personal control.

One model that examines the importance of actual problem solving in suicidal behavior is the previously mentioned diathesis-stress-hopelessness model (Schotte & Clum, 1982, 1987). Based upon this model, those with poor problem-solving abilities are unable to develop alternative solutions for coping, and this is related to increased hopelessness when they are exposed to naturally occurring negative life stress. As discussed previously, hopelessness is one of the best predictors of suicidal behavior, so this increased level of hopelessness places those with poor problem-solving at an increased risk for suicidal thoughts and behaviors. Empirical support exists for this
model; for example, in a study of college students with suicidal ideation, the interaction of poor problem-solving ability and increased negative life stress was related to hopelessness and suicide intent using the MEPS (Schotte & Clum, 1982). In a different study of inpatients with suicidal ideation and/or suicidal behaviors and non-suicidal inpatients, suicidal individuals demonstrated lower problem-solving abilities and higher levels of life stress than did the non-suicidal controls. As their levels of life stress increased, there was also an increase in hopelessness and suicidal intent (Schotte & Clum, 1987).

Apart from this model, there is additional research support for the role of actual problem-solving abilities in suicidal behaviors. Actual problem-solving abilities appear to differentiate those with parasuicidal behaviors from other groups. Approximately 24 hours after being admitted for a parasuicide attempt, 12 participants were interviewed and their responses were compared to the responses of 12 non-suicidal control group participants who were matched on a variety of demographic variables (Evans, Williams, O’Loughlin, & Howells, 1992). The parasuicidal individuals displayed fewer and less effective problem-solving abilities than did the control group. The suicidal inpatients generated only half as many solutions to a given problem and they were less likely to be able to implement these solutions as compared to those in the control group. These findings were consistent with previous research (McLeavey, Daly, Murray, O’Riordan, et al., 1987).

Another study also examined the problem-solving skills in those with parasuicide and suicidal ideation. Linehan and colleagues (Linehan et al., 1987) used an abbreviated version of the MEPS to compare the interpersonal problem solving abilities of psychiatric
inpatients with current serious suicidal ideation, psychiatric inpatients admitted for current parasuicidal act, and a nonsuicidal inpatient psychiatric and nonpsychiatric (medical) control group. This scale measured both active and passive (e.g., allowing someone else to solve problems) strategies. They predicted that those in the suicidal groups would demonstrate more passive and less active problem-solving strategies.

As in the previous research findings, they discovered that suicidal psychiatric inpatients had greater expectations that suicide would solve their problems than did the psychiatric control group, and they had poorer problem-solving abilities. Contrary to their hypotheses, they also found that active interpersonal problem solving did not differentiate between suicidal and non-suicidal psychiatric inpatients. Active problem-solving did, however, distinguish between parasuicidal individuals and those with suicidal ideation only, as those in the parasuicide group were less active problem-solvers. So although there are differences in problem-solving abilities between suicidal and nonsuicidal individuals (i.e., greater expectations that suicide would solve problem), individuals who are suicidal are not uniformly more passive in their problem-solving. These findings were supported by Pollock and Williams (2004) who likewise concluded that suicide attempters displayed poorer problem-solving abilities, but not more passive ones, than a psychiatric control group.

In summary, the data from these studies suggest that there is a connection between actual problem-solving abilities and suicidal behaviors. Although this relationship is important, it may be possible that it is not the actual abilities that are most important, but perceived problem-solving abilities may play a more important role. Self-appraised problem-solving abilities directly impact problem-solving performance and
coping in life situations (Heppner, Baumgardner & Jackson, 1985), and in general, self-appraisals of competence are believed by some to be more important determinants of behavior than actual abilities (Bandura, 1986). Based upon a review of 20 years of research using the PSI to assess self-appraised problem-solving abilities, Heppner and colleagues (Heppner, Witty & Dixon, 2004) concluded that problem-solving appraisal is strongly related to hopelessness and suicidal ideation. Those who assess their problem-solving abilities to be ineffective demonstrate higher levels of hopelessness and ideation, and specifically, hopelessness may be the link between problem-solving appraisal and suicidal ideation (e.g., Bonner & Rich, 1988). In conclusion, both actual and perceived problem-solving abilities are a second important cognitive factor involved in suicide and there is strong empirical support for these factors.

*Cognitive rigidity and dichotomous thinking.* Those who are suicidal also may present with cognitive rigidity and dichotomous, or all-or-nothing, thinking (e.g., Bonner & Rich, 1986; Ellis, 1986; Neuringer & Lettieri, 1971; Shneidman, 1996; Weishaar, 2000). Dichotomous thinking has been conceptualized as a form of cognitive rigidity (Weishaar, 2000). These two constructs are involved in the problem-solving process, as rigid thoughts and dichotomous thinking impair abilities to form alternative solutions, and deficits in these two domains may account for the noted problem-solving difficulties in suicidal people (Ellis, 1986). As individuals become increasingly upset, they begin to move into more and more rigid dichotomous thinking and eventually view suicide as the only option to escape their subjective pain (Shneidman, 1987). This becomes a vicious cycle as cognitive rigidity and dichotomous thinking deficits lead to poor problem
solving and associated distress, and the distress exacerbates the rigid and dichotomous thinking.

There is empirical support that cognitive rigidity and dichotomous thinking play a role in suicidal thoughts and behaviors. Individuals in a high suicide-risk group evaluated life and death more extremely and displayed more dichotomous thinking in comparison to those with lower risk (Neuringer & Lettieri, 1971). In a different study, suicidal adolescents continued to use ineffective problem-solving strategies even after more effective strategies were presented, indicating higher levels of rigidity and its importance in problem-solving deficits (Levenson & Neuringer, 1971). These two studies support the fact that rigidity and dichotomous thinking are two additional cognitive factors or causes for suicidal thoughts and behaviors.

*Other cognitive variables.* Several other cognitive variables are related to suicidality, including a variety of cognitive distortions and the construction of meaning. Most of the cognitive factors related to suicide that already have been discussed can be characterized as cognitive distortions, including hopelessness, rigidity and dichotomous thinking. Negative automatic thoughts, catastrophizing, self-blame, overgeneralization, selective abstraction or confirmatory bias, and personalization are several additional cognitive distortions that are believed to be related to suicidal thoughts and behaviors (Freeman & Reinecke, 1993). These cognitive distortions have a potentially negative impact because they may contribute to significant emotional problems, including depression, and this may be related to suicidal thoughts and behaviors (Freeman & Reinecke, 1993).
Another cognitive process that is connected to suicidal outcomes is the construction of meaning. The existential-constructivist framework for understanding suicide (Rogers, 2001) described previously provides an explanation and framework for understanding this link. When people lack meaning in their lives, they experience emptiness and lack a purpose to continue living, and at this point, suicide seems like a viable answer to relieve this state of being (Frankl, 1967 as summarized by Edwards & Holden, 2003). Empirical support exists for the inverse relationship between life meaning and suicidality (e.g., Edwards & Holden, 2001).

Current treatment approaches

Not only is there a strong focus in the literature upon the cognitive variables that are related to suicide, treatment studies and recommendations for working with suicidal individuals likewise take a largely cognitive emphasis. Two of most popular approaches to therapy are Albert Ellis’ Rational-Emotive Therapy and Aaron Beck’s Cognitive Therapy. Both of these approaches include techniques that are believed to reduce some of the cognitive symptoms associated with suicide, including: feedback and self-monitoring to decrease dichotomous thinking, generating and testing potential solutions to improve problem-solving abilities, and education and sensitization to reduce rigidity (e.g., Ellis, 1986; Freeman & Reinecke, 1993). Ellis specifically advocated for the use of cognitive therapy in treating suicidal individuals, and he said that the treatment should focus on reducing hopelessness, cognitive rigidity, dichotomous thinking, ineffective problem-solving, and the acceptance of suicide as a solution through cognitive techniques (Ellis, 1986). Other researchers and therapists share Ellis’ sentiments; Weishaar and Beck (1990), for example, stated that the goal of therapy is to “reverse the negative spiral
to suicide” (p. 473) by initially dealing with hopelessness through correction of cognitive distortions and problem solving.

Freeman and Reinecke (1993) created a manual for the use of cognitive therapy in the treatment of suicidal behaviors. First, the therapist must conduct a thorough assessment, including a focus on what reinforces and maintains dysfunctional thinking and behavior, and then he or she creates a conceptualization that will guide further treatment. They suggest using a combination of cognitive and behavioral techniques. Some cognitive techniques that were suggested include utilizing a dysfunctional thought record, thought testing/experimentation, and assisting in the development of adaptive responses through a variety of techniques like decatastrophizing, fantasized consequences, labeling distortions, replacement imagery, cognitive rehearsal, thought stopping, and the development of cognitive dissonance.

Indirect support for the use of cognitive-behavioral therapy (CBT) and other forms of cognitive therapy with suicidal individuals can be derived from studies demonstrating that these approaches are effective and efficacious in the treatment of disorders and variables related to suicide. CBT and other cognitive therapies are widely accepted as empirically supported treatments for depression (e.g., American Psychiatric Association, 2000b; Craighead, Hart, Craighead & Ilardi, 2002; Smith & Glass, 1977), hopelessness (e.g., American Psychiatric Association, 2000b), bipolar disorder (e.g., Craighead, Miklowitz, Frank & Vajk, 2002), anxiety disorders (e.g., Barlow, Raffa & Cohen, 2002; Chambless & Gillis, 1993), and alcohol-related disorders (e.g., Finney & Moos, 2002). The incidence of suicidal thoughts and behaviors has been found to be higher within these specific diagnostic groups, so if cognitive therapies cause an
improvement in symptoms within these populations, then indirectly, it is possible that these cognitive treatments may also decrease suicidal risk for these individuals.

Not only is there strong support that CBT is effective and efficacious in the treatment of disorders that are related to suicide, but also there is direct evidence that CBT and cognitive approaches reduce suicidal thoughts and behaviors. Salkovskis and colleagues (Salkovskis, Atha & Storer, 1990) conducted a randomized clinical trial with 20 participants who had made repeated suicide attempts. These individuals were randomly placed into a treatment-as-usual group or a CBT group. Both at the conclusion of the treatment and at a one-year follow up, those in the CBT group showed significant improvements in their levels of depression, hopelessness and suicidal ideation, and at six-month follow up, they additionally demonstrated a decrease in suicide attempts.

In a 2000 review of the empirical research on the effectiveness and efficacy of various treatment approaches for suicidal individuals, Rudd located eight studies that evaluated the effectiveness and efficacy of specific treatment approaches. A majority of these studies examined the effectiveness and efficacy of short-term CBT, and he concluded that CBT along with a core problem-solving component is effective at reducing suicidal ideation, depression and hopelessness for periods of time up to a year. In order to reduce suicide attempts though, the research suggests that more long-term treatment would be appropriate, as Salkovskis and colleagues also concluded.

Based upon this review, it is evident that there is strong theoretical and empirical support that cognitive variables and processes play an important role in understanding and treating suicidal thoughts and behaviors. Cognition, however, is not the only way that people subjectively experience the world. We have experiences and reactions that do
not always incorporate thought, and perhaps thoughts that follow from, rather than precede, these physiological and affective reactions. Again, there is support that cognition and affect are controlled by two independent systems (e.g., LeDoux, 1989; Zajonc, 1984). Although it is true that cognition and affect are most often related to each other and occur in close proximity to each other, it seems they also can exist independently from each other. The dominance of studies on the role of cognition in suicide extends knowledge of this system quite thoroughly, and appropriate treatment recommendations have been derived based upon these findings. On the other hand, another system used to experience the world, affect, has not been studied empirically to the same extent and often it is relegated in an a priori fashion to a secondary role to cognition. Does affect play an important or unique role in suicidality? It may or may not, but the question cannot be answered adequately from the current research base. The pertinent research that does exist is reviewed in the following section.

The role of affect in the suicide literature

Affect is not ignored by the suicidal literature; however, the information and research findings discussing the role of affect most often seem to be overshadowed by the cognitive research. In the research and literature that claims to examine affect, occasionally cognition is actually being studied rather than affect or emotion, and the findings have not yet been systematically organized or informed by the circumplex model, a theoretical model of affect. Instead, the research focuses primarily upon identifying risk factors. There are links that can be made within the existing literature though that support the importance of studying the affect of suicidal individuals in a
theoretical context, including the role of affect in some cognitive processes that have been connected to suicide.

“Affect” literature that is not studying affect

Occasionally hopelessness, depression, and other “feelings” are referred to as affect in the literature, but based upon the given definitions, these are more accurately labeled as cognitions (as in the case of hopelessness) or typically involve a strong cognitive component (as in the case of the diagnosis of depression). First, hopelessness is referred to as a type of affect in some literature (e.g., Mendonca & Holden, 1998; Nock & Kazdin, 2002; Zlotnick et al., 1997), but hopelessness is characterized as a belief that life conditions will not improve. As previously mentioned, hopelessness is a thought due to the cognitive appraisal involved.

The diagnosis of major depression and other mood disorders is also frequently categorized as affect or emotion (e.g., Esposito, Spirito, Boergers, & Donaldson, 2003; Mendonca & Holden, 1998; Nock & Kazdin, 2002), but most often cognitive aspects, like self-blame and low self-esteem (American Psychiatric Association, 2000a), are prominent. There is ample support that mood disorders are related to suicidal behaviors (e.g., American Psychiatric Association, 2003; Black & Winoku, 1990; Clark & Fawcett, 1992; Houston et al., 2001; Nierenberg et al., 2001). Approximately 50% of those who complete suicide are clinically depressed (Black & Winoku, 1990). In those with the diagnosis of major depression, the standardized mortality ratio (ratio of observed mortality to expected mortality) by suicide is 20.4, the annual suicide rate is .29% and the estimated lifetime suicide rate is 14.6%; and in those with bipolar disorder, the standard mortality ratio is 15.0, the annual suicide rate is .31%, and the estimated lifetime suicide...
rate is 15.5% (American Psychiatric Association, 2003). Clearly, those with mood disorders have an increased likelihood of suicidal behaviors and death by suicide. It is important to remember that even though close to 90% of suicides are by those with psychiatric diagnosis, only a small percentage of those with psychopathology die by suicide (Conner et al., 2001). Mood disorders alone do not predict or explain who will attempt or die by suicide. In addition, it is not clear which of the components involved in the diagnosis of major depression—affect, emotion, cognition, or behavior—are the active ingredients that lead to suicide in mood disorders. Further research is needed to support the role of affect. It is important to keep in mind though, that there is much overlap in constructs; suicidal ideation is one of the possible criteria for major depression.

Other studies on suicide purport to study affect and emotion, but they are actually not based upon the current definitions. For example, Neuringer and Lettieri (1971) conducted a study with the stated purpose of examining the affective measures of suicidality, but upon closer examination, affect was measured as feelings of self-destructiveness (i.e., wanting to die) and level of self-lethality. “Feelings” of self-destructiveness are cognitive in nature and the level of self-lethality appears to be based more upon behavioral observations of the experimenters, so these researchers were actually not studying affect as currently defined.

Non-theoretical affect studies: Empirically-derived risk-factors

A fair of amount of research on the emotional and affective differences between suicidal and non-suicidal individuals has been conducted, but this research is only looking at empirically-derived risk factors and does not incorporate theories of affect. Some of the noted differences are that suicidal individuals are more angry, anhedonic,
anxious, hostile, irritable and highly arousable (i.e., Conner et al., 2001; Fawcett, 2001; Fawcett et al., 1990; Lester, 1968; Linehan, 1999; Mehrabian & Weinstein, 1985; Vaillant & Blumenthal, 1990; Valentiner, Gutierrez, & Blacker, 2002; Weissman, 1974).

In one specific example, the affective states of suicidal patients and depressed non-suicidal patients were compared (Hendin, Maltsberger, Haas, Szanto, & Rabinowicz, 2004). Some of the affective states seemed to include cognitive components, like hopelessness and self-hatred, but other affective states appeared to be actual measures of affect, like rage and humiliation. Therapists rated as not present, present or intense, nine affective states of their suicidal patients, and they rated these affective states in depressed non-suicidal patients as a comparison group. Their ratings suggested that suicidal patients demonstrated more intense levels of affect, they displayed desperation most often, and they also showed higher levels of hopelessness, rage, abandonment, self-hatred and anxiety than the control group. Limitations of this study include the small sample size, lack of a validated instrument measuring affect, and possible bias in affect ratings related to their being completed in retrospect for the suicidal persons, after their known suicide deaths. Despite its limitations, this study does lend a degree of support to the idea that the affective and emotional experiences of those who are suicidal are different than those who are not suicidal, and that affect may be important to study.

In addition to the evidence suggesting affective differences between suicidal and nonsuicidal individuals, there also is some support that those with different types of suicidality may display slightly different patterns of affect. Although depressed affect/mood is common for both those who attempt and complete suicide, anger and hostility are more associated with those who attempt suicide, while apathy, anhedonia,
and anxiety are more associated with those who die by suicide (Linehan, 1993). A similar pattern was found when examining the affective states of those with parasuicidal behavior and those who died by suicide. Parasuicide and completed suicide were both related to depressive experiences; parasuicidal behavior was also more related to anger, and completed suicides were more related to apathy (MacLeod et al., 1992). The authors concluded that anger may be a protective factor for completed suicide and risk factor for parasuicide. Affect also appeared to be different in children and early adolescents with single versus multiple suicide attempts (Esposito et al., 2003). Those with multiple attempts had more severe depressive symptoms and anger than did the single attempters, and the difference in anger remained after controlling for diagnosis of mood disorders. In this study, the multiple attempters group could possibly include parasuicidal individuals; if it did, these findings are consistent with the other research noted.

This research illustrates that the affect of suicidal individuals has been studied, but again, the findings are not organized within a theoretical framework. Instead, the research most often only notes the affective states that are risk factors for suicidal thoughts and behaviors. As mentioned earlier, a theoretical approach to studying suicide is important and knowing empirically-derived risk factors has not resulted in a decrease in the rate of suicidal behaviors (e.g., Westefeld et al., 2000).

Support for the importance of studying affect in suicidal individuals

Even though the focus upon affect in the suicidal literature is limited because it is not theoretical in nature, this research provides some preliminary support that the study of affect may be important in understanding suicide. Additional support for the importance of studying affect is more indirect and can be derived from other suicide research and
literature. First, affect regulation may influence or be related to suicidal thoughts and behaviors. Second, the concept of psychological pain is incorporated in Shneidman’s cubic model of suicide and Baumeister’s escape theory of suicide, and this pain may be related to affect. Although it is true that both of these theories emphasize cognition also, they acknowledge the important role of affect and support the further investigation of affect. Third, affect may be related to and play a role in some of the cognitive factors involved in suicide, like problem-solving and reasons for living. All of these examples provide a rationale for the importance of increasing the focus and attention on the affect of suicidal individuals.

The ability to regulate affective states may be related to suicidal thoughts and behaviors because suicidal behaviors have been viewed as one strategy to manage intense affect (Zlotnick et al., 1997). As is explained, affect regulation involves an interaction between cognitive and affective processes, but still provides a rationale for the importance of incorporating affect into the study of suicide. Catanzaro (2002) provides a thorough review of mood regulation and suicidal behavior. He noted that mood, affect and emotion regulation are related but slightly different processes; mood regulation is the “process of trying to feel better” (p. 82), and affect regulation is a more specific term that entails efforts to change the pleasantness or activation of emotional experiences. Catanzaro attempted to summarize the general classification schemes of mood and affect regulation; he concluded that the two primary dimensions are whether the strategy is cognitive or behavioral, and whether it is aimed at directly (e.g., cathartic venting) or indirectly (e.g., avoidance, substitution) changing the mood/affect. Mood and affect regulation strategies vary in their effectiveness and research results are variable, but it
seems as if cognitive strategies and those that increase the likelihood of pleasant experiences are more effective.

There are also individual differences in abilities that are based upon temperament, personality traits, skills and expectancies. In his review of recent studies of mood regulation and suicidal behavior, Catanzaro concluded that mood regulation deficits are associated with the degree of suicidality and a history of suicide attempts. He proposed a tentative model to explain the individual differences in mood regulation and suicidal behavior that incorporates predisposing factors (i.e., temperament, early environment) interacting with mood regulation deficits (i.e., few skills, expectancies) at the point of a critical life stressor. This results in negative mood and cognitive appraisal that influence regulation attempts and may result in suicidal behavior if the individual becomes hopeless, expects self-injurious behavior to reduce affect intensity, or engages in ineffective regulation strategies.

Linehan (1993) also created a model that incorporates both affect regulation and suicidal behaviors, and her model also discusses predisposing temperamental and environmental factors. In those who are “chronically suicidal” (p. 150) or frequently attempt suicide, a pattern of emotional and behavioral dysregulation is present, and may be the result of an initial temperamental or biological disposition in combination with an “invalidating rearing environment” (Linehan, 1993). This connection between affect dysregulation and suicidal behavior has been supported by other research. Zlotnick and colleagues (1997) examined the relationship between affect regulation and self-destructive behaviors in adolescent inpatients who recently attempted suicide, and attempters demonstrated significantly more regulation difficulties than did inpatients with
suicidal ideation only. Their findings supported their hypothesis that suicide attempters would report higher levels of affect dysregulation than those with suicide ideation only, and they concluded that suicide attempts may be one means to reduce intolerable emotional and affective states.

The inability to regulate mood or affect is most often in reaction to a life stressor that brings about an intense affective or emotional reaction, and suicidal behaviors may be one way to attempt to cope with this state. Shneidman (1992, 1996) and Baumeister (1990) each have presented theories of suicidal behavior that also focus upon our reactions to life events and their theories claim that suicide is an escape from psychological pain or negative affect. Shneidman (1996) said that this pain (a.k.a. psychache) causes anguish, disturbance and perturbation that provides the motivation to attempt suicide, and even though he does not use the term affect in reference to this pain, it is possible that this pain represents affect. Shneidman also emphasizes the role of cognitive appraisals and the balance between thoughts and feelings in reference to the suicidal individual, but his theory suggests that affect is worth noting. Baumeister actually used the term negative affect to describe reactions to aversive self-awareness due to self-blame for negative life events in his escape theory. He said that this negative affect is associated with increased suicide attempts to escape this state of existence. Both of these theorists incorporate an affective element in their theories, but again, these theories do not incorporate the postulates from the leading theory of affect (e.g., two orthogonal dimensions of affect). Similar to Shneidman, Baumeister also states that cognitive processes are important and in the escape theory, and precede affect, but the interaction of these two systems adds important information to the study of suicide.
Another line of argument supporting the incorporation of affect is that even though the majority of the research and literature on suicide focuses primarily on cognition, it may be the case that affect actually may influence or at least play a role in these cognitive processes. Although affect and cognition are defined as distinct constructs, the two often co-occur together. Psychologists have hotly debated the relationship between affect and cognition, and whether affect or cognition is primary (e.g., Lazarus, 1984; Zajonc, 1984; Zajonc & Markus, 1984). Although there are mixed findings and beliefs on this issue, most would agree that a relationship most often exists between the two systems, but they can also function independently. This relationship may also be seen in the suicide literature and provides support for a connection between and the importance of affect and suicide. For example, affect has been found to play a role in problem-solving and reasons for living, two factors that are conceptualized as cognitive and that play a role in suicidal thoughts and behaviors. Alexithymia also may be related to suicide and includes an interaction of both cognitive and affective processes.

Problem-solving is a cognitive process that plays a role in suicidal behavior, as described earlier. A link between problem-solving and affect has also been established through research and theory. Positive affect, the “extent to which a person avows a zest for life” (Watson & Tellegen, 1985; p. 221), is linked to several improvements in cognition related to problem solving. As will be explained in more detail in a following section, positive affect and negative affect are believed to be independent of each other. Positive affect is related to more flexible, rapid and efficient thinking, influences decision-making through an increased integration of cognitive material, and promotes improved organization within the mind, more complex cognition, and innovative and
creative responding (Isen, 1993). Affect also impacts the way that information is processed. Positive affect leads to a schema-based, or “top-down” processing style, and negative affect seems to lead to a “bottom-up,” or externally-focused processing style (Forgas, 2001). It is also possible that there is a physiological explanation for the influence of positive affect on cognition. Positive affect is believed to be associated with increased brain dopamine levels. Creative problem solving is then improved due to this increased dopamine in specific areas of brain, like the anterior cingulate, leading to improved cognitive flexibility (Ashby et al., 1999).

Fredrickson (2001) proposed the broaden-and-build theory to provide an explanation for the connection between affect and problem-solving. This theory states that when certain forms of positive affect are activated, they broaden people’s “momentary thought-action repertoires” and build upon their personal resources, including the physical, intellectual, social and psychological. Positive affect is believed to reinforce continued action, so positive affect results in individuals interacting with the environment and participating in adaptive activities. In Fredrickson’s (2001) article introducing this theory, she provides some theoretical and empirical support: people experiencing positive affect show flexible, creative, and efficient thought, and positive emotions undo lingering negative emotions. For example, studies have shown that positive emotions are able to undo cardiovascular after-effects of negative emotion.

One research study was found that directly examined the relationship between affect, problem-solving and suicide. Joiner and colleagues (Joiner, Pettit, Perez, Burns, Genco, & Genco, 2001) conducted a treatment intervention study to assess the hypothesis that positive affect and emotions can foster more positive problem-solving
attitudes and actions in suicidal individuals. They based their study theoretically on Fredrickson’s (2001) broaden-and-build theory. Participants in their study were 93 men and 20 women who were referred to a larger treatment study for suicidal young adults. They were referred from outpatient and inpatient clinics and an emergency room if they demonstrated suicidal behavior or severe suicidal ideation, as determined by self-report and clinician assessment. At intake, participants were administered the PSI, the Modified Scale for Suicidal Ideation (MSSI; Miller, Norman, Bishop, & Dow, 1986), the Suicide Probability Scale (SPS; Cull & Gill, 1989), and Millon Clinical Multiaxial Inventory (MCMI; Millon, 1983) to assess affectivity. Individuals then were assigned to one of two treatment groups. The first group was involved in structured and intense group therapy focusing upon interpersonal skill development and adaptive coping that focused upon problem-solving, psychoeducation, and experiential/affective elements, and the second group was involved in “treatment as usual” (i.e., combination of inpatient and outpatient services). Participants completed the same four scales at follow-up sessions at six and 12-months.

Regression analyses were run in order to determine if positive affectivity predicted improved problem-solving and, in turn, decreased suicidal symptoms. Results indicated that problem-solving improved in patients, but the improvement was more significant in those with higher levels of positive affectivity, and problem-solving mediated the relationship between affect and suicide. An implication of this finding is that prior to working with individuals who are suicidal to enhance their problem-solving skills, therapists may be able to foster increased problem-solving through eliciting positive affect prior to treatment. One of the major limitations of this study was a high
attrition rate, and those who dropped out had lower levels of problem-solving than those who remained in the study. This study provides empirical support that affect is important to consider in those with suicidal thoughts and behaviors, and affect may influence and change the cognitive factors that are related to suicide.

Another link can be drawn between suicide, affect and cognition by examining the relationship between affect and the Reasons for Living inventory (RFL; Linehan et al., 1983). The RFL scale was created to measure the strength of individuals’ reasons for wanting to live if the thought of suicide occurred to them, and scores on this measure accurately differentiate those who are not suicidal from those who are suicidal ideators and attempters (Linehan et al., 1983). Experimental studies suggest that reasons for living and dying may change based upon mood, or long-term affect. If this is indeed the case, then it is possible that affect alters reasons for living, and this in turn may impact suicidal behaviors.

A series of three experiments (Ellis & Range, 1989, 1992; Turzo & Range, 1991) was conducted to test the hypothesis that mood influences reasons for living. The RFL was first administered to all undergraduate participants, and then participants were randomly assigned to either the control group or one of several experimental groups that participated in a mood induction procedure for different moods. For the mood induction procedure in two of the studies (Ellis & Range, 1989, 1992), participants listened to an audio tape that asked them to recall three past personal experiences spaced 30 seconds apart that were progressively sadder or happier, depending on the desired induced mood. Control groups listened to an unrelated story or waited. For the third study (Turzo & Range, 1991), the Velten mood induction procedure was utilized to prompt elated,
depressed or neutral moods. This procedure involves participants reading 60 self-referent statements to themselves in the mood instructed. For example, if the participant was randomly placed in the depressed mood group, he or she would read statements like, “I’m unhappy about myself.” A manipulation check used in two of the studies (Ellis & Range, 1992; Turzo & Range, 1991) showed that the manipulation was successful. Finally, all participants in all three studies completed the RFL again and pre- and post- scores were compared.

Results revealed that mood states influenced reasons for living, and results varied slightly in each of the three studies. In Ellis and Range (1989), significant differences between pre- and post-test RFL scores were noted overall and on three of the six subscales. When positive moods were induced, concern for family and survival and coping beliefs became stronger reasons for living, and when remembering unpleasant events to induce a sadder mood, participates scored higher on fear of social disapproval subscale. In Ellis and Range (1992), those in the induced-elation group also scored higher on the total RFL than did the mood-induced depressed or two control groups. Again, the mood-induced elation group scored higher on Responsibility to Family scale, and the mood-induced depressed group did not show any differences on reasons for not committing suicide. Turzo and Range (1991) found that mood influenced reasons for living, but in a slightly different manner. In their study, inducing both depressed and elated moods appeared to increase reasons for living. They hypothesized that when feeling depressed, we may rely more heavily upon internal resources for staying alive. Although the exact findings varied somewhat, it can be concluded that changes in mood (or long-term affect) cause changes in the intensity of reasons for living, which are
related to suicidal thoughts and behaviors. Affect may be primary in this case and influence an individual’s cognitive state and risk factors for participating in suicidal actions, and this provides a clear rationale for the importance of studying affect as it related to suicide.

In summary, there is little research on the affect of suicidal individuals, especially in relation to the amount of research on the cognitions of those who are suicidal. There are some connections within the literature between cognitive variables related to suicide and the influence of affect on these processes, providing a rationale to place more emphasis on affect. Most of the research that does exist examines the rates of a variety of states of affect and emotion that are empirically-derived risk factors. This is useful information, but this area of study could be advanced and organized by applying the circumplex model of affect.

Circumplex model of affect

One promising approach to studying affect in relation to suicidality is the widely researched and supported circumplex model. Prior to discussing the details of this model and the empirical support, a brief overview of the history of studying emotion and affect is provided in order to offer an historical context for current findings and the relationship between cognition and affect. Readers should bear in mind, however, that terminology has in some cases shifted since that used in these early writings; affect and emotion are often used interchangeably by these early theorists.

Philosophers have been concerned with emotion and affect since before Socrates. Earlier views (e.g., Plato) suggested that emotions were inferior to thoughts and reason;
they were seen as more primitive, less intelligent and more dangerous (Solomon, 1993). Modern theories of emotion are believed to derive from James’ theory of emotion (later known as the James-Lange theory) that states that a stimulus elicits a physiological reaction and then we interpret these reactions and arrive at emotional feelings. In other words, “We feel sorry because we cry, angry because we strike, afraid because we tremble” (James, 1968; p. 450; cited by Goldstein, 1994). Other theories and research have provided support for the James-Lange theory of emotion. Zajonc (1984) argued that unconscious stimuli can trigger emotional reactions independently of and even in opposition to individual’s cognitive appraisals. LeDoux (1989) similarly believed that physiological responses are the most important. He says that we can phenomenologically feel our emotions in our bodies. Based upon neurological feedback from our bodies during emotional experiences, there is evidence that subjective states of emotion can be artificially stimulated by inducing somatic changes (e.g., changing musculature of the face).

Some cognitive theories are “defenders of the rationality of emotions” (Redding, 1999; p. 2), and they criticize James’ theory because it does not allow room for the primary operation of cognitive influences on emotion. Those advocating for the cognitive view of emotions state that emotions are not just the causal effects of stimuli, but instead, they are the effects of the stimuli as understood and evaluated by the individual (Redding, 1999). One of the most famous opponents of the James-Lange theory is the Singer-Schachter theory (Schachter & Singer, 1962). In one of Schachter and Singer’s experiments (1962), physiological arousal was induced using norepinephrine injections. Simultaneously, attempts were made to manipulate
participants’ thoughts in specific ways. The authors concluded that the cognitive
interpretation and labeling of states of arousal was essential in the process of
experiencing an emotion.

The relationship between cognition, affect and emotion has been debated
throughout the historical theories of emotion, and the debate continues regarding whether
or not cognition and affect can be independent of each other and if so, which of the two is
primary (e.g., Lazarus, 1984; Zajonc, 1984). Over time, the prevailing view has become
that affect and cognition are distinct processes, but in interaction they produce emotion.
Still, support exists for both sides of the coin, and researchers actively debate these
issues. Some rapprochement to these two contradictory sides is brought by close
examination of the operationalization of these terms. For example, Lazarus (1984) stated
that cognition is primary, or comes before, affect in all instances, but Zajonc (1984)
believed that affect is separate and can precede cognitions. He pointed out that Lazarus
included cognitive appraisal in his definition of affect, so the two are debating separate
constructs.

These theories and differing viewpoints have led to the research on the structure
of affect. Most of the research supports a circumplex model of affect, with positive affect
the “extent to which a person avows a zest for life” (Watson & Tellegen, 1985; p. 221),
and negative affect, “extent to which a person reports feeling upset or unpleasantly
aroused” (p. 221), being orthogonal dimensions. There are some variations in
terminology used in this model, but they are all actually demonstrating the same
phenomenon. The word affect is used in reference to this model and from this point on
because this is the terminology used most often by researchers in this area, even though affect and emotion overlap to a large degree.

The history of the circumplex model dates back about 50 years. Studies of self-reported affect began with the assumption that positive and negative affect were bipolar dimensions, or opposite of each other. However, with the rise of objective assessment techniques, the issue of the possible independence of negative and positive affect was quickly raised (Feldman Barrett & Russell, 1998). The first studies of this nature supported the notion that affect could be described using several unipolar constructs. Nowlis and Nowlis (1956) factor analyzed self-reported affective states and concluded that there are between 6-12 independent unipolar factors of affect. Bradburn (1969) and Bradburn and Caplovitz (1965) also conducted research that supported the independence of positive and negative affect. In their studies, participants completed two checklists (Positive Affect Scale and Negative Affect Scale) of the frequency of experiencing five positive and five negative affect terms over the past few weeks. The major finding was that the correlation between the positive and negative affect items was low, while the correlation within the positive and negative items was much higher.

After establishing the possibility of the independence of positive and negative affect, researchers discovered that these unipolar constructs of affect might be systematically related to each other in a circular arrangement. In Schlosberg’s (1952) study, participants arranged facial expressions of emotions (term used in the study) into categories set by the experimenter, and their errors were examined. From these errors, Schlosberg was able to determine that emotions were organized in a circular-representation around the dimensions of pleasantness-unpleasantness and attention-
rejection. Similarly, Abelson and Sermat (1962) asked participants to rate the similarity-dissimilarity of pairs of facial expressions. Results were represented circularly in a two-dimensional space with pleasantness-unpleasantness and the combination of attention-rejection and sleep-tension serving as the axes.

Russell (1980) provided further empirical support for this circular arrangement through scaling 28 affective adjectives using several different methods: category-sort tests (i.e., participants asked to place 28 words into one of eight categories on circular model and then asked to place the eight categories into circular order), multidimensional scaling of terms, unidimensional scaling, and principle components analysis of participants’ self-reports of current emotional states. With the results from these multiple methods, he proposed a detailed circular model of affective states with pleasantness and arousal at the axes and the following coordinates: pleasure (0 degrees), excitement (45 degrees), arousal (90 degrees), distress (135 degrees), displeasure (180 degrees), depression (225 degrees), sleepiness (270 degrees), and relaxation (315 degrees).

In these studies, the affect terms were arranged around the axes of pleasantness-unpleasantness and degree of arousal or activation, but another rotation frequently applied to this two-factor space uses positive affect and negative affect as the axes (Figure 1.1). Both variations represent the same model, they are just two different ways of labeling the same information. With positive affect and negative affect as the axes, the high end of each dimension represents state of affective arousal. Thus, an individual can experience any combination of high or low intensity positive affect and high or low intensity negative affect over a given time period.
There is a great amount of empirical support for both variations of the circumplex model of affect. In this circumplex arrangement of affect, positive and negative affect are orthogonal dimensions; therefore, the research studies supporting this arrangement also support the independence of positive and negative affect. The independence of these dimensions is also supported by examining correlations between the two dimensions, correlations with external factors, and factor analyses (Russell & Carroll, 1999).

The correlations between the two dimensions are first presented. Bradburn and colleagues (1969; Bradburn & Caplovitz, 1965) found a weak correlation between positive and negative affect using the Positive Affect Scale and the Negative Affect Scale. This finding was replicated using this scale with several different samples (range -.05 to -.30, summarized by Diener & Emmons, 1985). These correlations do not suggest complete independence; more convincing evidence comes from the fact that the correlations of the items within the positive and negative affect scales are much higher. There has been some criticism of the scales used by Bradburn and colleagues though, and it is possible that the independence of positive and negative affect may in fact be only an artifact of the scale. Using different methods of measurement, however, independence was also supported. Positive and negative affect were not strongly intercorrelated when measured by the Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988b) (e.g., Goldstein & Strube, 1994; r = -.22 when participants rated affect over the “past few weeks”).

If positive and negative affect are related to different external factors, then this provides more support for the independence of the two dimensions. A study by Diener and Emmons (1985) of the zero-order correlations between the affect variables and
personality variables and measures of symptoms of psychological disorders provided such support. Most often, one of the types of affect correlated with one of these external variables, and the correlation with the other type of affect was near zero. For example, a significant negative correlation existed between negative affect and the personality trait of warmth, while a near-zero correlation was found between positive affect and warmth.

The independence of positive and negative affect is supported also through a variety of factor analyses using the PANAS (e.g., Beck et al., 2001; Crocker, 1997; Mackinnon, Jorm, Christensen, Korten, Jacomb, & Rodgers, 1999; Watson et al., 1988b) and other measures of positive and negative affect (e.g., Lawton, Kleban, Dean, Rajagopal & Parmelee, 1992). Watson and Tellegen (1985) reanalyzed a number of studies of self-reported mood and found that positive affect and negative affect emerged as the first two Varimax rotated dimensions in an orthogonal confirmatory factor analysis. Results support the stability, independence and robustness of positive and negative affect in self-report measures. Factor analyses of measures of affect created in other languages and cultures found similar results (e.g., Japanese in study by Watson et al., 1984; Israeli culture in Hebrew by Almagor & Ben-Porath, 1989).

Independence was also supported through experimental manipulation of affective states and participant self-report. Diener and Iran-Nejad (1986) asked participants to read stories that were designed to evoke affective states. Based upon participants’ responses it was concluded that positive and negative affect could be felt at varying levels without influencing the value of the opposite type of affect, so there may not necessarily be an inverse relationship between the two types of affect. In addition, affect manipulations also demonstrated a general “spreading” of negative affect and positive affect to other
affective states of same hedonic type, and participants reported times when they felt moderate amounts of positive and negative affect together.

Not all researchers agree that affect is structured in this circumplex arrangement with positive and negative affect being independent from each other. Some of the contradictory findings regarding the independence of positive and negative affect may be due to differences in the time frames in which affect is examined. During shorter periods of time, positive affect and negative affect may be correlated negatively, but when examining longer periods of time, the mean levels may be independent. To sort out whether or not they are independent, positive and negative affect were measured over different time periods using broad affective terms (Diener & Emmons, 1985). Through five related studies, the researchers found that the relationship between positive and negative affect differed depending on the time period. The strongest negative correlation occurred during highly emotional moments, and correlations linearly decreased as the time span in which affect was measured increased logarithmically. Positive and negative affect were independent in terms of how people felt over longer periods of time. According to the researchers, the negative correlation during more emotional times suggests that some mechanism may suppress the other, but this only occurs for short time period. They concluded that separate processes must influence both positive and negative affect (Diener & Emmons, 1985). Their conclusions have been supported empirically in other research studies as well (e.g., Diener, 1999; Diener, Smith & Fujita, 1995).

Despite these findings, others continue to state that the two dimensions are not orthogonal. Green, Goldman and Salovey (1993) said that the independence between
positive and negative affect disappears when controlling for measurement error in affect scales. When error, time frame, and different response formats (i.e., strictly unipolar versus bipolar Likert scales) are taken into account, Russell and Carroll (1999) also agreed that bipolarity fits the data best.

Several researchers have responded to this critique by Green and colleagues. Watson and Clark (1997) disagreed and said that the positive and negative affect dimensions still remain largely independent even when random and systematic errors are taken into account. In addition, the methods used by Green and colleagues to attempt to model this error have been criticized as an overcorrection by some (Watson et al., 1999). Feldman Barrett and Russell (1998) said that measurement error does indeed bias the observed results toward independence and away from bipolarity, but this does not explain the whole story. The control of measurement error results in strong bipolarity of “hypothesized semantic opposites,” but control of measurement error does not produce bipolarity in items that are not commonly understood as opposite in meaning. They stated that perhaps both sides are right; the structure of affect may have two independent dimensions that are both bipolar in nature.

An important point is made by Cacioppo and colleagues (1999) that the expression of affect through our self-ratings, language and behavioral responses may at times be best described as bipolar; however, this does not imply that the underlying structure of affect necessarily fits neatly into the bipolarity model. Our language and behavioral predispositions may prevent us from outwardly expressing positive and negative affect simultaneously, even though both may be operating independently. In
fact, data from neurosciences (summarized by Watson et al., 1999) and the majority of
the social sciences suggest that the two systems are indeed independent.

The circumplex model has been applied to a few clinical topics and has enhanced
psychologists’ understanding of the various phenomena under investigation. One
example is the study of depressive and anxiety disorders, which has been advanced
through the application of the circumplex model. For some time, the differentiation of
these two classes of disorders using self-report measures was controversial and
challenging (e.g., Clark, 1989; Feldman, 1993; Watson et al., 1988a). By conceptualizing
positive and negative affect as independent dimensions, researchers have been able to
improve the differentiation and diagnosis of anxiety and mood disorders. Negative affect
was directly correlated with symptoms of both anxiety and depression, but positive affect
was only inversely correlated to symptoms of depression (e.g., Beck et al., 2001; Jolly et
al., 1994; Watson et al., 1988a). Differences in levels of positive affect further
differentiated various subtypes of depression from one another (Lovejoy & Steuerwald,
1995).

Several of these studies also examined the relationships between positive and
negative affect and cognitions in those with anxiety and mood disorders. The cognitive
correlates of negative and positive affect were studied, and it was hypothesized that
worry was related to negative affect since worry is a cognitive component of both anxiety
and depressive disorders (Beck et al., 2001). The data supported this hypothesis, as
worry was positively correlated with negative affect, and hopelessness was negatively
correlated with positive affect. Hopelessness has been linked to suicidal thoughts and
behaviors throughout the literature, so this study provides support for a connection
between positive affect and suicide via hopelessness. The relationship between affect and cognitions to anxiety and mood disorders was also studied by comparing the cognitive content-specificity hypothesis and the circumplex model. Beck’s (1976) cognitive content-specificity hypothesis states that anxiety and depression can be differentiated by cognitive content. Since positive and negative affect also appear to differentiate the two disorders from one another, researchers tested whether the integration of these two models improves the discrimination of the disorders. Findings have been mixed; some support the cognitive content-specificity hypothesis more strongly (e.g., Beck & Clark, 1988; Clark, Beck & Stewart, 1990), while others support the affect model (e.g., Jolly et al., 1994). In general, however, the research indicates that a combination of the two models improves the discrimination between anxiety and depressive disorders (e.g., Jolly et al, 1994).

The circumplex model assists in differentiating anxiety and depressive disorders. Perhaps it also will aid in distinguishing between different types of suicidal individuals (e.g., ideation only, “attempters” with and without intent to die). Another potential strength of applying this model to the study of suicide is that it may organize information about the relationship between affect and suicide in a manner that lends itself to systematic investigation and an overdue, thorough appraisal of the role of affect in suicidality, both on its own and in relation to cognition.

Current study

The current study is designed to examine the role of affect in suicidal thoughts and behaviors from a theoretical perspective. In particular, the relationship between the
two types of affect (i.e., positive affect and negative affect) and suicidal thoughts and behaviors is investigated to evaluate whether or not the circumplex model of affect is an appropriate and useful model for studying affect in suicidal individuals. In addition, the current study is designed to assess whether information about affect adds additional information about suicidality beyond the information provided by important cognitive variables. The following questions are answered:

1. Is there a relationship between affect and suicidal ideation, hopelessness, and suicidal behavior? It is hypothesized that several significant relationships exist between these variables. Both positive affect and negative affect are predicted to be related to suicidal thoughts and behaviors. Negative affect, but not positive affect, is also expected to be related to nonlethal self-harm behaviors because past research has demonstrated that anger and hostility were related to parasuicide, but apathy (low positive affect) was related to completed suicides more than it was to parasuicide.

2. Are different combinations of positive and negative affect related to different patterns of suicidal ideation and behavior? How strongly do positive and negative affect together relate to suicidality, as represented by variables assessing suicide ideation through suicide attempts? It is hypothesized that different patterns of affect, or canonical variates, are related to different combinations of suicidal ideation and behaviors (these combinations are also termed canonical variates). Preliminary research cited earlier suggests that different types of suicidal behaviors have different affective correlates. This analysis extracts two variates in this case (number of variates is equivalent to the number of independent variables). The present stage of development of canonical correlation analysis precludes specific hypothesis-testing and instead is considered a
descriptive or screening procedure (Tabachnick & Fidell, 2001); therefore, there are no hypotheses regarding the nature of the linear combinations. The information generated by this procedure, however, provides the descriptive foundation necessary for theory development and future hypothesis-testing research in this new area, should important relationship patterns emerge.

3. Do positive affect and negative affect together provide unique information about suicidal thoughts and behaviors over and above the key cognitive variable of hopelessness? It is hypothesized that positive affect and negative affect provide additional information regarding suicide that cannot be gathered from examining cognitive variables alone, at least this powerful single one. Since the majority of research and theories on suicide focus on cognition, this finding would lend support to the view that affect is important to study, assess and take into consideration when creating treatment plans with suicidal individuals. If the bivariate and canonical correlations indicate that important affect-suicidality relationships exist, but this final hypothesis is not supported, future theory and research might fruitfully follow up on the possibility that hopelessness mediates affect-suicidality relationships as it mediates cognition-suicidality ones.
CHAPTER III

METHODOLOGY

Participants

Participants in this study were recruited from a midwestern Veterans Affairs outpatient mental health clinic following approval from the Institutional Review Board at The University of Akron and the Research and Development Committee at the Veterans Affairs hospital. The target sample size for this study was 107 participants. This number was based upon recommendations by Green (1991; as summarized by Tabachnick & Fidell, 2001) when using multiple regression, one of the analyses in this study. The suggested rule of thumb is that $N \geq 104 + m$ ($m$ is the number of individual predictors) when working under the assumption, as followed in this study, that a medium-sized relationship exists between the IVs and DVs, and $\alpha = .05$ and $\beta = .20$. As will be discussed later, there are three individual predictors for the multiple regression analyses, resulting in a minimum of 107 participants. Bonferroni correction was not used for the analyses because this research is exploratory in nature and in the theory building stage, and there is minimal risk involved in incorrectly rejecting the null hypothesis. When using canonical correlation analysis, another analysis of this study, Tabachnick and Fidell (2001) recommend 10 cases for every variable when reliability for variables is approximately .80, as is most often the case in social sciences. For the current study, six variables were used in a canonical correlation analysis (positive affect, negative affect,
suicidal ideation, self-harm, suicide attempts, suicide threats), resulting in a minimum of 60 participants. The recommended sample size for multiple regression exceeds the recommended minimum when using canonical correlation analysis, so the target sample size was based upon the larger of the two.

The total number of participants was 113 and data from 104 participants were analyzed. Protocols from nine participants were not used due to a large amount of missing data (i.e., two of the individuals only completed the front side of the two-sided survey; one did not complete any of the item on the Hopelessness Scale; six stopped halfway through the instrument). Several of the participants ($n = 15$) had random missing data points (e.g., missing one item on a scale) and mean substitution was used to replace these points.

Of the 104 participants, 84 were men and 20 were women; complete demographic characteristics are presented in Table 3.1. The average age of participants was 52.01 ($SD = 12.35$), and participants identified with the following ethnic groups: 70.2% European American, 12.5% African American, 1.0% Asian American, 2.9% Native American, 2.9% multi-ethnic, and 6.7% other; 3.8% did not respond to this item. A majority of the sample reported that they were unmarried (23.1% single, 2.9% separated, 28.8% divorced, 5.8% living with significant other), and 39.4% said that they were married. Regarding participants’ mental health, they reported an average of 109.40 months ($SD = 135.64$) in treatment, and a majority said that they were in individual treatment (72.1%) and taking psychotropic medication (82.7%) for a mood disorder (e.g., 67.3% with lifetime diagnosis of major depression, 27.9% with lifetime diagnosis of bipolar disorder). A review of these data shows variability in the sample on all characteristics.
Table 3.1

*Demographic characteristics of sample*

Descriptive statistics:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
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<tr>
<td>Age</td>
<td>52.01</td>
<td>12.35</td>
<td>52.0</td>
<td>22</td>
<td>85</td>
</tr>
<tr>
<td>Months in treatment</td>
<td>109.40</td>
<td>135.64</td>
<td>36.0</td>
<td>0</td>
<td>540</td>
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</table>

Frequencies:

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<th>Variable</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
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<tr>
<td>Male</td>
<td>84</td>
<td>80.8%</td>
</tr>
<tr>
<td>Female</td>
<td>20</td>
<td>19.2%</td>
</tr>
<tr>
<td>Ethnicity</td>
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<td></td>
</tr>
<tr>
<td>European American</td>
<td>73</td>
<td>70.2%</td>
</tr>
<tr>
<td>African American</td>
<td>13</td>
<td>12.5%</td>
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<tr>
<td>Asian American</td>
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<td>1.0%</td>
</tr>
<tr>
<td>Native American</td>
<td>3</td>
<td>2.9%</td>
</tr>
<tr>
<td>Multi-ethnic</td>
<td>3</td>
<td>2.9%</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>6.7%</td>
</tr>
<tr>
<td>Missing response</td>
<td>4</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

Marital status

<table>
<thead>
<tr>
<th>Marital status</th>
<th>N</th>
<th>Percentage of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>24</td>
<td>23.1%</td>
</tr>
</tbody>
</table>
Married/partnered 41  39.4%
Separated 3  2.9%
Divorced 30  28.8%
Living with 6  5.8%

Self-reported reason for current treatment
Depressive disorder 26  25.0%
Bipolar disorder 7  7.7%
Anxiety disorder 2  1.9%

(not PTSD)
Psychotic disorder 6  5.8%
PTSD 10  9.6%
Personality disorder 1  1.0%
ADHD 1  1.0%
Multiple reasons 24  23.1%
Other 22  21.2%
Missing response 5  4.8%

Type of treatment currently receiving
Individual 75  72.1%
Group 12  11.5%

Life-time diagnoses
Major Depression 70  67.3%
Dysthymia 5  4.8%
<table>
<thead>
<tr>
<th>Disorder</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar disorder</td>
<td>29</td>
<td>27.9%</td>
</tr>
<tr>
<td>Other mood disorder</td>
<td>17</td>
<td>16.3%</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>60</td>
<td>57.7%</td>
</tr>
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</table>

Receiving psychotropic medications

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>86</td>
<td>82.7%</td>
</tr>
<tr>
<td>No</td>
<td>17</td>
<td>16.3%</td>
</tr>
<tr>
<td>Missing response</td>
<td>1</td>
<td>1.0%</td>
</tr>
</tbody>
</table>
assessed. The typical participant profile, however, is a middle aged, European American, unmarried, male veteran who has received long-term mental health treatment and is presenting with a mood disorder.

**Procedure**

Participants were recruited by the experimenter from the waiting room of the outpatient mental health clinic. The experimenter provided patients with a brief description of the research study and then asked patients if they were interested in participating. Those demonstrating obvious psychotic symptoms were not approached for participation in the study. If the patient decided that he or she would like to participate, the experimenter provided the patient with a cover letter that described the purpose of the study, the procedures, risks and benefits for participants, and contact information (Appendix A) and the experimenter also provided a copy of the questionnaire. The patient was informed that he or she could either complete the survey before or after session or at home. Participants placed their anonymously completed questionnaires in a sealed box in the waiting area.

**Measures**

Demographic Questionnaire. This questionnaire was created for this study in order to gather demographic information for this sample. Specific information was gathered on participants’ sex, age, racial/ethnic group, marital status, and current mental health treatment (Appendix B).
Affect. The Positive and Negative Affect Scale (PANAS; Watson et al., 1988b) was administered to assess participants’ experience of positive and negative affect (Appendix B). This scale was chosen due to its frequent use in the literature, ease of administration and ample reliability and validity evidence. This scale consists of 10 descriptors for the positive affect scale (attentive, interested, alert, excited, enthusiastic, inspired, proud, determined, strong and active) and 10 descriptors for the negative affect scale (distressed, upset, hostile, irritable, scared, afraid, ashamed, guilty, nervous and jittery). Participants are asked to rate their frequency of experiencing each descriptor over the past few weeks (this is one of the seven possible temporal instructions) on a 5-point Likert scale (1 = very slightly or not at all; 2 = a little; 3 = moderately; 4 = quite a bit; 5 = extremely), resulting in a score of 10-50 for both the positive affect and negative affect scales.

This scale was created under the assumption that positive affect and negative affect are two independent dimensions. Watson and colleagues’ (1988b) goal was to create a scale that included terms that were relatively pure indicators of positive affect or negative affect. In order to create this scale, they started with the 60 terms that were used in a factor analysis by Zevon and Tellegen (1982) that was designed to select pure markers of positive and negative affect. Next, Watson and colleagues selected those terms from Zevon and Tellegen’s study with an average loading of at least .40 that did not cross load on a secondary factor. Following initial reliability analyses, Watson and colleagues ended up with a list of 10 positive affect descriptors and 10 negative affect descriptors.
There is extensive reliability and validity support for the PANAS. In their measure development study, Watson and colleagues (1988b) provided the initial support for the reliability and validity of the scale. Their normative sample was primarily undergraduate students enrolled in various psychology courses and groups of university employees. Preliminary data indicated that the students were not significantly different than the non-students, so further data analyses were run on the sample as a whole. Data were collected for individuals receiving all possible time instructions ranging from how they felt “at this present moment,” to how they felt “over the past year.” In the present study, participants were asked to rate their affect during the past few weeks. These instructions were selected because they appear to be frequently used in other research studies and this time period is most consistent with the time periods examined by other measures in this study. In the normative sample, number of participants for this set of instructions was 586. Reliability estimates for those instructed to rate their affect over the past few weeks were acceptable: coefficient alphas were .87 for positive affect and .87 for negative affect, and test-retest reliability (eight week) was .58 for PA and .48 for NA. In other studies using the PANAS, internal consistency was similar in both non-clinical (e.g., Beck et al., 2001; Goldstein & Strube, 1994) and clinical samples (e.g., Crawford & Henry, 2004; Jolly et al., 1994).

Construct-related validity was demonstrated using principal factor extraction analysis. Results indicated that two dimensions, representing positive affect and negative affect, accounted for 87.4% of common variance in the “moment” data (e.g., how participants feel this moment), and 96.1% of the variance in the “general” data (e.g., how participants have felt in general). All the terms had strong loadings on the appropriate
factors (.50 or above), and the loadings on the opposite factor were all low (.01 or below). The two-factor structure was upheld in a variety of confirmatory factor analytic studies (e.g., Beck et al., 2001; Crocker, 1997; Mackinnon et al., 1999). When competing models were tested using CFA in a nonclinical sample, the best fit occurred when positive affect and negative affect were permitted to correlate, leading to the conclusion that the two dimensions are distinct, but somewhat interdependent (the latent variables of positive affect and negative affect shared 9% of variance) (Crawford & Henry, 2004).

On the other hand, studies have found that positive affect and negative affect, as measured by the PANAS, are not strongly intercorrelated (e.g., Goldstein & Strube, 1994; r = -.22 for “past few weeks” instructions in Watson et al., 1988b). In addition, some findings have suggested that the relationship between positive affect and negative affect varies based upon the response format used (e.g., bipolar scales with “opposite” affects as anchors, unipolar Likert scales measuring extent of experiencing one type of affect), but the PANAS demonstrated factorial validity even using a different response format in a subgroup of the sample (Watson et al., 1988b; Watson & Clark, 1997).

Strong support was also found for the convergent and discriminant validity of the PANAS. First, the PANAS was significantly related to other measures of mood and affect, including scales by Diener and Emmons (1984), Stone and colleagues (Stone, Hedges, Neale, & Satin, 1985), McAdams and Constantian (1983), and Bradburn (1969). Based upon these findings, Watson and colleagues (1988b) concluded that the PANAS provided the “clearest convergent/discriminant pattern of any pair [of PA/NA factors]” (p. 1067). Further support for the convergent validity of the PANAS was found. The negative affect scale was significantly and positively correlated with the Hopkins
Symptom Checklist (HSCL; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974), a measure of distress and dysfunction. The positive affect scale was modestly and negatively related to the HSCL. Positive affect and negative affect scores on the PANAS were significantly correlated with scores on the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) in the predicted patterns (e.g., positive affect negatively and negative affect positively correlated with BDI). Following the initial validation of the PANAS, a great deal of additional convergent and discriminant validity support has been gathered. For example, self-reported PANAS scores were significantly related to clinicians’ ratings of psychopathology (Clark & Watson, 1991) and to informant-rated affect (Watson & Clark, 1991), and the PANAS is related to depression and anxiety (e.g., Crawford & Henry, 2004; Jolly et al., 1994).

**Suicidal ideation.** The Suicidal Ideation Scale (SIS; Rudd, 1989) is a self-report instrument designed to assess the severity or intensity of suicidal ideas, rather than actions, over the past week (Appendix B). This scale consists of 10 Likert items (e.g., “I have been thinking of ways to kill myself”) that participants rate from 1 (Never or none of the time) to 5 (Always or a great many times), so total scores range from 10 to 50. Four of the items on this scale were modified from scales used by Harlow, Newcomb, and Bentler (1986) and Petrie and Chamberlain (1983), and Rudd added six additional items. Rudd (1989) noted that the items fall along a continuum of suicidal ideation, ranging from covert thoughts to more overt ideation and intent, to actual suicide attempts. In this study, the construct of suicidal ideation has been conceptualized as thoughts, but not actions, but the construct of suicidal behaviors has been defined as actions. There are two questions on this survey that deal with suicidal behaviors (“I have told someone that
I want to kill myself,” and “I have made attempts to kill myself”), and since these actions are considered suicidal behaviors and not ideation, these questions were not be scored for this study. As a result, the total score range for this scale was 8 to 40. Another minor change to the original scale will be that participants were asked to answer based upon the “past few weeks” rather than the “past week” to keep the time period consistent across scales.

There are many scales that proclaim to study suicidal ideation, including the Scale for Suicide Ideation (SSI: Beck, Kovacs, & Weissman, 1979; Beck, Steer, & Ranieri, 1988) and the Adult Suicidal Ideation Questionnaire (ASIQ: Reynolds, 1991). These scales are more commonly used in the suicide literature, but they were not chosen for this study because they incorporate a stronger emphasis on suicidal behaviors. For example, the items on the SSI were factor analyzed and one of the three factors was labeled as preparation (Beck et al., 1979), which has an action component. The SIS only has two questions that are behavioral in nature, so this scale was used in this study. Another strength of the SIS is its ease of administration and brevity.

The reliability and validity of this scale was initially examined with a sample of 215 university students (Rudd, 1989). The SIS had good internal consistency ($\alpha = .90$) (Rudd, 1989). Findings supported the criterion-related validity of the SIS with this sample, as scores on this scale were significantly correlated with depression and hopelessness scales, and suicide attempters scored higher than nonattempters (Rudd, 1989). Using a different sample consisting of 737 university students, the SIS also demonstrated good internal consistency ($\alpha = .86$) (Rudd, 1989). There have been no studies investigating the reliability and validity of this scale with a clinical sample.
Hopelessness. The Hopelessness Scale (HS: Beck, Weissman, Lester, & Trexler, 1974) is a 20-item true-false scale that measures pessimism or negative expectations about the future (this scale is not represented in the appendices due to copyright protection). Ten items are reversed scored, and higher scores reflect a greater level of hopelessness. The range of possible scores is 0-20; cut-off scores are 0-3 for minimal level of hopelessness, 4-8 for low/mild levels of hopelessness, 9-14 for moderate levels of hopelessness, and 15 and above for clinically severe hopelessness.

In constructing the scale, nine questions were taken and revised from a test of negative attitudes about the future, and the remaining 11 were from a pool of pessimistic statements made by psychiatric patients. The initial draft was completed by a sample of depressed and nondepressed clients, who provided feedback on the items’ relevance and clarity. Next, a group of clinicians evaluated the scale’s content-related validity, and appropriate revisions were made, resulting in the final version (Beck et al., 1974).

Beck and colleagues (1974) initially examined the reliability and validity of the HS on a sample of 294 patients who were hospitalized for recent suicide attempts. This sample along with six others (those with suicidal ideation, alcoholism, heroin addiction, single episode major depression, recurrent episode major depression, and dysthmic disorder) are the basis for the majority of reliability and validity evidence in the HS manual (Beck & Steer, 1993). A total of 1301 clients being treated at the Center for Cognitive Therapy were involved in this sample.

Internal consistency reliability for the HS was found to be adequate across the seven clinical samples (α = .82-.93). In other clinical samples, internal reliability estimates ranged from .83-.92 (e.g., Durham, 1982; Dyce, 1996; Young, Halper, Clark,
Scheftner, & Fawcett, 1992), and in nonclinical samples, internal reliability estimates ranged from .65-.88 (e.g., Chang, D’Zurilla, & Maydeu-Olivares, 1994; Durham, 1982; Steed, 2001). Test-retest reliability over one week was .69 for a sample of 21 clients with mixed diagnoses, and over six weeks was .66 for a similar sample of 99 clients (Beck & Steer, 1993).

There was also support for the validity of the HS within these seven clinical samples in the initial measurement validation study. Construct-related validity was demonstrated by comparing HS scores to clinician ratings of pessimism, hopelessness, and other measures of negative attitudes about the future. A significant relationship existed between the HS and clinician ratings for the hospitalized suicidal patients (Beck et al., 1974). In a sample of 59 depressed psychiatric hospital patients, the HS was significantly correlated with the Stuart Future Test and the pessimism item on the BDI. At discharge, patients’ scores were significantly lower on the HS. Scores on the HS were higher for suicidal individuals than for both nonclinical samples and inpatients without suicidal ideation (e.g., Beck & Steer, 1993; Topol & Reznikoff, 1982). Additionally, significant negative relationships exist between HS and hope/optimism (e.g., Chang et al., 1994; Steed, 2001).

Construct-related validity was also supported by a series of investigations by Beck and colleagues (Beck et al., 1974; Beck & Steer, 1993; Kovacs, Beck, & Weissman, 1975) using the HS. They concluded that the construct of hopelessness, as measured by the HS, was related to other variables (e.g., depression, suicidal intent) as hypothesized. Data from the suicide attempters sample were also subjected to an exploratory factor analysis, and three factors were extracted that explained 53.5% of the total variance:
Feelings about the Future, Loss of Motivation, and Future Expectations. Other researchers investigated the factor structure and construct-related validity of the HS and produced variable results. Similarly to Beck and colleagues (1974), Dyce (1996) also used principal components analysis with depressed outpatients as the sample; three factors were extracted that accounted for 53% of the total variance (Expectation of Success, Expectation of Failure, Future Uncertainty).

Although evidence from these studies represents support that the HS may include three factors, there seems to be more evidence overall that the HS is a unidimensional scale. A series of factor analyses indicated that the HS may include only one factor, hopelessness. Steed (2001) concluded that studies using PCA found three factors, but the first factor accounts for a large percentage of variance, so the HS seems to be more unidimensional. Steed empirically tested this conclusion using principal-axis factor analysis with a nonclinical sample. Four factors were extracted, but upon closer examination, he concluded that they were largely uninterpretable. In addition, the first factor accounted for 34% of variance, supporting the unidimensionality of the scale. Young and colleagues (1992) analyzed the HS using an item response model because this method avoids difficulties that are often associated with using factor analysis with dichotomous variables. They included two samples, one strictly clinical and the other a combination of clinical and nonclinical participants. For both samples, the best fitting model was one factor (accounting for 53% of variance), and all items were strongly related to the latent variable of hopelessness. This finding was supported by Chang and colleagues (1994) with an undergraduate sample.
Hopelessness is theoretically linked to suicide (e.g., Abramson, Alloy, Hogan, Whitehouse, Gibb, Hankin, & Cornette, 2000; Beck, 1963; Bonner & Rich, 1988; Freeman & Reinecke, 1993), and the HS has been found to be a good predictor of eventual suicide attempt, providing evidence for the scale’s criterion-related validity. The HS was found to be a better predictor of suicidal ideation in hospitalized suicide attempters than the level of their depression (Kovacs et al., 1975). In a longitudinal study of patients hospitalized for suicidal ideation, HS scores above nine correctly identified 91% of eventual suicides (Beck et al., 1985). Those scoring above 9 on the HS were 11 times more likely to complete suicide than those respondents scoring below 9 (Beck, Brown, Berchick, Stewart, & Steer, 1990). Although the HS is useful in identifying those at risk for suicidal behaviors, the scale is most effective when used in conjunction with other measures of depression and suicidal intent (Freeman & Reinecke, 1993).

**Suicidal behaviors.** The Self-Harm Behavior Questionnaire (SHBQ; Gutierrez, 1998) is a self-report instrument that measures suicide-related behaviors and thoughts (Appendix B). This scale was designed to be “a compromise between the breadth and depth of information gathered during an open-ended clinical interview and the efficiency of a self-report questionnaire” (Gutierrez, Osman, Barrios, & Kopper, 2001; p. 476). Initially, a semistructured interview was created following an extensive review of the literature to assess for a range of suicidal thoughts and behaviors in adolescents. This interview was useful for risk assessment for both clinical and nonclinical samples of adolescents, but the interview required individual administration by a trained interviewer (Gutierrez et al., 2001). Consequently, this interview was then translated into a self-report inventory that included both closed questions and open questions to provide
opportunities for elaboration and brief responses (Hagstrom & Gutierrez, 1998). If the participant responds “yes” to a general question (e.g., “Have you ever hurt yourself on purpose?”), a series of follow up questions are included (e.g., “If yes, what did you do?” and “Approximately how many times did you do this?”). These follow up questions assist in determining the specific type of behavior and the intent, lethality and outcome of the behaviors. If the individual responds “no” to these general questions, then he or she is directed to the next general question. A coding system was also created to code the open-ended responses into numerical values that correspond to the seriousness of the behaviors. Raters in the validation study were advanced undergraduate students who first were trained through discussions and practice items, and rater agreements ranged from 95% to 100% (Gutierrez et al., 2001). For this study, the examiner coded the responses, while a second trained psychology doctoral student coded 10% of the responses to assess interrater reliability.

This scale is divided into four parts, each assessing a different aspect of suicidality. Part A, self-harm behavior, asks about intentional self-harm that the individual did not label as suicidal. This section includes one major question (“Have you ever hurt yourself on purpose?”), and if the respondent responds “yes” then there are six follow up questions. These follow up questions assess the frequency, history, risk, disclosure, and treatment of behaviors and injuries. Part B inquires about suicide attempts, and includes two general questions about suicide attempts. Each of these questions also has a series of follow up questions for those answering affirmatively that gather further information about method, frequency, risk, medical treatment, life events, and intent. Part C asks about suicide threats, and includes one general question about
whether or not the respondent has made a threat to hurt self badly or try to kill self. Again, if the respondent answers “yes,” then he or she is asked to complete a series of follow up questions about the method, frequency, history, risk, intent and circumstances surrounding the threat. Finally, Part D asks about suicidal ideation. This part asks not only about thoughts of suicide, but also plans and preparation. In the present study, all parts were administered, but only A, B and C were analyzed because these sections focus upon behaviors rather than thoughts, and Part D deals mainly with thoughts.

A scoring key was created in order to convert each response into a numerical value (Appendix B). The range of scores for each scale is as follows: Self-Harm Behavior (0-18), Suicide Attempts (0-25), Suicide Threats (0-21), Suicide Ideation (0-14) and total (0-78). A score of zero represents no suicidal behavior and the higher the score, the greater amount of suicidal behaviors. No cut-off scores have yet been established to categorize individuals as high or low risk on each of these measures; however, the scores have been found to differentiate severe and nonsuicidal individuals overall (Gutierrez et al., 2001).

Reliability and validity evidence was gathered on a sample of 342 university undergraduates (140 men and 202 women) who were enrolled in psychology courses (Gutierrez et al., 2001). The average age of this sample was 19.48 years, and the ethnicity of participants was 95.9% White, 0.6% African American, 2.3% Asian American, and 1.2% from other groups. The SHBQ was internally consistent with this sample (Suicide Attempts $\alpha = .96$, corrected item-total correlations range = .79 to .97; Self-Harm $\alpha = .95$, corrected item-total correlations range = .88 to .95; Suicide Threat $\alpha = .94$, corrected item-total correlations range = .68 to .91; Suicide Ideation $\alpha = .89$,}
corrected item-total correlations range = .65 to .90), providing support for the reliability of this measure. The construct-related validity of the SHBQ was supported using exploratory factor analysis. Four factors were extracted that accounted for 80.1% of the total variance in the sample data, and the items for each factor were conceptually similar to the theoretically derived scales. Further analyses (scale intercorrelations) supported the fact that these scales were not redundant with each other.

Criterion-related validity was demonstrated through several different means. First, the SHBQ was able to differentiate the severe suicidal ideation subgroup of the sample from the nonsuicidal subgroup. As expected, the severe suicidal ideation group scored significantly higher than did nonsuicidal subgroup. Second, construct-related validity was shown by moderate and significant correlations between the SHBQ total and subscale scores and the Adult Suicidal Ideation Questionnaire (ASIQ; Reynolds, 1991), the Suicide Probability Scale (SPS; Cull & Gill, 1982), and the Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman, Bagge, Gutierrez, Konick, Kopper, & Barrios, 2001). Third, criterion-related validity was supported as the SHBQ subscales Suicide Threat and Suicide Ideation predicted scores on the SPS. To date, there has not been research on the reliability and validity of this scale with a clinical sample.

Many measures exist that claim to measure suicidal behaviors, some of which are more commonly used and researched more widely (e.g., Suicidal Behaviors Questionnaire; Linehan & Nielsen, 1981). The SHBQ was chosen because this scale measures a range of behaviors, not just suicide attempts. Suicidal behavior may also include forms of self-harm and self-inflicted injury (e.g., Clark, Sommerfeldt, Schwarz, Hedeker, & Watel, 1990; Zlotnick et al., 1997). “Most instruments focus primarily, often
exclusively, on suicidal ideation and aim to assess behaviors at only a very high threshold. This narrow focus often results in low levels of item endorsement, and more importantly, may lead to the instrument missing important relationships between suicidal behavior and other risk-taking and life-threatening behaviors” (Rohde, Lewinsohn, Seeley & Langhinrichsen-Rohling, 1996; pp.272-273). This quote supports the fact that, due to the statistical rarity of suicide attempts and deaths, more variability will be present in the data if a range of behaviors is assessed. This approach also increases the conceptual richness of the data. Another reason that the SHBQ was picked for this study is that the three scales that will be used strictly measure behavior, rather than mixing in questions about suicidal thoughts as is commonly done. One limitation of this scale though, is the fact that the reliability and validity sample was college students and not a clinical sample.

Research questions and data analysis procedures

Before addressing the primary research questions, descriptive and preliminary analyses were conducted in order to answer the following questions:

1. What is the prevalence of suicidal ideation and behaviors in this clinical sample? Descriptive analyses were run on the SIS and SHBQ. The ranges on these scales were examined to ensure that they were not restricted (i.e., no participants noting history of suicide attempt), and this did not appear to be the case.

2. Are the suicide measures reliable and valid with this clinical population? The internal consistency reliabilities of the SIS and SHBQ were calculated. The inter-rater
reliability of the SHBQ was also calculated. Validity for the sample was examined by investigating the convergent validity of the HS, SIS and SHBQ.

Following preliminary and descriptive analyses, a series of primary analyses were run to address the following research questions:

1. Is there a relationship between affect and suicidal ideation, suicidal behavior and hopelessness? In order to answer this question, bivariate correlation coefficients were calculated between the scores on the PANAS (positive affect and negative affect), SIS, SHBQ total and subscales, and HS.

2. Are different combinations of positive and negative affect related to different patterns of suicidal ideation and behavior? How strongly do positive and negative affect together relate to suicidality, as represented by variables assessing suicide ideation through suicide attempts? A canonical correlation analysis was conducted to examine these questions. The relationship between the linear combination of positive affect and negative affect (independent variables) and the linear combination of suicidal ideation (SIS) and suicidal behaviors (SHBQ subscales) was examined in order to determine the strength and pattern of the relationships between these sets of variables. Based upon the number of variables, the analysis will generate two combinations of variates.

3. Do positive affect and negative affect together provide unique information about suicidal thoughts and behaviors over and above the cognitive variable hopelessness? Two hierarchical multiple regression analyses were run to answer this question. For the first analysis, suicidal ideation (SIS) was the dependent variable, and the independent variables were hopelessness and a block that consisted of positive affect and negative affect. Hopelessness was entered first, followed by the affect block, in
order to evaluate the unique contribution of affect over and above hopelessness on suicidal ideation. In the second analysis, suicidal behaviors (SHBQ total) was the dependent variable, and the same independent variables were entered in the same order. This analysis determined the unique contribution of affect over and above hopelessness on suicidal behaviors.
CHAPTER IV

RESULTS

Data screening

Before the research questions were examined, the data were inspected for outliers, linearity, normality, and multicollinearity. Histograms were utilized to inspect for univariate outliers for the variables of positive affect, negative affect, suicidal ideation (SIS), hopelessness (HS), and suicidal behaviors (SHBQ) (Figure 4.1). There were no points on these histograms that appeared to lie a considerable distance from the others; therefore, it was determined that there were no univariate outliers in the data set based upon this visual analysis. Next, the data were screened for multivariate outliers using a Mahalanobis distance cut-off of $p < .001$, as recommended by Tabachnick and Fidell (2001). The following sets of variables were examined for multivariate outliers: positive affect and hopelessness, positive affect and suicidal ideation, positive affect and suicidal behaviors, negative affect and hopelessness, negative affect and suicidal ideation, and negative affect and suicidal behaviors. Mahalanobis distance of these various pairs of variables did not exceed the cut-offs at $p < .001$; therefore, no multivariate outliers were found for the variable pairs of interest.

Next, normality of the data was examined through a visual inspection of histograms and the calculation of skewness. When visually inspecting the distributions (Figure 4.1), suicidal ideation, self-harm, suicide attempts, suicide threats, and the SHBQ
Figure 4.1

Histograms and distributions of variables
Figure 4.1, continued

Histograms and distributions of variables
total score all appear to be positively skewed. The degree of skewness was statistically calculated and converted into a z-score. The z-score of each of these variables was significant at the .01-level (suicidal ideation: $z = 3.54$; self-harm: $z = 5.21$; suicide attempt: $z = 3.92$; suicide threat: $z = 6.88$; SHBQ total: $z = 5.2$), thus, each of these variables in positively skewed. Despite this fact, data were not transformed because the distributions present for the sample are a reflection of the distribution for the population. In other words, the fact that the distribution is skewed is not an artifact of this sample, but instead is a reflection of the actual occurrence of these behaviors within the population.

In addition, the variables were all skewed in a similar pattern, so the impact of the nonnormal distribution on further analyses is reduced (Tabachnick & Fidell, 2001).

On the other hand, the distributions of several of the variables were normal while others were skewed, so the relationship between these variables was evaluated for linearity. Due to the fact that the ideation, self-harm, attempts, threats, and SHBQ total distributions were nonnormal, and PA, NA and hopelessness were normal, scatterplots were created to check for linearity. The relationships of interest that were examined were: positive affect with ideation, self harm, attempts, threats and SHBQ total; and negative affect with ideation, self-harm, attempts, threats and SBHQ total. The shapes of the bivariate scatterplots were visually examined; an oval-shaped distribution suggests that the variables are linearly related. The shapes of the scatterplots did not suggest nonlinear relationships because they were generally oval-shaped and not curvilinear.

Finally, the data were tested for multicollinearity. Pearson-correlation coefficients exceeding .90 are indicative of multicollinearity (Tabachnick & Fidell, 2001); no bivariate correlations in this data set met this criterion (see Table 4.1).
Table 4.1

*Pearson correlation coefficients*

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>PA</th>
<th>NA</th>
<th>SIS</th>
<th>HS</th>
<th>SH</th>
<th>Attempt</th>
<th>Threat</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>22.13 (7.24)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>29.11 (9.67)</td>
<td>-.30**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIS</td>
<td>15.86 (8.44)</td>
<td>-.40**</td>
<td>.56**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HS</td>
<td>9.73 (6.22)</td>
<td>-.53**</td>
<td>.55**</td>
<td>.74**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-harm</td>
<td>3.45 (5.53)</td>
<td>-.20*</td>
<td>.32**</td>
<td>.49**</td>
<td>.37**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attempt</td>
<td>5.09 (7.37)</td>
<td>-.25**</td>
<td>.34**</td>
<td>.61**</td>
<td>.42*</td>
<td>.58**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threat</td>
<td>2.70 (5.09)</td>
<td>-.27**</td>
<td>.37**</td>
<td>.60**</td>
<td>.43**</td>
<td>.40**</td>
<td>.44**</td>
<td></td>
</tr>
<tr>
<td>SHBQ</td>
<td>11.24 (14.59)</td>
<td>-.30**</td>
<td>.42**</td>
<td>.70**</td>
<td>.50**</td>
<td>.81**</td>
<td>.88**</td>
<td>.72**</td>
</tr>
</tbody>
</table>

* *p < .05
** *p < .01
To summarize, there were no univariate or multivariate outliers in this data set. The distributions of the suicide variables were positively skewed. This is consistent with the distribution for the population, so the data were not transformed. The relationships between the variables of interest appeared linear and multicollinearity was not present. As a result, the data were not altered or transformed based upon the data screening techniques.

Preliminary and descriptive analyses

A series of preliminary and descriptive analyses were first run in order to answer two initial questions.

1. What is the prevalence of positive affect, negative affect, hopelessness and suicidal ideation and behaviors in this clinical sample?

The means and standard deviations of PA, NA, HS, SIS and the SHBQ total and subscales were calculated (Table 4.2). Scores on the PANAS PA and NA scales can range from 10-50. The average score of PA was 22.13 ($SD = 7.24$) and the average score of NA was 29.11 ($SD = 9.67$) for this clinical sample. The norm group for the PANAS consisted of undergraduate students ($n = 586$ for the instructions “over the past few weeks”), and their average scores were 32.0 ($SD = 7.0$) for positive affect, and 19.5 ($SD = 7.0$) for negative affect. The PA scores for the clinical sample used in this study were lower than the norm group, and the NA scores were higher.

The HS can range from 0-20 and cutoff scores are: 0-3 for minimal hopelessness, 4-8 for low/mild levels, 9-14 for moderate, and 15 and above for clinical severe hopelessness (Beck et al., 1974). The average score on HS for this sample was 9.73 ($SD = 7.0$) for negative affect.
Table 4.2

Means and standard deviations of variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Affect</td>
<td>22.13</td>
<td>7.24</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>29.11</td>
<td>9.67</td>
</tr>
<tr>
<td>SIS</td>
<td>15.86</td>
<td>8.44</td>
</tr>
<tr>
<td>HS</td>
<td>9.73</td>
<td>6.22</td>
</tr>
<tr>
<td>SHBQ</td>
<td>11.24</td>
<td>14.59</td>
</tr>
<tr>
<td>Self-Harm</td>
<td>3.45</td>
<td>5.53</td>
</tr>
<tr>
<td>Attempt</td>
<td>5.09</td>
<td>7.37</td>
</tr>
<tr>
<td>Threat</td>
<td>2.70</td>
<td>5.09</td>
</tr>
</tbody>
</table>
= 6.22), indicating that on average participants in this sample were at a moderate level of risk. According to Beck and colleagues (1990), those scoring above 9 on the HS were 11 times were likely to die by suicide.

Scores on the SIS, modified for this study, can range from 8-40; participants’ average score on the SIS was 15.86 (SD = 8.44). No cutoffs have been established for this scale. The item mean score was 1.98 (average total score of 15.86 divided by 8 items), and this corresponds with the Likert-scale anchor of “infrequently.” The average score was not compared to the normative sample because two items were deleted from the SIS for this study and different time frames were used (norm group rated ideation over the past year, and current sample rated ideation over the past few weeks).

For the SHBQ, the range of the total score is 0-64, and the ranges of subscales are as follows: self-harm (0-18), attempts (0-25), and threats (0-21). For this sample, the average total SHBQ score was 11.24 (SD = 14.59), and the average scores for the subscales were: self-harm 3.45 (SD = 5.53), attempts 5.09 (SD = 7.37), and threats 2.70 (SD = 5.09). No cutoffs have been established for this scale. For the college student norm group, means were not reported for the overall sample, but means were provided for individuals placed in either a nonsuicidal group or a severe suicidal group. The average scores for the current clinical sample were higher than the nonsuicidal norm group members (self-harm = .45; attempts = .00; threats = .00), and lower than the severe suicidal norm group members (self-harm = 4.85; attempts = 5.90; threats = 9.95). The mean total scores could not be compared because the ideation subscale was not used in this study.
In order to calculate the prevalence of life-time suicidal behaviors in the sample, the responses on the SHBQ and its subscales and the SIS were dummy coded (scores of 0 on total SHBQ and subscales were coded as 0, and scores above 0 on total and subscales were coded as 1). The results are shown in Table 4.3: 64.2% reported suicidal ideation within their lifetime \((n = 67)\), 29.4% reported self-harm \((n = 31)\), 34.6% reported suicide attempts \((n = 36)\), 24.7% reported suicide threats \((n = 26)\), and 71.6% reported some form of suicidal behavior during their lifetime \((n = 74)\). Of the 28 participants who disclosed previous suicide attempts, 22 said their intent was to die, four said that they did not intend to die, and two did not complete this item. Participants also were asked whether or not they engaged in any suicidal behaviors during the past few weeks; 34 said that they have been thinking of ways to kill themselves, three individuals reported self-harm behaviors, one reported a suicide attempt, and three said that they made suicide threats.

2. Are the suicide measures reliable and valid with this clinical population?

As mentioned previously, the SIS and SHBQ were normed on college student samples. Because the current sample is a clinical sample, the reliability and validity of these two measures with this sample were examined. The internal consistency reliability of the SIS was acceptable with this sample \((\alpha = .95)\) and was higher than the value attained in the norm group \((\alpha = .90;\) Rudd, 1989). Alphas of the remaining scales were also acceptable (PANAS PA scale: \(\alpha = .90\); PANAS NA scale: \(\alpha = .91\); Hopelessness Scale: \(\alpha = .93\)). The inter-rater reliability of the SHBQ also calculated; 10% of the protocols were coded by a clinical psychology doctoral student, and the scores were compared with those of the researcher. A 97% agreement rate was found.
Table 4.3

Prevalence of suicidal thoughts and behaviors in sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicidal ideation</td>
<td>67</td>
<td>64.2%</td>
</tr>
<tr>
<td>Self-harm</td>
<td>31</td>
<td>29.4%</td>
</tr>
<tr>
<td>Attempts</td>
<td>36</td>
<td>34.6%</td>
</tr>
<tr>
<td>Threats</td>
<td>26</td>
<td>24.7%</td>
</tr>
<tr>
<td>Any type</td>
<td>74</td>
<td>71.6%</td>
</tr>
</tbody>
</table>
Convergent validity for the sample was examined by investigating the bivariate correlations of the HS with the SIS and SHBQ. As seen in Table 4.1, the correlation between HS and the SIS \( (r = .74, p < .01) \), and the total SHBQ \( (r = .50, p < .01) \) and its subscales (self-harm: \( r = .37, p < .01 \); attempts: \( r = .42, p < .01 \); threats: \( r = .43, p < .01 \)) are all statistically significant. The correlations suggest that the SIS and SHBQ are related to the theoretically relevant variable of hopelessness as predicted, and the degree of correlation suggests that these variables are also distinct from one another (i.e., multicollinearity not present). Based upon these preliminary analyses of the SIS and SHBQ, there is support for the reliability and validity of these instruments with this clinical sample.

Primary analyses

Following preliminary and descriptive analyses, a series of primary analyses were run to address the stated research questions.

1. Is there a relationship between affect and suicidal ideation, suicidal behavior and hopelessness?

Bivariate correlation coefficients were calculated between the scores on the PANAS (positive affect and negative affect), SIS, SHBQ total and subscales, and HS (Table 4.1). Positive affect was significantly correlated with suicidal ideation \( (r = -.40, p < .01) \), suicidal behaviors overall \( (r = -.30, p < .01) \), self-harm \( (r = -.20, p < .05) \), suicide attempts \( (r = -.25, p < .01) \), suicide threats \( (r = -.27, p < .01) \), and hopelessness \( (r = -.53, p < .01) \) in the negative direction. Negative affect was significantly correlated with these variables in the positive direction (suicidal ideation: \( r = .56, p < .01 \); suicidal behaviors
overall: \( r = 42, p < .01 \); self-harm: \( r = .32, p < .01 \); suicide attempts: \( r = .34, p < .01 \); suicide threats: \( r = .37, p < .01 \); and hopelessness: \( r = 55, p < .01 \). In summary, positive affect was inversely related to suicidal thoughts and behaviors, and negative affect was positively related to them. These findings are consistent with the hypothesis that both positive affect and negative affect are related to suicidal thoughts and behaviors, but not with the prediction that self-harm behaviors are related to negative affect but not positive affect. Although both positive and negative affect were significantly correlated with the suicide variables, the observed strength of the relationships were somewhat stronger for negative affect with all variables except hopelessness.

2. Are different combinations of positive and negative affect related to different patterns of suicidal ideation and behavior? How strongly do positive and negative affect together relate to suicidality, as represented by variables assessing suicide ideation through suicide attempts?

To answer these research questions, a canonical correlation analysis was performed. The linear combination of the independent variable set of positive affect and negative affect (measured by scores on the two PANAS scales) were correlated with the linear combination of the dependent variable set of suicidal ideation (SIS) and suicidal behaviors (SHBQ subscales of self-harm, threat, and attempt) in order to determine the strength and pattern of the relationships between these sets of variables. An additional benefit of using this analysis over multiple correlation coefficients is that Bonferroni corrections are not required because all correlations are explored concurrently.

Two canonical correlations were calculated because there were two independent variables. The first canonical correlation was .61 (37.2% overlapping variance) and the
second was .04 (.01% overlapping variance). When taking into account both canonical correlations, $\chi^2 (8) = 46.45, p < .001$. When removing the first canonical correlation, $\chi^2 (3) = .15, p = 1.00$. Therefore, the first canonical variate pair accounted for the significant relationship between the affect and suicide sets of variables, so only this pair was interpreted.

The correlations between the variables and canonical variates, percent of variance, redundancies, and canonical correlation are presented in Table 4.4. Using the recommended cutoff of .3 for loadings (Tabachnick & Fidell, 2001), the affect variables of positive affect and negative affect, and the suicide variables of ideation, self-harm, attempts and threats were correlated with the first pair of canonical variates. The relationships are pictorially depicted in Figure 4.2. This pair of canonical variates indicates that a combination of high negative affect (.92) and low positive affect (-.65) is positively associated with a combination of suicidal ideation (.99), threats (.66), attempts (.62) and self-harm (.56).

The significant canonical correlation of .61 between affect variables and suicide variables is consistent with hypotheses. This figure represents 37% overlapping variance for the pair of affect and suicide variates. Review of these results also reveals that negative affect produced a stronger weight than positive affect. Contrary to the prediction that two combinations of variables exist, different statistically-based patterns of affect were not found for different types of suicidal individuals because only one canonical variate was interpretable.
Table 4.4

*Canonical correlation analysis results*

First Canonical Variate

<table>
<thead>
<tr>
<th></th>
<th>Canonical loading</th>
<th>Cross loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Affect set</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive affect</td>
<td>-.65</td>
<td>-.40</td>
</tr>
<tr>
<td>Negative affect</td>
<td>.92</td>
<td>.56</td>
</tr>
<tr>
<td>% of variance</td>
<td>63.6%</td>
<td></td>
</tr>
<tr>
<td>Redundancy</td>
<td>23.4%</td>
<td></td>
</tr>
<tr>
<td><strong>Suicide set</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideation</td>
<td>.99</td>
<td>.61</td>
</tr>
<tr>
<td>Self-harm</td>
<td>.56</td>
<td>.34</td>
</tr>
<tr>
<td>Attempts</td>
<td>.62</td>
<td>.38</td>
</tr>
<tr>
<td>Threat</td>
<td>.66</td>
<td>.40</td>
</tr>
<tr>
<td>% of variance</td>
<td>52.9%</td>
<td></td>
</tr>
<tr>
<td>Redundancy</td>
<td>19.7%</td>
<td></td>
</tr>
<tr>
<td><strong>Canonical correlation</strong></td>
<td></td>
<td>.61</td>
</tr>
</tbody>
</table>
Figure 4.2

Canonical correlation analyses model
3. Do positive affect and negative affect provide unique information about suicidal thoughts and behaviors over and above the cognitive variable hopelessness?

Two hierarchical multiple regression analyses were run to answer this question. For the first analysis, suicidal ideation (SIS) was the dependent variable, and the independent variables were hopelessness and a block that consisted of positive affect and negative affect (Table 4.5). Hopelessness was entered first, followed by the affect block, in order to evaluate the unique contribution of affect over and above hopelessness on suicidal ideation. The analyses revealed that the first block (hopelessness) accounted for a significant amount of the variance of suicidal ideation ($R^2 = .55$, $F(1, 103) = 122.38$, $p < .001$). When adding the second block consisting of the affect variables (positive affect and negative affect), the result was a modest but significant increase in the amount of variance in suicidal ideation that was accounted for by the independent variables ($R^2 = .58$, change in $R^2 = .03$, change in $F(2, 102 = 3.89$, $p < .05$). When all variables were entered into the equation, negative affect, but not positive affect, was a significant unique predictor. These findings are consistent with the hypothesis that affect accounts for a significant amount of the variance in suicidal ideation over and above the variance accounted for by hopelessness.

In the second analysis, suicidal behavior (SHBQ total) was the dependent variable, and the same independent variables were entered in the same order. This analysis determined the unique contribution of affect over and above hopelessness on suicidal behaviors. The results are seen in Table 4.6. The analyses revealed that the first block (hopelessness) accounted for a significant amount of the variance of suicidal behaviors ($R^2 = .25$, $F(1, 103) = 33.92$, $p < .01$). The second block of variables,
Table 4.5

Hierarchical regression analyses on suicidal ideation (SIS)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>β</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$F$ change</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1:</td>
<td>.55</td>
<td>.55</td>
<td>122.38</td>
<td>.00</td>
<td></td>
<td>.00</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>1.00</td>
<td>.74**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 2:</td>
<td>.58</td>
<td>.03</td>
<td>3.89</td>
<td>.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>-.01</td>
<td>-.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>.19</td>
<td>.22**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** $p < .01$
**Table 4.6**

*Hierarchical regression analyses on suicidal behaviors (SHBQ total)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>β</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$F$ change</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hopelessness</td>
<td>1.17</td>
<td>.50*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>-.09</td>
<td>-.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>.32</td>
<td>.21*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p < .05$
** $p < .01$
consisting of positive and negative affect, did not significantly account for variance beyond that accounted for by hopelessness ($R^2 = .28$, change in $R^2 = .03$, change in $F(2, 102) = 2.30, p = .11$). This finding was contrary to the hypothesis that affect accounts for a significant amount of the variance in suicidal behaviors over and above the variance accounted for by hopelessness.

**Exploratory graphic analysis**

The graphic representations of the relationship between positive affect and negative affect were visually examined for different groups of suicidal individuals in order to further explore if different patterns exist for different risk groups (Figure 4.3). The earlier canonical correlation analyses did not demonstrate different statistical patterns, but this may have been due to the fact that there was overlap in the suicide variables (i.e., individuals who have made a suicide attempt most often also report suicidal ideation). A categorical approach of graphic analysis was utilized to help circumvent this limitation.

First, participants were placed in to four mutually exclusive suicidal risk groups (no suicidal thoughts or behaviors, ideation only, self-harm or attempts without intent to die, and attempts with intent to die) in order to determine if different visual patterns of affect are present among subtypes of suicidal individuals. Those in the “no suicide” group ($n = 25$) did not endorse any of the items on the SHBQ subscales of self-harm or attempts, and they responded “never” to the item “I have been thinking of ways to kill myself” on the SIS. Participants in the “ideation only” group ($n = 22$) did not endorse any of the items on the SHBQ subscales of self-harm and attempts, but they indicated that
Figure 4.3

Scatterplots of PA and NA for suicide risk groups
Figure 4.3, continued

Scatterplots of PA and NA for suicide risk groups
they have been thinking of ways to kill themselves. Individuals were placed in the “harm with no intent” \((n = 11)\) if they indicated that they have a history of self-harm or suicide attempts on the SHBQ, but they said that they did not intend to die from their actions. Finally, participants in the “harm with intent group” \((n = 23)\) said that they have a history of suicide attempts with the intent to die.

Scatterplots for positive affect and negative affect for each of the suicide risk groups were created and visually analyzed to assess whether specific patterns were evident for each group. The plots were divided into quadrants in order to provide a marker for high and low affect during this visual analysis. For the “no suicide” group, data points appeared to cluster within the central region of the graph, with slightly lower levels of negative affect. For the “ideation only” group, the data points appeared to reside in the lower half of the space, an indication that those individuals with suicidal ideation generally experience lower than average levels of positive affect. Their levels of negative affect appeared to vary. When examining the scatterplot for those with self harm without the intent to die, it appeared that these individuals had low positive affect and negative affect seemed to be clustered around the mid-point. Finally, the “harm with intent to die” group’s affect scores were all located in the low positive affect quadrants and the majority were also in high NA quadrants. Based upon this inspection, it appeared that different visual patterns of affect emerged within each suicide group. Specifically, it appears that low positive affect may be an important, but not distinguishing, feature of suicidal risk. It was consistently low across all three suicidal groups, in contrast to the “no suicide” group’s more mid-range and variable positive affect scores. Negative affect, on the other hand, appeared to be both an important and a distinguishing feature of
suicidal risk, as it seemed to become increasingly negative across groups of increasing risk.

In summary, suicidal thoughts and behaviors were prevalent in this sample, and positive and negative affect were significantly related to suicidal thoughts and behaviors in the predicted direction (e.g., positive affect was negatively correlated with suicidal thoughts and behaviors; negative affect was positively correlated). Based upon statistical analyses, different combinations of affect were not related to different combinations of suicidal thoughts and behaviors, but a visual analysis of graphs provided support that different patterns of affect may exist for individuals of various levels of risk. Finally, the combination of positive and negative affect accounted for a significant amount of the variance in suicidal thoughts, but not behaviors, over and above hopelessness. In the following section, these findings are interpreted and possible implications, strengths and limitations of this study, and future research possibilities are discussed.
CHAPTER V
DISCUSSION

An extensive amount of research has been conducted on the role of cognition in suicidal thoughts and behaviors, but there has not been as much research conducted on the role of affect. This study was an attempt to apply the circumplex model of affect to the study of suicide and to determine if affect contributes additional information to suicide over and above cognition. The goal was to advance theory on suicidality, and to improve the assessment and treatment of suicide through a more holistic understanding of the affective and cognitive experiences of those considering ending their lives. The results of this study supported the application of the circumplex model of affect to the study of suicidal thoughts and behaviors and the argument that affect is important to study in relation to suicide, in addition to cognitive variables. In this section, results of this study are first reviewed, including an evaluation of the research hypotheses, and then implications of the findings, limitations of the study, and future research directions are discussed.

Review of research hypotheses and results

Preliminary data analysis indicated that suicidality was prevalent in this sample: 64.2% reported suicidal ideation within their lifetime, 29.4% reported self-harm, 34.6% reported suicide attempts, 24.7% reported suicide threats, and 71.6% reported some form
of suicidal behavior during their lifetime. The lifetime prevalence of thoughts of suicide in the general population is 28.9% (Weissman, Bruce, Leaf, Florio, & Holtzer, 1991) and of suicide attempts is 1.1 to 2.9% (e.g., Mosciki, 1995). In this study, the majority of those who said that they previously attempted suicide had the intent to die. About one-third of the participants said that over the past several weeks they had been thinking of killing themselves, three reported self-harm and suicide threats, and one indicated a suicide attempt. Based upon a comparison of data from this sample and previously studied samples, suicidal thoughts and behaviors are more prevalent in the sample. This heightened level of suicidal thoughts and behaviors is likely related to the clinical nature of the sample and the multiple risk factors that characterized it. These include the frequency of mood disorders and higher risk demographic characteristics such as being European American, middle-aged, and male.

The first research question for this study was: Is there a relationship between affect and suicidal ideation, suicidal behavior and hopelessness? It was hypothesized that affect would be related to suicidal thoughts and behaviors overall. Bivariate correlation analysis supported the hypothesis that positive and negative affect are significantly related to suicidal thoughts and behaviors. This is an important finding because it provides preliminary support for the importance of studying affect in suicidal individuals and for the application of the circumplex model of affect to the study of suicidality.

It was hypothesized that negative affect, but not positive affect, would be related to self-harm behaviors (self-injury without the intent to die). The rationale for this predicted finding was that past research has shown that anger and hostility are related to parasuicide, but apathy (low positive affect) is related to completed suicides more than it
is to parasuicide (e.g., Linehan, 1993; MacLeod et al., 1992). At best, this hypothesis received partial support. Positive affect was related to self-harm somewhat more weakly than it was to the other suicide variables, but the correlation was still statistically significant. As expected, negative affect was significantly related to self-harm and more strongly so than positive affect (accounting for 10% versus 4% of the self-harm variance). This finding, however, was not unique to self-harm, being observed also with suicide ideation, threat, and attempt. Based upon these data, the hypothesis received minimal support, and it is unclear whether the statistical findings have clinical significance and usefulness (i.e., help in assessing individuals who are parasuicidal versus those who may have the intent to die). There is no numerical cut-off to distinguish clinical significance, but it is likely that the 4% and 10% of variance accounted for was clinically important due to the fact that life endangering behaviors are being studied and even a small amount of variance could have an important outcome (e.g., detecting an individual at risk and implementing an appropriate intervention).

It is possible that the suicide variables might show more distinctive affective patterns with a different approach to measuring affect. As discussed earlier in the overview of the circumplex model of affect, there are two common rotations of the affective space that are utilized by researchers: positive affect and negative affect as axes, as used in this study, and valence and arousal as axes. It is possible that when the valence and arousal rotation is applied, different patterns of affect and suicidal thoughts and behaviors may emerge. This possibility is discussed later when reviewing exploratory analyses.
These bivariate correlational analyses provided some useful information that supports the rationale for investigating affect in individuals who are suicidal, but these coefficients only provide a snapshot of the relationship between these variables. Individuals can experience different levels of positive affect and negative affect, and a combination of suicidal thoughts and behaviors concurrently. Therefore, the combination of these variables is important to examine using multivariate statistical analysis because this more accurately represents the reality that all variables simultaneously influence each other (Thompson, 1991). The set of second research questions was designed to address this concern: How strongly do positive and negative affect together relate to suicidality, as represented by variables assessing suicide ideation through suicide attempts? Are different combinations of positive affect and negative affect related to different patterns of suicidal ideation and behavior? A canonical correlation analysis was conducted to address these questions.

The results indicated that positive and negative affect taken together importantly relate to the set of suicide-related thoughts and behaviors. In fact, the first linear combination of the affect variables showed a substantial 37% overlapping variance (significant canonical correlation of .61) with that of the suicide variables. This is a strong and perhaps unique finding of this research, as no previous studies were found that simultaneously examined the strength of affect-suicide relationships. The finding further supports the importance of more systematically studying the role played by affect in suicidality.

The results indicated that only the first combination of these variables was significant. A combination of low positive affect and high negative affect was related to
a combination of high levels of suicidal ideation, self-harm, suicide threats and suicide attempts. Negative affect was weighted more strongly than was positive affect, and suicidal ideation was weighted more strongly than the other forms of suicidal behaviors. In other words, negative affect demonstrated a stronger relationship to the combination of suicide variables than did positive affect, and suicidal ideation demonstrated a stronger relationship to the group of affect variables than did the other suicidal behaviors.

Due to the fact that only one combination of these variables was significant, this analysis does not support the hypothesis that two different combinations of affect distinguish between different patterns of suicidal thoughts and behaviors. One explanation for this finding is that the suicide variables are inter-related and overlapping; someone who has engaged in suicidal behaviors is also likely to have thought of killing him or herself. Because these variables often co-occur, it may be that there are not distinct statistical patterns of relationship between them and positive and negative affect. This conclusion cannot, however, be definitively reached from the canonical analysis alone because of the continuous versus discrete (group based) nature of the variables. Another limiting factor for this analysis is that the number of canonical variates that canonical correlation analysis produces is equivalent to the number of independent or dependent variables (whichever is smaller). In this case, the analysis only generated two canonical variates because there were only two affect variables. Perhaps more statistical patterns would have been found if more affect-related variables were introduced (i.e., activation and pleasantness dimensions; affect regulation).

To address the limitation of variable overlap that came about during the canonical correlation analysis, individuals were placed in mutually exclusive risk groups and the
patterns of their affect data were visually examined. The goal was to gain understanding of the visual patterns of positive affect and negative affect that might exist for different suicidal risk groups. The correlation analyses reported earlier measured suicidal ideation and behaviors as continuous variables, and many individuals reported a variety of different suicidal thoughts and behaviors, causing these variables to overlap. Two individuals may endorse identical items on the SIS and thus have the same level of suicidal ideation, but they may be very different in terms of suicidality if one of these individuals also reports threats and attempts and the other does not. In order to understand an individual’s risk, clinicians must take into account all suicidal thoughts and behaviors concurrently. To do so and to provide clinical meaning to the findings of this study, each participant was placed into a suicide risk group and their patterns of affect were visually examined to look for themes. Another benefit of this approach is that intent to die could be taken into account for those who said that they had attempted suicide in the past.

A visual analysis of the graphs suggests that there are different combinations of affective variables for the different risk groups: the “no suicide” group had mid-levels of positive affect and lower levels of negative affect; the “ideation only” group had lower levels of positive affect and various levels of negative affect; the “self harm without the intent to die” group had low positive affect and mid-levels of negative affect; and the “harm with intent to die” had low positive affect and high negative affect. Based upon this visual inspection, it appears that different patterns of affect are emerging within each suicide group. Specifically, low positive affect seems to more or less be a “common denominator” for individuals with any degree of suicidality. Negative affect, on the other
hand, seems to more clearly differentiate between the groups, with the combination of low positive affect and high negative affect being the most potentially lethal. These results are only exploratory and the significance of the relationships cannot be established through this method of analysis.

These graphic depictions also lend themselves to an examination of the role of the activation/valence dimensions of the affect circumplex space. Activation is important to consider because some have noted that there is an increased risk of suicidal behaviors when depression begins to “lift” and individuals gain energy or activation (e.g., Isaacson & Rich, 1997; Meehl, 1973). Joiner and colleagues (Joiner, Pettit, & Rudd, 2004) reviewed the suicide literature and reported that they could not locate any studies attempting to empirically validate this proposition. These researchers tested the hypothesis that it is not the increase in activation that results in risk of suicide, but the incomplete remission of depression of any variation. They believed that those with incomplete remission are thought to be more ill to begin with. Results of their study of suicidal youth supported their hypothesis that incomplete depression remission of any variation is related to heightened suicide risk, not the increase in activation by itself. In summary, the findings on the importance of activation in individuals who are suicidal is mixed and preliminary.

To follow up on these preliminary findings, the activation and valence dimensions were visually examined. The measures used in this study examined the positive/negative affect rotation of the circumplex, but activation can be visually examined on the scatterplots. Two new axes can be drawn by rotating the quadrant lines in Figure 4.3 45-degrees (i.e., connecting the diagonal corners of the scatterplot space) to represent
pleasantness/unpleasantness (line would be located from bottom left corner to top right corner) and high/low activation (line would be located from top left corner to bottom right corner). Based upon a visual analysis of these graphs and axes, it appears that those in the “no suicide” group were generally characterized by pleasant affect and low activation; those in the “ideation only” group were generally classified by unpleasant affect and low activation; those in the “harm with no intent” group were generally unpleasant in affect and had mid-level activation; and individuals in the “harm with intent” group generally demonstrated the visual pattern of unpleasant affect and mid-level activation. Overall, it seems that one of the differences between those who act upon suicidal thoughts and those who do not is their degree of affective activation.

This analysis does not test the same hypothesis examined by Joiner and colleagues because it does not test the impact of a change in activation on suicidal risk. It does provide some tentative support for a relationship between activation and risk, but no causality can be inferred. One possibility is that those with heightened suicide risk possess higher levels of activation in general, and it is not just the change in activation that is of interest. This information would be useful in assessment of suicide risk because those with higher levels of activation in general (not just an increase in activation) may be more likely to have heightened risk of suicide. This hypothesis could be tested by attempting to decrease activation in suicidal individuals (e.g., deep breathing, relaxation techniques) to determine if suicidal thoughts and behaviors also correspondingly decrease.

Up to this point, analyses have provided support that affect is related to suicidal thoughts and behaviors; the next step is to determine if affect is important to study in
addition to cognitive variables. In order to examine this issue, the third research question was: Do positive affect and negative affect together provide unique information about suicidal thoughts and behaviors over and above the cognitive variable hopelessness? It was hypothesized that affect would account for a significant amount of the variance in suicidal thoughts and behaviors over and above the variance accounted for by the important cognitive variable. Hopelessness was picked for this analysis because the relationship between hopelessness and suicidal behaviors is well supported and documented in a variety of samples (e.g., Abramson et al., 1998; Beck et al., 1985, 1989; Bevers & Miller, 2004; D’Zurilla et al., 1998).

Two multiple regression analyses were run to examine this research question, and it was found that the set of positive affect and negative affect variables contributed a statistically significant amount of information to suicidal ideation over and above hopelessness. Due to the fact that hopelessness is such an important variable in relation to suicide, it is an important finding that affect accounted for an additional amount of the variance in suicidal ideation. This provides support for the importance of studying both affect and cognitive processes because each contributes unique information, and while they are related to each other, the two systems maintain some independence from one another.

The beta-weights of the variables indicate that negative affect was more important than positive affect in accounting for variance in suicidal ideation above hopelessness when the two forms of affect are considered together. This finding does not mean that positive affect is not important or not related to suicidal ideation (recall that both positive affect and negative affect were significantly related to hopelessness); rather, positive
affect does not add additional information above hopelessness and negative affect. On the other hand, negative affect appears to explain variation in suicidal ideation that cannot be accounted for by hopelessness or positive affect alone. It seems that positive affect, but not negative affect, is fully subsumed by the other variables in the equation. High negative affect has been conceptualized as an aversive state from which individuals wish to escape (e.g., Baumeister’s escape theory, 1990). In contrast, low positive affect is related to a state of malaise, which is unsatisfying, but not acutely painful. It may be that this malaise importantly overlaps with hopelessness, the cognitive belief that conditions will not improve. With the unique addition of acutely painful negative affect, feelings of malaise and cognitions of hopelessness may be more likely to lead to active thoughts of suicide.

Affect adds information about suicidal ideation above hopelessness, but similar results were not discovered regarding suicidal behaviors. Positive affect and negative affect together did not contribute a significant amount of information to suicidal behaviors over and above hopelessness. One hypothesis to explain why this analysis was significant for ideation but not suicidal behaviors is related to the variety of subtypes of behaviors. The variable of suicidal behaviors includes self-harm, attempts with and without the intent to die, attempts that are planned, and those that are impulsive, all with different levels of lethality. Each of these types of behaviors may involve a different relationship between affect and cognition. For example, research has shown that those with impulsive near-lethal attempts (less than five minutes of planning) are more likely to be hopelessness and lack control of aggressive impulses, and those who engage in non-impulsive near-lethal attempts are more likely to be depressed (Simon, Swann, Powell,
So for those who are impulsive, affect may be less regulated by cognitive processes and it may account for more variance in suicidal behaviors. Hopelessness appears to be related to most, if not all, of the varieties in suicidal behavior, as does affect, but the specific type of affect and the manner in which it interacts with cognition may vary. With a larger sample size, it would be interesting to examine the unique contribution of affect for a variety of types of suicidal behavior to test this hypothesis. In conclusion, bivariate correlation analyses suggest that affect is related to suicidal behaviors, but when examining suicidal behaviors as a whole, affect may not provide any additional information not already accounted for by hopelessness.

Implications

The general finding that affect is related to suicidal thoughts and behaviors supports the need to broaden the scope of the current research and to study affect in relation to suicide, just as researchers have examined cognition to date. The fact that affect provided additional information above the cognitive variable of hopelessness also supports the fact that affect is an important variable to study and that the affective and cognitive systems are not redundant with one another. The research on cognition has provided many important theoretical and treatment-related advances in suicidal thoughts and behaviors, and perhaps similar strides can be made in understanding the role of affect. By increasing the focus upon individuals’ affective states, the study of suicide may be better able to take into account the intense psychological pain endured by many suicidal individuals, and these research findings have the potential to guide future assessment, treatment and theoretical studies on the topic of suicidality.
First, the results of this study have several implications for suicide assessment. Many instruments exist to measure suicidal risk, and the realistic goal of assessment is to evaluate the risk of suicide because accurate prediction via assessment measures is not possible at this time (Westefeld et al., 2000). Despite this goal, the Beck Hopelessness Scale has been found to “predict” eventual suicide in two different studies (Beck et al., 1985, 1990). The current study also supported the conclusion that hopelessness is related to suicidal thoughts and behaviors, and affect adds even more information above hopelessness. One implication is that assessment may be enhanced by evaluating both hopelessness and negative affect. Another assessment-related implication of these findings is that an individual’s affective state may impact how they respond on the cognitive measures of suicide (as shown on the RFL by Ellis & Range, 1989, 1992; Turzo & Range, 1991). With this in mind, those attempting to assess an individual’s suicide risk factors should first take into consideration his or her affect at time of assessment to determine how it could potentially impact responses on the suicide inventories.

Second, this study also has some implications for the treatment of suicidal individuals. Affect can be independent from cognition (e.g., LeDoux, 1989; Zajonc, 1984), but in conjunction, these two processes more accurately define our subjective experience. The direction of the relationship between affect and cognition is hotly contested (i.e., does cognition always come before affect?). The correlational design of this study prohibited inferring causality and an evaluation of the primacy debate, but it is important to attempt to understand whether a causal relationship exists between affect and cognition. The broaden-and-build theory and the mood-congruent memory theory...
both suggest that affect can change or influence cognition. If this is the case, then it is important to address the affective experiences of those who are suicidal in conjunction with the more typical cognitive approaches to treatment by inducing positive affect and/or reducing negative affect and activation. The study by Joiner and colleagues (2001) that demonstrated that positive affect improves problem-solving in people who are suicidal provided one example of how affect and cognition can be addressed in the treatment of suicide in order to enhance outcomes. This study emphasized the importance of positive affect in relationship to suicide. The current study also supports the significance of positive affect in the study of suicide, but negative affect was a more important, or at least more distinct and possibly more distinguishing, variable. Therefore, one of the implications of this study is that reducing negative affect, as well as increasing positive affect, may be important in the treatment of suicidal individuals, and changes in affect could possibly lead to improvements in suicidal thoughts and behaviors.

Finally, this study has theoretical implications. As mentioned, a few of the major theories of suicide (e.g., escape theory, broaden-and-build theory) incorporate affect, but not the main postulates of the circumplex model. The findings of this study can be integrated with and added to Baumeister’s (1990) escape theory of suicide and the broaden-and-build theory of affect (Fredrickson, 2001) to advance the theoretical understanding of suicide. In the escape theory, negative affect is conceptualized to be a result of cognitive appraisals of self-blame and the resulting negative affect motivates action to escape from the pain. The present study supported Baumesiter’s proposition that negative affect is related to suicidal thoughts and behaviors, and those with increasing levels of suicide risk demonstrate higher levels of affective activation.
However, Baumeister’s theory has not yet incorporated positive affect, and results of the present study also support the relationship between positive affect and suicidality.

On the other hand, the broaden-and-build theory of affect emphasizes the role of positive affect in enhancing problem solving, and this model has been applied successfully to the study of suicide (Joiner et al., 2001). Perhaps the escape theory and broaden-and-build theories could be integrated with one another, thus accounting for the important role of both positive and negative affect that was supported in the present study. In other words, negative affect may motivate actions to escape, such as suicide, but positive affect may improve problem-solving capabilities and provide additional options for escape. One point of discrepancy between these two theories is the temporal link between cognition and affect. The escape theory proposes a causal and temporal link between cognition and affect, with cognitive appraisal preceding affect. On the other hand, the broaden-and-build theory of affect states that affect leads cognition. The design of the present study precluded an examination of the temporal relationship between affect and cognition, so this relationship requires further empirical testing, but the present study provided support for the importance of examining both variables.

Limitations

The first set of limitations is related to the external and internal validity of the study. This study utilized a clinical sample in an outpatient mental health clinic. Compared to a nonclinical sample, the findings of this study are more generalizable to the clinical population, supporting the external validity of this study. There are some limitations regarding the generalizability of this sample to the clinical population, though.
The majority of the sample was male and this reflects the fact that the majority of consumers of the outpatient mental health clinic and Veterans Affairs medical services are men. In the general clinical population, women are more likely to seek mental health services than are men, and there are different patterns of suicidality between men and women. Suicide research has revealed different rates of suicidal behaviors and different ratios of attempts to completions in men and women, most likely because males select more lethal means of attempting suicide (APA, 2003). It is possible that suicide attempts in this study are more lethal than in the population due to the fact that this sample is disproportionately male. Even if this is the case, it should not influence the relationships of interest because the relationship between affect and lethality of suicide attempt (measured by coding the lethality of suicide attempt using the SHBQ coding scheme) was not significant (positive affect: $r = .24, p = .22$; negative affect: $r = -.09, p = .65$) when examined post hoc. In conclusion, the external validity of this sample was enhanced using participants from a mental health clinic because the results are more generalizable to the clinical population, but there are some factors that also limit the generalizability of this sample.

By enhancing the external validity through the use of a clinical sample, several threats to internal validity were introduced. The first threat was the lack of control of extraneous variables. It was not possible to control all testing conditions because participants completed the measures in the mental health clinic waiting room. For example, some participants were waiting with family members as they completed the surveys, some were alone in waiting room, and at other times, some were writing their responses when the room was full. Some participants completed the surveys before their
sessions because either they were early for their appointments or because they were waiting for a doctor or therapist who was running behind. Other participants completed the questionnaires after their session ended. Participants were attending the mental health clinic for various reasons, including routine medication check-ups, ongoing therapy, or the walk-in clinic for either refills or emergencies. Several participants noted that they were attending their first session, and some stated that they had been receiving services in the mental health clinic for over two decades. All of these conditions could not be controlled and could potentially impact participants’ responses in a variety of ways. One example is that some of these conditions could generate more anxiety than others (e.g., first session, emergency appointment, full waiting room), or could impact participants’ perceived anonymity (e.g., family member sitting next to them versus an empty waiting room).

Another threat to the internal validity is that participants were not randomly selected. All patients in the mental health clinic were provided the opportunity to participate in the study, but those who decided to participate belonged to a self-selected group that was subject to selection bias. Potential participants were recruited with flyers and were approached by the examiner while in the waiting room. The flyer indicated that the study was related to self-harm and suicide, but clarified that input was needed whether or not an individual had a history of self-harm or not. It is possible that some individuals without a history of self-harm elected not to participate because they did not believe that the study was relevant to them. Additionally, some individuals may have decided not to participate because they have had a history of self-harm and they were
concerned about their anonymity. Either way, it is possible that the sample was not representative of the population due to these self-selection factors.

In summary, a clinical sample was used in this study and this resulted in limitations related to the internal validity of the findings because several variables were not controlled. On the other hand, the use of a clinical sample enhanced the external validity of the sample and increased the variability of the suicide data.

The second set of limitations is related to issues of measurement. The measures used in this study have all been empirically validated, but the SIS and the SHBQ were only tested with a college student sample prior to this study. College student samples are not representative of the general population or of those seeking mental health treatment. Preliminary analyses in this study supported the reliability and convergent validity of these measures, but further research aimed specifically at validation with clinical samples is needed.

One of the first steps in measuring a construct is defining the terminology (Pedhazur & Schmelkin, 1991). There is no consensus in the literature on the definition of affect, resulting in limitations related to its measurement, and to its theoretical and conceptual clarity. As highlighted in the review of the literature, the terms emotion and affect are often used interchangeably, and there is a great deal of conceptual overlap in the definitions. Despite the variety of definitions, it seems that one of the hallmarks of affect is that it is more automatic and physiological in nature, and emotion involves more cognitive appraisal (e.g., Cacioppo et al., 1999; Russell & Feldman Barrett, 1999). Some researchers and theorists make clear distinctions between affect and emotion/cognition (e.g., LeDoux, 1989; Zajonc, 1980); however, even if there is agreement on this
distinction, measurement of affect is not consistent with this definition. Affect is most often measured with paper and pencil measures, which involve cognitive appraisals of one’s internal states. As a result, the measure of affect in this study involves cognition, but it is also important to consider the fact that paper and pencil measures of affect are related to more physiological measures (e.g., Russell 1980). In conclusion, there is not agreement on the definitions of affect and emotion, so the variable of affect that was used in this study represents a construct that exists somewhere in the middle between the more physiologically-based affect and the more cognitively-based emotion. In addition, the methods of measurement of affect in this study were not consistent with the general definitional themes in the literature, but this issue may not be as large of a limitation as initially believed due to the relationship between different means of measurement.

A third measurement-related limitation of this study is the time-frame under investigation. The instructions for the various instruments were slightly altered so that participants were asked to recall their thoughts and affect over the past few weeks. Due to the statistical rarity of suicidal behaviors, the time frame of “past few weeks” was not used in this study; instead, participants responded about their life-time prevalence of suicide threats and attempts. Research has shown that short term affect is related to long term affect (Watson et al., 1988), so theoretically, participants’ affect over the past few weeks is related to their affect over a longer time span, but they are not necessarily the same. With this in mind, the time frame difference for the variables of interest continues to be a measurement limitation, but perhaps not as detrimental as initially anticipated.

The final set of limitations of this study concerned the statistical analyses executed. The research design of this study was correlational, so causal effects cannot be
inferred. The correlational analyses in this study indicated that there were significant relationships between affect and suicide variables. It is not clear whether affect causes a change in suicidal behaviors, or vice versa. An additional possibility is that the variables are not causally related, but a third variable accounts for the significant relationship (e.g., error, similar means of measurement). In affect research, researchers and theorists frequently discuss the issue of causality by debating the primacy of affect versus cognition. Future research is needed to further examine the causal connection between these variables.

Future research

Affect is important to study in relation to suicide, so several future studies are proposed in this section to follow up on and to advance the current findings. The current study examined affect using a model that utilized the positive affect and negative affect axes of the affect circumplex. A useful future study would be to utilize a scale with more axes/dimensions of the affective space represented, and to attempt to place suicidal thoughts and behaviors on the affective space more specifically. One scale that was located that may serve this function is the 12-Point Affect Circumplex Scale (Yik, Russell, & Steiger, 2003). Six different axes are used to divide up the circumplex, leading to 12 points, each representing an affective state, equidistant from one another on the circumplex. The scale consists of three to six descriptors for each of the 12 points, and a variety of formats can be used to rate participants on each of these points (e.g., Likert scale, agree-disagree). This scale has been used to place personality variables on the affect circumplex using a statistical method called CIRCUM-Extension (Browne,
1999), and a similar approach could be implemented to place suicidal ideation, threats, self-harm and suicide attempts on the circumplex. If the various forms of suicidal thoughts and behaviors are located at different places on the circumplex, then evaluation of affect could be another area to incorporate into assessment.

Causality could not be tested in this study due to the statistical analyses used and the correlational design of the study. One possibility for future research is to conduct a controlled treatment study or mood induction study to gain information about the causal link between these variables. This is important because it provides information about the appropriate means of intervention and lends some insight into how cognitive and affective variables interact. Again, if changes in affect result in changes in cognition, then cognitive therapy would be enhanced by first inducing positive affect and/or reducing negative affect and activation. One previous study (Joiner et al., 2001) found that eliciting positive affect before attempting to enhance problem-solving skills improved treatment outcomes. The current study provides evidence that negative affect may be even more important than positive affect, so outcomes may be enhanced by addressing both forms of affect, or attempting to decrease the levels of activation of affect. This could be tested experimentally using a controlled-group treatment study in which both experimental and control groups of individuals who are suicidal participate in cognitive therapy, and the experimental group also participates in positive mood induction and relaxation procedures (to reduce activation) before each treatment session. If the groups differ in their levels of suicidality after treatment, then it can be concluded that the changes in affect resulted in improved outcomes over traditional cognitive therapy.
In an effort to enhance the theoretical foundations of suicide research, the affect-like states incorporated into Shneidman’s cubic model of suicide (1992, 1996) and Baumister’s escape theory of suicide (1990) could be investigated using the circumplex model. As mentioned in the review of the literature, Shneidman’s concept of pain appears to be affect-like in nature, possibly representing the negative affect axis. He also utilized the construct of perturbation that may be similar to the axis of activation. The two axes that appear to be represented by his model are not orthogonal axes, but perhaps with further research, it may be discovered that these constructs are characterized by additional axes on the circumplex. If this is the case, researchers and clinicians may be better able to understand how these states of pain and perturbation relate to one another and suicide, and how they combine with one another to create our subjective experiences.

In his escape theory of suicide, Baumeister (1990) acknowledges the importance of negative affect, and it would be interesting to integrate positive affect into this theory in order to understand the manner in which these two orthogonal dimensions of affect impact his theoretical postulates. By integrating these suicide theories with the circumplex model of affect, the opportunity exists for the development of an integrated affect-behavior-cognition theory of suicide.

A final possibility that is recommended for future research is to track momentary affect and suicidal thoughts and behaviors over several weeks for at-risk individuals. Rather than being limited to static measures of the average affective state over the past few weeks, these data would provide a more dynamic snapshot of affective experiences. Perhaps it is not a particular affect state by itself that is problematic, but maybe it is the rate of change of affective states. These data would lend themselves to non-linear and
graphic analyses and afford some exciting data analysis possibilities. Longitudinal data could also be used to examine levels of positive affect and negative affect in individuals with suicidal ideation to try to predict those who would go on to attempt without intent to die and those who would attempt with the intent to die based upon the graphical analysis patterns. If these patterns of affect are indeed found to differ among different suicidal risk groups, this could provide valuable clinical information. For example, an individual may present with suicidal ideation, but their combination of positive and negative affect may be similar to those who attempt suicide with the intent to die. The affect information indicates that they are at a higher level of risk and may necessitate different interventions.

Summary

This study provided evidence that affect, in particular negative affect, is important to study in relation to suicidal thoughts and behaviors and that the circumplex model of affect provides a promising framework for doing so. This model proposes that there are two relatively orthogonal dimensions of affect, and both of these dimensions were related to suicidal ideation, self-harm, suicidal threats and suicide attempts, as well as to hopelessness, in this study. Further, there was evidence that the relationships between the affect variables and the suicide ones occurred to at least some degree through independent mechanisms. Statistical analyses did not indicate that there were different patterns of affect for the various forms of suicidal behaviors. Rather, a general finding was seen in which suicidality was related to low positive affect and high negative affect. A visual analysis of graphs utilizing a group-based approach did, however, offer preliminary support for some unique patterns. An additional result of this study was that
affect accounted for a significant amount of the variance in suicidal ideation, but not suicidal behaviors, above the cognitive variable of hopelessness. This means that it is important to study both cognitive and affect variables in order to gain more understanding about suicidal ideation. Some implications of this study are that therapists could gain more information about suicidal thoughts and behaviors if they assessed affect, and it is possible that treatment outcomes may be enhanced by incorporating affect. Follow up research is required to test these implications. In conclusion, affect is important to study in relationship to suicide, and it may provide additional information not gleaned from the more customary focus upon cognition in the suicide literature.
REFERENCES


APPENDIX A

COVER LETTER

Dear potential participant:

You are invited to participate in a research study being conducted by Cynthia Yamokoski-Maynhart, a current psychology resident at the Dayton Veterans Affairs Medical Center and a doctoral candidate in the Collaborative Program in Counseling Psychology at The University of Akron. This project focuses upon life threatening behaviors (e.g., like suicide) and the impact of thoughts and feelings upon these actions. Your input is very valuable, regardless of whether or not you have ever thought about or attempted suicide.

If you would like to participate in this study, you will be asked to complete the attached survey. You should only complete this survey once. You are not to put your name on the survey. After you complete the survey, please place the survey in the box in the mental health waiting room labeled “Research project” or request a stamped envelop from the clerk and return the survey through the mail. You can also take this survey home to complete and place in the sealed box at your next visit.

It is estimated that this survey will take approximately 15-25 minutes to complete. There are no foreseeable risks to your participation in this study. You will receive no direct benefit from participating in this research study.

Your anonymity will be protected throughout the study. Please do not put your name anywhere on the survey. Turning in your completed survey represents your informed consent for participation in the study. Your responses will be used for research purposes only, and will not be used for assessment or treatment purposes. Your mental health provider(s) at the VA will not have access to your responses.

Participation in this project is completely voluntary. If you agree to participate, you may refuse to answer any questions and may withdraw from the study at any time prior to turning in your survey without penalty. After your survey has been turned in, it cannot be withdrawn because it will not include your name and so could not be identified for removal.
This research project has been reviewed and approved by The University of Akron Institutional Review Board for the Protection of Human Subjects and by the Research and Development Committee at the Veterans Administration hospital at Dayton.

You may contact Robert Stegman, Ph.D. at telephone number (937) 268-6511 ext. 2729 or after hours the Dayton Veterans Affairs Medical Center Operator at (937) 268-6511 regarding any questions, comments, complaints, or injury. You may also contact Karen Scheel, Ph.D., the faculty advisor for this project, at (330) 972-7779. If you have any questions regarding your rights as a study subject, you may contact Ron Beaulieu, M.D. (ACOS/Research & Development, Dayton VAMC) at (937) 268-6511 ext 3380, Robyn James (IRB Secretary at (937) 775-2425 and/or Ms. Sharon McWhorter, Associate Director, The University of Akron Research Services, at (330) 972-7666 or 1-888-232-8790.

If you would like a summary of the research findings, please send at email request to: cay2@uakron.edu. Results will be for the group of participants overall and we are unable to report individual results. It is anticipated that results will be available in June 2006.

Before you agree to participate, the following items should be completed:

- You have had an opportunity to ask questions and to clarify anything that was unclear to you about the study or your participation
- The procedures involved were adequately explained
- You have read and now understand the entire Consent Form.

You have read and understand the information contained in this document. You have had an opportunity to ask questions and all of your questions have been answered to your satisfaction. You are completing this survey voluntarily, indicating your agreement to participate in this study, until you decide to do otherwise.

If you are thinking about suicide, please seek help immediately. Please do one of the following: inform your current mental health provider, call a crisis hotline (for example, the National Hopeline 1-800-273-8255), call 911, or go to an emergency room, like the VA Medical Center emergency room.

PLEASE KEEP THIS COVER LETTER

Thank you for your time,
Cynthia A. Yamokoski, MA
APPENDIX B

RESEARCH QUESTIONNAIRE

1. Sex: ___Male  ___Female

2. Age: _____

3. Ethnic/racial background: ___European American  ___African American
   ___Latino/a  ___Asian American  ___Native American
   ___Multi-ethnic  ___Other: _____________

4. Marital status:  ___Single         ___Married/Partnered     ___Separated
   ___Divorced   ___Living with significant other

5. In regards to your current mental health treatment…
a. What is your reason for seeking treatment? __________________________
   ______________________________________________________________
   ______________________________________________________________

6. What type of treatment are you receiving/seeking? (check all that apply)
   ___ Individual    ___Group  ___Outpatient
   ___Partial hospitalization   ___Inpatient

   a. Approximately how long have you been in treatment for this particular mental
      health concern? _________

   b. Has a mental health professional ever given you any of the following
diagnoses? Check all that apply:
   ___Major Depression
   ___Dysthymia
   ___Bipolar disorder
   ___Other mood disorder
   ___Anxiety-related disorder
   ___Others: ______________________________________________________

   c. Are you currently taking any medications for a psychological or psychiatric
      concern?   YES (Please list below)   NO
Positive and Negative Affect Schedule (PANAS)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way during the past few weeks. Use the following scale to record your answers.

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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td>very slightly or not at all</td>
<td>a little</td>
<td>moderately</td>
<td>quite a bit</td>
<td>extremely</td>
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<td>distressed</td>
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<td>excited</td>
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<td>upset</td>
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<td>guilty</td>
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<td>scared</td>
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<td>hostile</td>
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<td>enthusiastic</td>
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<td>irritable</td>
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<td>alert</td>
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<td>ashamed</td>
<td>__</td>
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<td>inspired</td>
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<td>nervous</td>
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<td></td>
<td>determined</td>
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<td></td>
<td>attentive</td>
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<td>jittery</td>
<td>__</td>
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<td>active</td>
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<td></td>
<td>afraid</td>
<td>__</td>
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R-SIS

This questionnaire consists of 10 statements. Please read each carefully and then circle the number for each item that *best describes* the way you have felt over the past few weeks, including today. Be sure to circle only one number for each item.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Infrequently</th>
<th>Sometimes</th>
<th>Frequently</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have been thinking of ways to kill myself.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
</tr>
<tr>
<td>2. I have told someone I want to kill myself.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
</tr>
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<td>3. I believe my life will end in suicide.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
</tr>
<tr>
<td>4. I have made attempt to kill myself.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
</tr>
<tr>
<td>5. I feel life just isn’t worth living.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
</tr>
<tr>
<td>6. Life is so bad I feel like giving up.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
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<tr>
<td>7. I just wish my life would end.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
</tr>
<tr>
<td>8. It would be better for everyone involved if I were to die.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
</tr>
<tr>
<td>9. I feel there is no solution to my problems other than taking my own life.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
</tr>
<tr>
<td>10. I have come close to taking my own life.</td>
<td>1-----</td>
<td>2-------------</td>
<td>3---------</td>
<td>4----------</td>
<td>5------</td>
</tr>
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</table>
A lot of people do things which are dangerous and might get them hurt. There are many reasons why people take these risks. Often people take risks without thinking about the fact that they might get hurt. Sometimes, however, people hurt themselves on purpose. I am interested in learning more about the ways in which you may have intentionally or unintentionally hurt yourself. I am also interested in trying to understand why people may do some of these dangerous things. If you’ve done things which may have been unsafe or make it possible that you may not be able to keep yourself safe, I strongly encourage you to discuss this with a counselor or call one of the hotline numbers provided on the information sheet accompanying this survey. Please circle YES or NO in response to each question and answer the follow-up questions. For questions where you are asked who you told something to, do not give specific names. We only want to know if it was someone like a parent, spouse, friend, clergy person, doctor, etc.

Things you may have actually done to yourself on purpose.

1. Have you ever hurt yourself on purpose? (e.g., scratched yourself with finger nails or sharp object.)
   YES  NO
   If no, go on to question #2.
   If yes, what did you do? ____________________________
   a. Approximately how many times did you do this? __________________
   b. Approximately when did you first do this to yourself? (write your age) ___
   c. When was the last time you did this to yourself? (write your age) ______
   d. Have you ever told any one that you had done these things? YES  NO
      If yes, who did you tell? ____________________________
   e. Have you ever needed to see a doctor after doing these things? YES  NO

Times you hurt yourself badly on purpose or tried to kill yourself.

2. Have you ever attempted suicide? YES  NO
   If no, go on to question # 4.
   If yes, how? ____________________________

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(Note: if you took pills, what kind? ___________; how many? _____; over how long a period of time did you take them? __________)

a. How many times have you attempted suicide? __________

b. When was the most recent attempt? (write your age) __________

c. Did you tell anyone about the attempt? YES NO

Who? ________________________________

d. Did you require medical attention after the attempt? YES NO

If yes, were you hospitalized over night or longer? YES NO

How long were you hospitalized? ________________

e. Did you talk to a counselor or some other person like that after your attempt? YES NO

Who? ________________________________

3. If you attempted suicide, please answer the following:

a. What other things were going on in your life around the time that you tried to kill yourself? ________________________________

______________________________

b. Did you actually want to die? YES NO

c. Were you hoping for a specific reaction to your attempt? YES NO

If yes, what was the reaction you were looking for? ________________________________

______________________________

d. Did you get the reaction you wanted? YES NO

If you didn’t, what type of reaction was there to your attempt? ________________________________

______________________________

e. Who knew about your attempt? ________________________________

Times you threatened to hurt yourself badly or try to kill yourself.
4. Have you ever threatened to commit suicide? **YES** **NO**
   If no, go on to question # 5.
   If yes, what did you threaten to do? ________________________________

   a. Approximately how many times did you do this? ________________
   b. Approximately when did you first do this? *(write your age)* __________
   c. When was the last time you did this? *(write your age)* ______________
   d. Who did you make the threats to? *(e.g., mom, dad)* ________________
   e. What other things were going on in your life during the time that you were threatening to kill yourself? ________________________________

   f. Did you actually want to die? **YES** **NO**
   g. Were you hoping for a specific reaction to your threat? **YES** **NO**
      If yes, what was the reaction you were looking for? ________________

   h. Did you get the reaction you wanted? **YES** **NO**
      If you didn’t, what type of reaction was there to your attempt? ________________
SHBQ SCORING KEY

PART A. Things you may have actually done to yourself on purpose (Self-Harm Behavior)

1. Have you ever hurt yourself on purpose? (e.g., scratched yourself with finger nails or sharp object.) YES NO (If YES, code 1 for SHB-Status; Code 0 for Control)
   If no, go on to question #2. (Score 0 for each, Items 1 - 5)
   If yes, what did you do?

Item #1. Self-Harm Behavior Frequency (SHB-Freq)
   a. Approximately how many times did you do this?
      (Blank = 0; once = 1; twice = 2; 3 times = 3; 4 or more times = 4).

Item #2. Self-Harm Behavior History (SHB-Hx)
   b. Approximately when did you first do this to yourself? (write your age)
   c. When was the last time you did this to yourself? (write your age)

Scoring SHB-Hx Item #2: Compute difference score: age at last attempt (c) minus (-) age at first attempt (b):
      (Blank = 0; 0-1 year = 1; 2-3 years = 2; 4-5 years = 3; 6 or more years = 4).

Item #3. Self-Harm Behavior Risk (SHB-Rsk):
   Compute difference score: Stated chronological-age given in background information (minus) (-) age at last attempt (c):
      (Blank = 0; 1 year or less = 4; > 1 year but < 2 years = 3; > 2 years = 2).

Item #4. Self-Harm Behavior-Disclosure (SHB-Dis) (Enter Response Circled)
   d. Have you ever told any one that you had done these things? YES NO
      (1) (2)

Item #5. Self-Harm Behavior-Treatment (SHB-Rx) (Enter Response Circled)
   e. Have you ever needed to see a doctor after doing these things? YES NO

Total SHB (sum Items 1 to 5) Score: _____________________________(3) (2)
PART B. Times you hurt yourself badly on purpose or tried to kill yourself (Suicide Attempt).

2. Have you ever attempted suicide? YES NO (If YES, code 1 for SA-Status; Code 0 for Control).

   If no, go on to question # 4. (Score 0 for each, Items 1 - 6).

   If yes, how?

   (Note: if you took pills, what kind? __________; how many? _____; over how long a period of time did you take them? __________)  

Item #1. Suicide Attempt Method (SA-Mth) (For multiple methods, enter highest score).

   (Blank = 0; Overdose (OD) on one substance, small (e.g., 10 pills or less) amount = 1; OD on the same substance, large (e.g., 10 pills or more) amount = 2; OD on 2 or more of mixed/odd substances = 3; Harm/Injury to any *part* of body = 4; Traumatic/lethal - hanging, suffocating, accident, use of firearms = 5.)

Item #2. Suicide Attempt Frequency (SA-Freq)

   a. How many times have you attempted suicide?

   (Blank = 0; once = 1; twice = 2; 3 times = 3; 4 or more times = 4.)

Item #3. Suicide Attempt Risk (SA-Rsk)

   b. When was the most recent attempt? (write your age)

Scoring SA-Rsk Item #3: Compute difference score: Stated chronological-age given in background information (minus) (-) age at most recent attempt (b):

   (Blank = 0; 1 year or less = 4; > 1 year but < 2 years = 3; > 2 years = 2).

   c. Did you tell anyone about the attempt? YES NO

   Who?

Item #4. Suicide Attempt Medical-Treatment (SA-MRx) (Enter Response Circled)

   d. Did you require medical attention after the attempt? YES NO

   (4) (2)

   If yes, were you hospitalized over night or longer? YES NO

   How long were you hospitalized?
Did you talk to a counselor or some other person like that after your attempt?

YES  NO  Who?

3. If you attempted suicide, please answer the following:

Item #5. Suicide Attempt Event (SA-Evn)

a. What other things were going on in your life around the time that you tried to kill yourself?
(Blank = 0; 1 event = 1; 2 events = 2; 3 or more events = 4.)

Item #6. Suicide Attempt Intent (SA-Int) (Enter score for only *b*).

b. Did you actually want to die?  YES  NO

   (3)  (1)

c. Were you hoping for a specific reaction to your attempt?  YES  NO

   If yes, what was the reaction you were looking for?

d. Did you get the reaction you wanted?  YES  NO

   If you didn’t, what type of reaction was there to your attempt?

e. Who knew about your attempt?

Total SA-Int (sum Items 1 to 6) Score:

PART C. Times you threatened to hurt yourself badly or try to kill yourself

(Suicide Threat).

4. Have you ever threatened to commit suicide?  YES  NO

   (If YES, Code 1 for ST-Status;  Code 0 for Control).

   If no, go on to question # 5.  (Score 0 for each, Items 1 - 6)

   If yes, what did you threaten to do?

Item #1. Suicide Threat - Method (ST-Mth) (For multiple methods, enter highest score).

   (Blank = 0;  Substance abuse = 1; self-injury, object not specified = 2; fatal accident; poisoning = 3; lethal objects/behavior (hanging, firearms etc) = 4.

Item #2. Suicide Threat Frequency (ST-Freq)

   a. Approximately how many times did you do this?

   (Blank = 0; 1-2 times = 1; 3-4 times = 2; 4 or more times = 3.)
**Item #3. Suicide Threat History (ST-Hx)**

b. Approximately when did you first do this? *(write your age)*

c. When was the last time you did this? *(write your age)*

**Scoring ST-Hx Item #3: Compute difference score: age of last threat (c) minus (-) age of first threat (b):**

(Blank = 0; 0-1 year = 1; 2-3 years = 2; 4-5 years = 3; 6 or more years = 4).

**Item #4. Suicide Threat Risk (ST-Rsk):**

Compute **difference score**: Stated chronological-age given in background information (minus) (-) age of last threat (c):

(Blank = 0; 1 year or less = 4; > 1 year but < 2 years = 3; > 2 years = 2).

**Item #5. Suicide Threat - Event (ST-Evn) (enter score for only *e*).**

d. Who did you make the threats to? (e.g., mom, dad)

e. What other things were going on in your life during the time that you were threatening to kill yourself?

(Blank = 0; 1 event = 1; 2 events = 2; 3 or more events = 3.)

**Item #6. Suicide Threat Intent (ST - Int) (Enter score for only *f*).**

f. Did you actually want to die? YES NO 

(2) (0)

g. Were you hoping for a specific reaction to your threat? YES NO

If yes, what was the reaction you were looking for?

h. Did you get the reaction you wanted? YES NO

If you didn’t, what type of reaction was there to your attempt?

**Total ST (sum Items 1 to 6) Score: ____________________**
SCORES: PART A __________, PART B ____________, PART C ________ =
Signature of Scorer: ____________________ Rater #

Note.
For Items with multiple sub-items, only one item is scored or derived to represent that Item in carrying out the statistical analyses. Here are some examples:
Part A, Item #2 has two (2b and 2c) sub-items. However, only a single score is derived to represent Item #2.

Part B, Item #3 has two (3b and 3c) sub-items. However, only a single score is derived to represent Item #3.

This scoring procedure also minimizes error of using items with different measurement units/scales in the analyses. Items not scored can be used as probe items.

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APPENDIX C

INSTITUTIONAL REVIEW BOARD APPROVAL


Cyclone A. Vankvast, Ph.D.
6050 Medical Center Drive
Memphis, TN 38163

The University of Memphis' Institutional Review Board for the Protection of Human Subjects in Research (IRB) conducted a review of the proposed study, "The Role of Social Information in Social Interaction," and recommended approval of the research. The IRB applications number associated with this project is 491085.

The protocol is valid for one year from the date of approval and was approved on January 13, 2005. The protocol was reviewed and approved by the Institutional Review Board and meets the following criteria:

1. The research is conducted in accordance with all applicable regulations and policies.
2. The research is conducted with the informed consent of all participants.
3. The research is conducted with the approval of the Institutional Review Board.
4. The research is conducted with the approval of the appropriate institutional review board(s).

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