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The spectrum of self-harm in college undergraduates: The intersection of maladaptive coping and emotion dysregulation

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The Spectrum of Self-Harm in College Undergraduates:

The Intersection of Maladaptive Coping and Emotion Dysregulation

by

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ABSTRACT

Suicidality and non-suicidal self-injury are highly prevalent on college campuses and death by suicide is the number two cause of death for that age demographic. Even with such a deadly public health concern, little is known about how self-harm behavior can be prevented or effectively treated. Research has suggested that differences in affect regulation may differentiate those who engage in self-harm from those who do not, but many of these studies have examined disparate pieces of affect regulation without addressing the overlap and interaction of regulatory behaviors. The field must discover what specific aspects of affect regulation go awry, if self-harmers demonstrate a different pattern of affect regulatory strategies, and if subtypes of persons who engage in self-harm have different patterns of affect regulation that will need to be addressed differently in treatment and prevention efforts.

The purpose of this study is to explore these associations between affect regulation, specifically emotion regulation and coping, and self-harm behaviors. Two-hundred and fifty undergraduates completed surveys on emotion regulation, coping strategies, and health-risk behavior. An extremely high prevalence of self-harm and risky

behavior was discovered (nearly 47% endorsing self-harm and 86% endorsing risky behavior).

Results from three different measures of emotion regulation and coping strategies were factor analyzed to produce three factors, corresponding to maladaptive, active adaptive, and passive adaptive (distress tolerance) affect regulation strategies. Persons with and without a history of self-harm behavior endorsed similar levels of adaptive affect regulation strategy utilization, but those with a history of self-harm behavior had much higher utilization of maladaptive affect regulation strategies. Similar patterns of affect regulation strategy utilization were found for persons engaging in risky behavior (sexual, alcohol, illicit substances, disordered eating, safety, and smoking) and all subtypes of persons engaging in self-harm (i.e., non-suicidal self-injury, suicide attempts, or both). Those who had engaged in self-harm could be differentiated from participants with no history of self-harm behavior or ideation on the basis of their utilization of maladaptive affect regulation strategies. Implications for prevention and intervention are discussed.

Introduction

The purpose of this study is to explore the associations between deficits in affect regulation, specifically aspects of emotion regulation and coping, and self-harm behaviors in a sample of college undergraduates. Traditional college students are members of an age bracket noted for high risk of self-harm (White, Trepal-Wollenzier, & Nolan, 2002), and research has shown that self-harm behaviors are particularly common among undergraduates (Gratz 2001). Deficits in affect regulation have been associated with the presence of deliberate self-harm (Crowell, Beauchaine, McCauley, Smith, Stevens, & Sylvers, 2005; Herpertz, 1995; Klonsky, 2007; Laye-Gindhu, & Schonert-Reichl, 2005; Nixon, Cloutier, & Aggarwal, 2002; Suyemoto, 1998; Zlotnick, Donaldson, Spirito, & Pearlstein, 1997) but few studies have explored which specific components of affect regulation drive this association, a shortcoming that hinders clear interpretation and utility of findings. Although deficits in aspects of affect regulation such as emotion regulation and coping have all separately been connected to a history of self-harm (Cantanzaro, 2000; Favazza & Conterio, 1989) no study to date has explored the interrelationships between these constructs and self-harm in one study. A better understanding of the interplay between these distinct but related components of affect regulation could aid in prevention and intervention methods for self-harm, a problem of considerable morbidity and mortality in the college population.

The Problem of Self-Harm

The "spectrum of self-harm" is commonly used to describe a wide range of behaviors spanning health-risk behavior (such as reckless driving or sexual activity), deliberate self-injury (in the form of cutting, burning, or other superficial tissue damage without conscious suicidal intent), suicide attempts, and actual death by suicide (King, Ruchkin, & Schwab-Stone, 2003). It seems contrary to all human survival instincts when people intentionally attempt to end their own lives or deliberately hurt themselves (Joiner, 2005). Nevertheless, self-harming behaviors are relatively common in the general population of young adults, with as many as one third of college students (Gratz, 2001) engaging in self-harmful behaviors at some point in their lives. The most deadly variant of self-harm, suicide, is the second leading cause of death among college students (Anderson & Smith, 2005), with nearly 10% of college students seriously considering and 1.5% of college students actually attempting suicide within the previous year (Kisch, Leino, & Silverman, 2005).

There are strong associations between self-harming behaviors and subsequent death by suicide (Cooper, Kapur, Webb, Lawlor, Guthrie, Mackway-Jones, et al., 2005; Groholt, Ekeberg, & Haldorsen, 2000). Of all persons seen in the hospital for treatment after self-harm, 5% will die by suicide within the next ten years (Owens, Horrocks, & House, 2002) and 10% more will die from more ambiguous causes (Hawton, Harriss, & Zahl, 2006). Despite the high mortality and morbidity associated with self-harming behaviors, much still remains unknown regarding the correlates of this dysfunctional behavior.

Nomenclature

The prevalence of self-harm varies hugely depending on what is defined as self-harm, a problem that is compounded by the multiple different and often ambiguous meanings ascribed to self-harm even within the mental health community (O' Carroll, Berman, Maris, Moscicki, Tanney, & Silverman, 1996). Part of the difficulty in studying self-harm is the inability of the research and clinical community to come to a consensus on the nomenclature associated with self-harmful behaviors (O' Carroll et al., 1996; Skegg, 2005). The term *self harm* has multiple meanings: in the United Kingdom, where much of the research is conducted, the term is synonymous with *deliberate self-harm* and refers to all instances of deliberate injury, regardless of intent to die, a construct similar to the European term "parasuicide." *Parasuicide* is not commonly used in North American literature, but in European literature refers to two discrete concepts: 1) either all episodes of bodily harm survived with or without intent, or 2) episodes without intent, typically excluding repetitive acts (Skegg, 2005). This construct of parasuicide does not differentiate between *suicide attempts*, episodes of self-harm (i.e., overdose, hanging, cutting, jumping from high places, etc.) in which there was at least some intent to die, and also more repetitive acts of self-harm motivated by inter- or intrapersonal factors in which there may be no conscious attempt to die. From this perspective, all acts of self-harm, regardless of intent, are considered on a spectrum of life-threatening behavior. Research on the high likelihood of persons who self-harm without suicidal intent later progressing into suicidal acts supports this position (Cooper et al., 2005; Owens et al., 2002; Sansone, Songer, & Sellbom, 2006).

However, characterizing all self-harm acts irrespective of motive may be overly simplistic, as research has consistently shown distinct differences between the two behaviors. Most recently, in an investigation of differences between adolescents engaging in self-injurious behavior and adolescents attempting suicide, Muehlenkamp & Gutierrez (2004) found that while depression and suicidal ideation differentiate self-harming adolescents from controls, only attitudes toward life differentiated between self-injurious and suicide-attempting groups: those adolescents with many negative life events and strongly negative global attitudes towards life are far more likely to attempt suicide and have a wish to die. This suggests that persons with more positive attitudes toward life may engage in self-injurious behavior for motives very different from those who attempt suicide with a desire to die (Muehlenkamp & Gutierrez, 2004). Even amongst suicide attempters, those who express an attempt to die make more lethal attempts and are typically more depressed and hopeless than those who make attempts for other reasons (Groholt et al., 2000). This research supports the position that, while suicide and self-injury may exist on a spectrum of self-harm, there are phenomenological differences between the two acts (Favazza, 1987; 1992; 1998; Muehlenkamp & Gutierrez, 2004; Pattison & Kahan, 1983; Tuisku, Pelkonen, Karlsson, Kiviruusu, Holi, Ruuttu, et al., 2006; Winchel & Stanley, 1991).

More consistent with this categorization, in North America suicide attempts are considered separately from non-suicidal self-harm, and the term *self-harm* is used more specifically to refer to repetitive episodes of bodily harm without suicidal intent and typically excludes methods of high lethality (Skegg, 2005). From this perspective, suicide attempts and non-suicidal self-harm are qualitatively different, motivated and maintained

by different mechanisms (e.g., wish to die vs. problematic coping mechanism in order to live). The North American definition of self-harm usually overlaps with the construct of *self-injurious behavior*, which is typically defined as self-inflicted superficial tissue damage, such as self-cutting or self-burning, without a conscious intent to die (Claes, Vandereycken, & Vertommen, 2005; Herpertz, 1995; Winchel & Stanley, 1991). To confuse things further, the terms self-injurious behavior and *self-mutilation* are often used interchangeably, although the former typically refers to repetitive or superficial injuries and the latter more often refers to serious bodily injury, such as castration, amputation, or enucleation of the eye, which occur often without suicidal intent in the context of psychosis (Claes, Vandereycken, & Vertommen, 2005; Herpertz, 1995). The terms self-mutilation and self-injurious behavior are also sometimes used to describe the stereotypical self-harm, such as head-banging, often present in pervasive developmental disorders (Fulcher, 1984). The picture becomes further muddied when risky behavior, defined as "risk taking and health-compromising behaviors that most profoundly affect mortality, morbidity, disability, and social problems," is considered within the realm of self-harm (Perez, 2005, p. 38). Although these risky acts, including substance abuse, fighting, eating disorders, delinquency, aggression, and reckless sexuality or driving, are rarely consciously suicidal and often are not directly completed in order to harm oneself, they are commonly risk factors for progressing to more serious self-injury or suicidality (Bae, Ye, Chen, Rivers, & Singh, 2005; Karver & Tarquini, under review; King et al., 2003).

These two major positions – viewing all self-harmful behaviors on a spectrum (i.e., parasuicide) as opposed to viewing self-harmful behaviors categorically (i.e., self-

injurious behavior versus suicide attempt) – have competed in the research of suicidology for years, and most researchers have touted one viewpoint or the other rather than making efforts to reconcile the two. However, a recent theory has grown in prominence, the Joiner interpersonal-psychological theory of suicidality (Joiner, 2005; Stellrecht, Gordon, Van Orden, Witte, Wingate, Cukrowicz, et al., in press), that incorporates both viewpoints. According to Joiner's model, although risky behavior, self-injurious behavior, and suicide attempts may all have qualitatively different motivations and (sometimes ambiguous) suicidal intent in the mind of the executor, all self-harmful behaviors exist on the same continuum. The actions with lower-suicidal intent (i.e., risky behaviors or non-suicidal self-injurious behavior) have different initial motivators, but still increase a person's capability to later engage in true suicidal actions. According to this theory, the acquired capability to enact lethal self-harm, coupled with a perception of burdensomeness and thwarted belong, paves the way for subsequent actions with higher suicidal-intent (Stellrecht et al., in press; Joiner, 2005). However, although this theory partially reconciles the dimensional and categorical viewpoints of suicidality, it does little to address the confusing lack of standardization of nomenclature.

Certainly, the problem of defining and operationalizing self-harm constructs has impeded research and treatment development regarding these problems. As such, for the purposes of this proposal, when presenting data from authors with multiple perspectives and definitions, I will utilize the definitions based on O'Carroll's (1996) classic suicide nomenclature article when possible. O'Carroll's definition of *suicide* refers to "death from injury, poison, or suffocation where there is evidence (either explicit or implicit) that the injury was self-inflicted *and* that the decedent intended to kill him/herself" (pp.

246-247). A *suicide attempt* refers to "a potentially life-threatening self-injurious behavior with a nonfatal outcome for which there is evidence (either implicit or explicit) that the person intended at some (nonzero) level to kill him/herself. A suicide attempt may or may not result in injuries" (p. 247). A suicide attempt will include behaviors of low lethality where there is evidence of conscious suicidal intent (i.e., the ingestion of five aspirin when the person believed this to be a lethal dose, etc.) as well as behaviors of high lethality where there is no directly expressed intent but obvious implicit intent (i.e., the ingestion of three bottles of pills combined with liquor because the person "had a headache and wanted the pain to go away," etc.).

Despite the utility of a common nomenclature, there are some serious problems with the O'Carroll definitions that have yet to be addressed by the research community that has embraced them. While the O'Carroll definitions have aided researchers to use a common parlance, the O'Carroll definitions are misleading in that they do not represent all aspects of self-harmful behaviors identified by the literature; rather, they focus heavily on behaviors committed to attain some external end, such as punishing others or receiving attention. Especially in a project where internal motivations for self-harm are being more fully explored, these definitions are unacceptable and deceptive because they imply that all self-harm occurs for the manipulation of external persons, an assumption that has fallen out of favor in modern research (Favazza, 1998; Haas & Popp, 2006; Herpertz, 1995; Klonsky, 2007; Kumar, Pepe, & Steer, 2004; Laye-Gindhu & Schonert-Reichl, 2005; Linehan, 1993; Nixon, Cloutier, & Aggarwal, 2002; Rodham, Hawton, & Evans, 2004; Skegg, 2005; Suyemoto, 1998; Zlotnick, Donaldson, Spirito, & Pearlstein, 1997).

For example, O'Carroll proposes a category roughly equivalent to the commonly-used term self-injurious behavior called *instrumental suicide-related behavior*. However his term refers only to "potentially self-injurious behavior for which there is evidence (either implicit or explicit) that (a) the person did not intend to kill himself/herself (i.e., had zero intent to die), *and* (b) the person wished to use the *appearance* of intending to kill himself/herself in order to attain some other end (e.g., to seek help, to punish others, to receive attention)" (p. 247). This term is wholly unsatisfactory because it implies that all self-injury (i.e., cutting, burning, etc.) occurs for manipulative purposes. This view is utterly unsubstantiated by the research on the functions of self-injurious behavior, which repeatedly shows that affect regulation tactics are the most commonly cited reason for self-injury (Herpertz, 1995; Klonsky, 2007; Laye-Gindhu & Schonert-Reichl, 2005; Nixon, Cloutier, & Aggarwal, 2002) and that manipulative reasons are not as commonly endorsed (Haas & Popp, 2006; Herpertz, 1995; Kumar, Pepe, & Steer, 2004; Rodham, Hawton, & Evans, 2006). A similar problem exists in relation to O'Carroll's umbrella term for all self-harming behavior. O'Carroll utilizes the term *suicide-related behavior*, defined as "potentially self-injurious behavior for which there is explicit or implicit evidence either (a) that the person intended at some (nonzero) level to kill himself/herself, or (b) the person wished to use the *appearance* of intending to kill himself/herself in order to attain some other end" (p. 247). Again, this definition is inadequate because it excludes self-harm that did not have conscious suicidal intent and also was not committed to manipulate outside parties with the appearance of committing suicide. Therefore, rather than utilize the O'Carroll definitions of *instrumental suicide-related behavior*, the term *self-injurious behavior* will be used to refer to the commission

of deliberate harm to one's own body severe enough for tissue damage to result without conscious suicidal intent (Winchel & Stanley, 1991). Similarly, rather than using the O'Carroll broad term suicide-related behavior, the term *self-harm* will refer to the wider spectrum of episodes of self-directed bodily damage, regardless of intent and lethality. Self-harm will function as an umbrella-term for both suicidality and self-injurious behavior that is not consciously suicidal (see figure 1). It is possible that the inadequacy of these two O'Carroll terms is the reason they are so rarely used in the literature, especially as affect regulation models of self-harm have received greater recognition.

It is obvious from the literature that affect regulation, especially emotion regulation and coping, plays a large role in precipitating and maintaining self-harm behaviors, yet definitions of self-harm behaviors are oddly silent about this important facet of self-harm. As such, studying other motivations for self-harm, especially affect regulation, will lead to further clarification of nomenclature and more precise research definitions in the future. In subsequent sections, research will be presented on emotion regulation and coping that will provide the basis for an affect regulation model of self-harm, with emphasis on the interplay between emotion regulation, coping, and self-harm behavior.

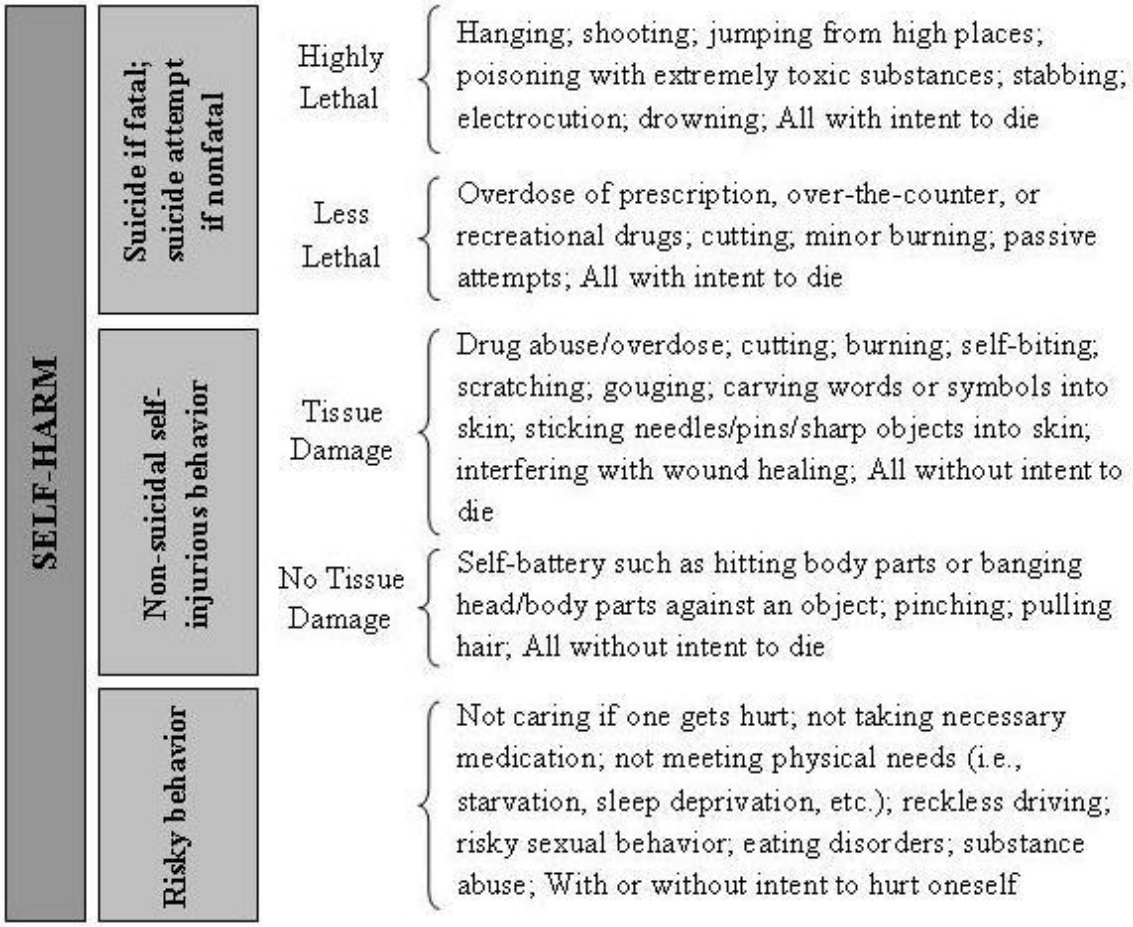

Figure 1. Examples of behaviors commonly included in descriptions of self-harm. For this proposal, only self-injurious behavior and suicide attempts will be included in the definition of self-harm.

Affect Regulation

Before discussing the relationship between self-harm and affect regulation, a broad discussion of affect regulation in general must be reviewed. As negative emotion, and not positive emotion, has been repeatedly linked to self-harm (Herpertz, 1995; Klonsky, 2007; Laye-Gindhu & Schonert-Reichl, 2005; Nixon, Cloutier, & Aggarwal, 2002), regulation of negative emotion will be of focus.

The term *affect* refers to a superordinate category that includes all valenced states, whether positive or negative (Scherer, 1984). *Affect regulation*, therefore, refers to a number of processes individuals utilize in order to consciously or unconsciously influence these affective states (Rottenberg & Gross, in press). When a conscious effort, this affect regulation process is often referred to as "coping" in the common parlance. *Coping* refers to thoughts and behaviors used to manage both the internal and external demands of situations that are deemed to be stressful and thereby tax one's ability to respond (Lazarus & Folkman, 1984), whereas *emotion regulation* refers to any efforts made to influence or control the timing, intensity, experience, or expression of emotion related to such a stressful situation (Rottenberg & Gross, 2007). Traditionally in the literature, coping refers to responses that address both the emotions associated with the stressful situation and the problem of the stressful situation itself, whereas emotion regulation refers to the specific subset of coping behaviors that addresses the emotions associated with the stressful situation but not the external source of the stressful situation itself. (For example, during a fight with a significant other, both discussing the disagreement and counting to ten would be considered coping strategies, but only counting to ten would be considered an emotion regulation strategy.) It is a weakness of the literature that these two terms are often used interchangeably or are not adequately defined, leading to a lack of clarity. Worse, although both coping and emotion regulation have vast bodies of literature, these literatures have developed relatively independently from each other, leading to reduced insight, collaboration, and knowledge sharing.

It is unfortunate that the majority of the emotion regulation and coping literatures have developed independently of each other, because the constructs are intimately

intertwined. Part of the overlap in coping and emotion regulation literature results because a coping response can be initiated either: 1) to change an emotional state or 2) to change the stressful situation that caused the negative emotional state. As such, a coping response initiated to improve a negative mood state can also be considered an emotion regulation strategy. However, when the coping response is instrumental, or initiated to address the external stressful stimulus that caused the negative emotion rather than the negative emotion itself, this is no longer emotion regulation, despite the fact that this coping response may also result in an alteration of emotion. The subtle difference between coping and emotion regulation is that coping can attempt to alter an earlier link in the antecedent chain that resulted in an undesired emotional state and thereby alters the emotional state indirectly (i.e., via the external stimulus that precipitated the emotional state), whereas emotion regulation alters the emotional state directly (without addressing the external stimulus).

Although emotion regulation can be considered a subset of coping, the two types of affect regulation will be differentiated in the context of this paper based on whether the response is meant to address internal or external demands. Therefore, in the context of this paper, the term *coping* will refer only to cognitive or behavioral responses designed to alter the stressful stimulus itself, whereas the term *emotion regulation* will refer only to cognitive or behavioral responses designed to maintain or alter the emotional state resulting from the experience or processing of the stressful stimulus. Although these terms will differentiate between variants of affect regulation, in practice, the two processes of coping and emotion regulation often occur together, either simultaneously or sequentially. For example, negative emotions that are stressful even independent of the

stressful situation must often be down-regulated before the stressful situation itself can be addressed; without such emotion regulation, more instrumental forms of coping cannot occur effectively (Folkman & Moskowitz, 2004). As such, deficits in emotion regulation or coping are likely to cause considerable distress and have been linked to self-harm (Cantanzaro, 2000).

Since emotion regulation and coping overlap, an individual who utilizes maladaptive emotion regulation strategies (i.e., an emotionally salient stimulus is not fully processed or is avoided, emotion states are not fully identified or are suppressed, or emotional expression is inhibited, impulsive, or detached) is not likely to utilize ideal coping responses (Baker, Thomas, Thomas, & Owens, 2007). Similarly, environments that tax an individual's ability to respond (i.e., life stressors) often also elicit negative emotions (i.e., anger, anxiety, or depression) that must be appropriately regulated. This symbiotic relationship between emotion regulation and coping strategies is necessary for good mental health; when either of these elements is not functional, the likelihood of becoming overwhelmed by one's environment or emotional experience is probable, increasing the likelihood of self-harm. Several leading theories of coping and emotion regulation address this symbiosis and focus on the overlap between the two constructs.

Guiding theories of emotion regulation and coping. One of the most influential theories from the field of coping, that of Folkman and Lazarus (1980), eloquently addresses this very overlap, classifying responses to stressful stimuli as either *problem-focused*, which involves addressing the initial stressful stimulus, or *emotion-focused*, which involves addressing the negative emotions caused by the initial stressful stimulus. According to this theory, problem-focused coping includes devising a plan to solve the

problem or weighing the options for the next step of a task (what I refer to as coping in the context of this paper), whereas emotion-focused coping includes distraction, reappraisal of the emotion, or the seeking of emotional support (what I refer to as emotion regulation in the context of this paper).

An equally influential theory of coping, this time from the field of emotion regulation, has been devised by Parkinson and colleagues (Parkinson & Totterdell, 1999; Parkinson, Totterdell, Briner, & Reynolds, 1996). According to their work, emotion regulation can be conceptualized to be composed of two dimensions: 1) whether the response to the emotional stimulus is cognitive or behavioral (i.e., re-appraising a mood state as opposed to engaging in an active coping response to change the mood) and 2) whether the response involves diversion (i.e., avoidance or distraction) or engagement (i.e., reappraisal or discussing emotions). These results on diversion and engagement emotion regulation strategies (based on a hierarchical cluster analysis) are reminiscent of much of the research in the coping field (e.g., Roth & Cohen, 1986) in which coping responses can be dichotomized into approach or avoidant styles of responding.

Although theories of emotion regulation and coping have typically been developed separately, the conclusions reached by the two fields are complimentary. A response to a stimulus that causes negative emotion can be either problem-focused (i.e., coping enacted to address the stressful stimulus itself) or emotion-focused (i.e., emotion regulation enacted to address the negative emotion caused by the stressful stimulus), and both coping and emotion regulation strategies can be: 1) either cognitive or behavioral in manifestation and 2) either approach-oriented or avoidant. In general, coping is more often approach-oriented (i.e., requires direct action), whereas emotion regulation can be

either approach-oriented (i.e., discussing emotions) or avoidant (i.e., denying emotions or using substances to escape emotions).

In general, these different varieties of response are neither inherently good nor bad, but may be more or less adaptive in a given situation (Lazarus & Folkman, 1984). For example, problem-solving coping strategies tend to be more adaptive when the situation is controllable (i.e., stress over a paper with a rapidly approaching deadline) than when it is uncontrollable (i.e., stress over terminal cancer); in situations that are uncontrollable, emotion regulation or social strategies may be more helpful (Christensen, Benotch, Wiebe, & Lawton, 1995; Folkman & Moskowitz, 2004; Terry & Hynes, 1998). Additionally, a strategy that is helpful in the short-term may be less effective in the long-term (i.e., distraction from anxiety over a paper by drinking alcohol may help reduce negative emotions initially but cause stress to increase when grades are released; DeLongis & Preece, 2002; Preece & DeLongis, 2005) and vice-versa (i.e., discussing differences of opinion with a spouse may initially increase negative emotions but reduce stress in the long-term; Stone, Kennedy-Moore, & Neale, 1995). One clear finding, however, is that avoidant emotion regulation strategies are typically related to poorer mental health outcomes (Folkman & Moskowitz, 2004), including self-harm (Curry, Miller, Waugh, & Anderson, 1992; Spirito, Francis, Overholser, & Frank, 1996).

Emotion regulation, coping, and self-harm. A dearth of problem-focused coping and abundance of avoidant emotion regulation strategies is found in borderline personality disorder, a core feature of which is self-harmful behavior. Marsha Linehan describes the etiological significance of an *invalidating environment* on the development of maladaptive avoidant coping skills and subsequent emotion dysregulation. The

invalidating environment can manifest itself in many forms, but a defining characteristic is the tendency of others in the environment "to respond erratically and inappropriately to an individual's private experience (e.g., beliefs, thoughts, feelings, sensations, etc.) and in particular to be insensitive to private experience… [often responding] in an extreme fashion" (Linehan, 1993, p. 3). Children who grow up in such an environment over time may learn to avoid engaging in more adaptive problem-focused coping because it exposes them to nonattuned responses by parents, siblings, and teachers (i.e., instances of anger or sadness are met with either nonresponsiveness or an overly extreme punitive response); instead, they adopt maladaptive avoidant emotion regulation strategies, such as suppressing their emotions, to reduce the likelihood of these nonattuned responses from others. For similar reasons, children in an invalidating environment may never learn to use adaptive emotion regulation strategies, such as appropriately labeling and modulating their emotions, tolerating stress, or trusting their own personal emotional responses as valid (Linehan, 1993) since their efforts at emotion regulation in the past were either not acceptable to or met punitively by others in the environment. As a result, those who are raised in an invalidating environment remain emotionally immature as adults, unable to utilize adaptive problem-solving coping for fear of reprisal from others, and often engaging in maladaptive avoidant emotion regulation strategies, such as trying to inhibit emotional expression or escape emotional states through substance use. There is also some evidence that those persons who are very highly responsive to emotional stimuli, who experience emotions particularly intensely, or who evidence a slow return to emotional baseline may be biologically predisposed to difficulties with emotion regulation in general (Haines, Williams, Brain, & Wilson, 1995), a biological or

temperamental risk that is only compounded by the maladaptive avoidant emotion regulation strategies learned in an invalidating environment (Linehan, 1993). As such, when faced with stressful life events or negative emotional states, they may be more likely to be overwhelmed by their emotions and utilize maladaptive coping and emotion regulation strategies (Linehan, 1993), including self-harm.

There is much empirical support for the notion that those who self-harm have deficient emotion regulation and coping strategies. Suicidal individuals are more likely to utilize avoidant (Spirito et al., 1996) and maladaptive emotion regulation strategies (Curry, et al., 1992), and have fewer coping strategies in their repertoire (Rotherham-Borus, Trautman, Dopkins, & Shrout, 1990). Although these maladaptive avoidant emotion regulation and coping strategies may be effective at reducing negative emotions in the short-term (i.e. through denial or suppression, etc.), these tactics actually cause negative emotions to increase in the long-term (Kashdan, Barrios, Forsyth, Steger, 2006). However, if a person is uncomfortable expressing or trusting their emotions and these tactics work even slightly in the short-term, a person may come to rely on these maladaptive strategies, not realizing that never directly addressing their emotions or problems is ineffective. Over time, if coping responses are ineffective to address the problem or if the coping strategies selected avoid the problem altogether, it is likely the negative emotions associated with the problem will increase; however, the presence of high levels of negative emotion ironically makes it increasingly difficult for persons to perform appropriate coping and emotion regulation strategies (Linehan, 1993). As problems and the emotions they elicit are continually avoided, levels of negative emotions rise higher and higher, and become overwhelming. With their coping repertoire

composed of ineffective strategies and their ability to regulate their emotions overtaxed, the negative mood state may become intolerable, precipitating self-harm as a desperate emotion regulation strategy.

Self-harm research supports this theory, as the most commonly attributed motive for self-injurious behavior is emotion regulation - engaging in the behavior to alleviate intolerable feelings of negative emotion, such as tension, depression, anger, or depersonalization (Favazza & Conterio, 1989; Herpertz, 1995; Laye-Gindhu & Schonert-Reichl, 2005; Nixon, Cloutier, & Aggarwal, 2002). Despite being such a maladaptive method of emotion regulation, over 60% of self-injurers report experiencing emotional relief after they injure themselves (Kumar, Pepe, & Steer, 2004). As such, negative reinforcement, in the form of removal of a noxious stimulus such as overwhelming affect, may be the most powerful motivator for self-injurers (Machoian, 2001).

While negative reinforcement in the form of removal of high levels of negative emotion may motivate the initial episode of self-harm, it is also likely to maintain this maladaptive emotion regulation strategy (Machoian, 2001). Consistent with the principles of reinforcement, on the next occasion that their level of negative emotion rises, individuals who self-harmed in the past will be less likely to engage in problem-focused coping or adaptive emotion regulation strategies and increasingly likely to turn to the maladaptive strategy that brought them emotional relief in the past, self-harm. Self-harm behavior increases while other coping strategies decrease due to differential reinforcement; the maladaptive emotion regulation strategy of self-harm that brought symptom relief in the past is more likely to be chosen and therefore pushes other strategies out of the coping repertoire. Over time, as other strategies drop off, the

maladaptive self-harm strategy may become less effective, and engaging in self-harm itself may cause additional problems and emotional stress (i.e., other people's reactions, feelings of shame, etc.). When the previously reinforcing behavior of self-harm no longer brings the same level of relief, self-harm may increase in frequency or severity, an "extinction burst" that occurs when a previously reinforced behavior is no longer reinforced at the same level. If this heightened frequency or severity of self-harm is reinforced (in the form of providing relief from negative emotion or concern and attention from concerned others in the environment), a cycle of escalating maladaptive emotion regulation can ensue. As the ability to regulate emotions and cope adaptively deteriorates over time, self-harm continues to escalate, potentially to a lethal degree.

The research on self-harm provides evidence for this theory, in that "escape from a negative or overwhelming mood state" is a commonly endorsed motive for suicide attempts (Groholt, Ekeberg, & Haldorsen, 2000; Hjelmeland & Groholt, 2005) as well as self-injurious behavior, showing continuity in negative reinforcement processes between the two behaviors. This continuity and progression of emotion dysregulation and self-harm severity is shown by hospitalized adolescents who have attempted suicide at least once, who show higher levels of emotion dysregulation and a greater number of self-injurious behaviors than hospitalized ideators who have never made an attempt (Zlotnick, et al., 1997). Similarly, persons who have attempted suicide multiple times demonstrate greater use of maladaptive emotion regulation strategies than single attempters and engage in more severe forms of non-suicidal self-injury (Esposito, Spirito, Boergers, & Donaldson, 2003). As persons who engage in self-harm have been shown to have deficits in emotional expression (Diggs & Lester, 1996; Evans, Hawton, & Rodham, 2005;

Lynch, Cheavens, Morse, & Rosenthal, 2004; Wanstall & Oei, 1989) and control (Diggs & Lester, 1996; Herpertz, Sass, & Favazza, 1997; Suyemoto, 1998), some of which may be related to the biologically-based construct of emotional reactivity (Haines, Williams, Brain, & Wilson, 1995), this connection between self-harm and maladaptive emotion regulation is not surprising.

Considering that persons who engage in self-harm often do so for the purpose of regulating overwhelming emotion, self-harm behaviors can therefore be viewed as an emotion-focused coping mechanism, albeit a maladaptive one (Alderman, 1997; McAllister, 2003). Reports from those who self-injure often express that the emotional pain and both physiological and psychological tension escalate until it is absolutely intolerable and dissociation sometimes occurs; at this point, the person engages in self-harm in order to deal with the overwhelming mood state (Favazza, 1998; Simeon & Favazza, 2001). Self-harm has been recognized as a response to overwhelming emotional states, but has rarely been researched in light of the vast body of stress and coping literature. Nevertheless, self-harm research supports the union of these literatures via a hypothesized affect regulation model of self-harm, with special emphasis on the interplay between emotion regulation, coping, and self-harm behavior (a model of associations and interactions is presented in Figure 2; a model of this interaction including relevant measures is depicted in Figure 3).

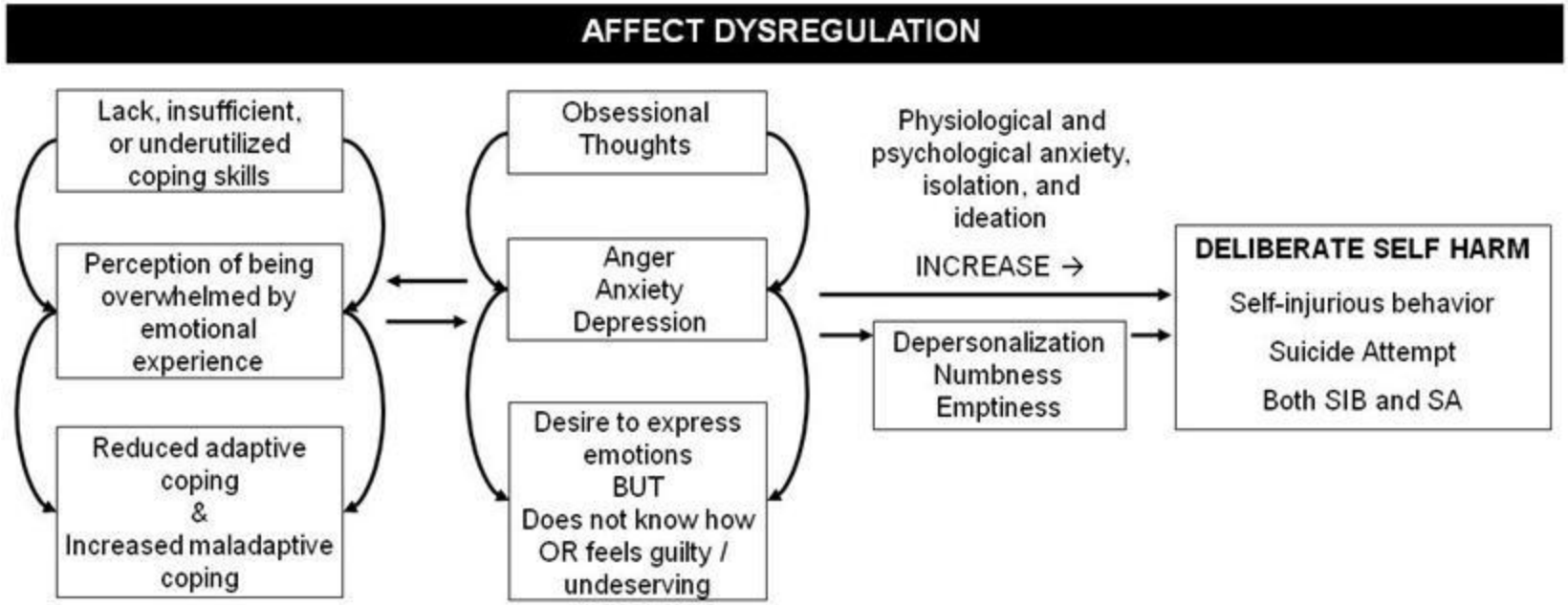

Figure 2. An integrative affect regulation model of self-harm that includes mechanisms of maladaptive emotion regulation and coping strategies.

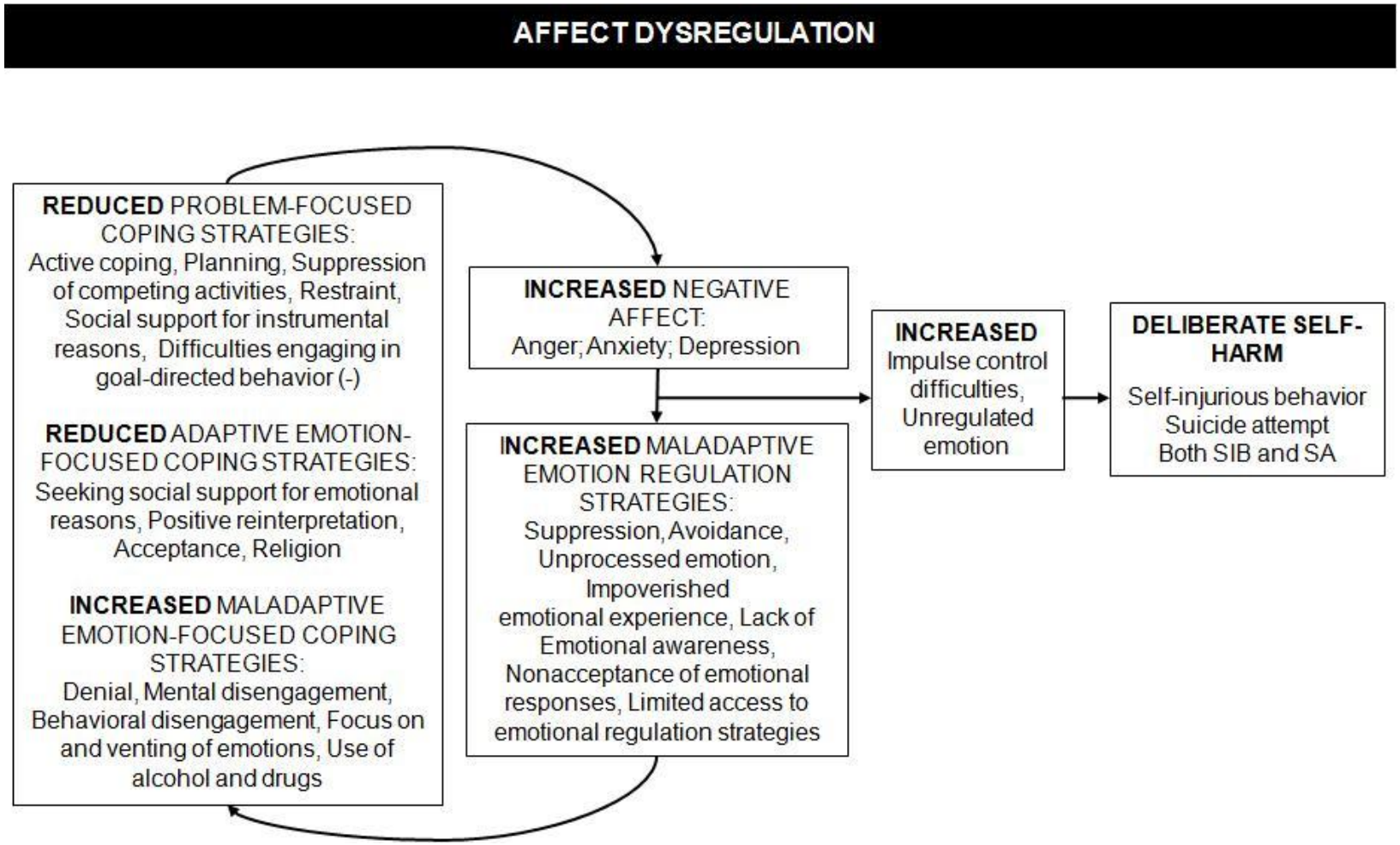

Figure 3. A model of the relationship between affect regulation and self-harm as represented by selected measures.

An Affect Regulation Model of Self-Harm

According to this model, self-harm is both precipitated and maintained by maladaptive emotion regulation and coping strategies. When faced with a stressful situation, potentially self-harming individuals may not have the requisite emotion regulation or coping skills to deal with the strong affective states caused by stress, their coping skills may be insufficient to address the problem, or coping skills may not be properly utilized when under duress. In any case, the individual reduces adaptive problem-focused coping (i.e., facing the problem directly to find solutions) and increases maladaptive emotion regulation strategies (i.e., avoidance). Over time, the continual avoidance of the problem may increase feelings of being overwhelmed and also increase the frequency of triggering events (i.e., not addressing the problem may lead to additional fights with family or increased depression, leading to increased perceptions of being overwhelmed and increased usage of avoidant coping in a cyclical manner). This cycle of maladaptive coping is likely to lead to greater emotion dysregulation in the form of increased anger, tension, or depression, mood states commonly associated with self-harm. As the individual's ability to respond adaptively is overwhelmed and maladaptive avoidant emotion regulation or coping strategies are endorsed, emotion dysregulation in the form of increased anger, tension, or depression can lead to obsessive thoughts (i.e., a cycle of suppression and avoidance) that are heightened by the negative mood state. Unable to respond adaptively, the individual may wish to express their painful emotions, but does not know how to appropriately express him/herself or feels guilty and undeserving. This thwarted desire to express oneself only increases the negative mood state (i.e., anger, tension, or depression). Over time, these cycles of maladaptive coping

and emotion dysregulation interact and escalate, often resulting in an increase in both social isolation and self-harm ideation. Physiological and psychological tension increase to an intolerable level, and depersonalization, emotional numbness, or emptiness (factors commonly reported as directly preceding acts of self-harm) often occur. At the height of affective dysregulation, this mood state is so intolerable that nearly anything will be done to escape it; unfortunately, the vulnerable individual perceives that they have nowhere to turn, with the ability to respond adaptively overtaxed and the ability to appropriately express his or her pain underdeveloped. Desperate to feel better and escape the agony of their mood state, individuals turn to self-harm as a release, a method of coping and regulating their emotions.

The study proposed herein seeks to explore these relationships between affect regulation and self-harm. Specifically, this study will be among the first to explore the interrelationships between maladaptive emotion regulation, reduced adaptive coping, and self-harm in one study.

Objectives of This Study

As self-harming individuals have been found to demonstrate premorbid coping skills and problem solving deficiencies (Linehan, 1993; McAuliffe, Corcoran, Keeley, Arensman, Bille-Brahe, de Leo, et al., 2006; Speckens & Hawton, 2005), it would be helpful to explore the balance between adaptive and maladaptive coping and emotion regulation strategies in self-harming individuals. Additionally, as the research is quite resounding as to the important role of emotion regulation as a motivator for self-harm, it would be of value to determine which particular aspects of emotion regulation serve as a vulnerability for those who engage in self-harm. Despite this strong research body in both

the coping and emotion regulation fields, research on self-harm has never systematically explored both coping skills and emotion regulation in one methodologically rigorous study. Considering that Linehan has demonstrated success in enhancing coping repertoire and emotion regulation strategies to reduce self-harm (Linehan, 1993), combined research on emotion regulation and coping in the context of self-harm may provide additional routes to prevention and intervention. Therefore, the objectives of this study are fivefold:

1. To explore the specific emotion regulation strategies associated with self-harm;
2. To explore the balance between adaptive and maladaptive coping and emotion regulation responses in those with a history of self-harm versus those with no such history;
3. To explore the correlations between coping and emotion regulation strategies to develop factors associated with a history of self-harm; and
4. To explore whether certain coping and emotion regulation factors differentiate between a history of self-injurious behavior, a history of suicide attempts, a history of both self-injurious behavior and suicide attempts, or a history of no self-harm, while controlling for relevant confounds (i.e., demographics, current stress level, etc.).
5. To explore whether certain coping and emotion regulation factors can specifically predict a history of self-harm behavior from other types of maladaptive behavior, such as health risk behavior.

Specific hypotheses that correspond to these objectives are as follows:

1. Persons engaging in self-harm will demonstrate higher levels of maladaptive emotion regulation, such as suppression of emotions, avoidance, nonacceptance of emotional

responses, and lack of emotional awareness and clarity, than those who do not engage in self-harm.

2. Persons who engage in self-harm will demonstrate higher levels of maladaptive emotion-focused coping strategies, such as denial, disengagement, venting of emotions, and the use of substances, than those who do not engage in self-harm.
3. Persons who engage in self-harm will demonstrate reduced levels of adaptive emotion-focused coping, such as seeking social support, engaging positive reappraisal or acceptance, or religious-based coping, than those who do not engage in self-harm.
4. Persons who engage in self-harm will demonstrate reduced levels of adaptive problem-solving coping strategies, such as goal-directed behavior, planning, or suppression of competing activities, than those who do not engage in self-harm.
5. Persons who engage in self-harm will demonstrate higher neuroticism and lower extraversion, openness, agreeableness, and conscientiousness than those who do not engage in self-harm; however, these associations will not account for all of the differences in emotion regulation and coping strategies detected between groups.
6. Persons who engage in self-harm will demonstrate higher trait levels of depression, anger, and anxiety than those who do not engage in self-harm; however, these associations will not account for all of the differences in emotion regulation and coping strategies detected between groups.
7. Maladaptive emotion regulation and maladaptive coping strategies will correlate directly and highly (i.e., those who are high in maladaptive emotion regulation strategies will also be most likely to be high in maladaptive coping strategies; those who are low in maladaptive emotion regulation strategies are most likely to also be

low in maladaptive coping behaviors). Using factor analysis, the large number of specific emotion regulation and coping responses can be reduced to a smaller number of patterns of responding. It is likely that emotion dysregulation and maladaptive emotion-focused coping strategies will load on one factor, while adaptive problem-focused coping and adaptive emotion-focused coping will each load independently on additional factors. Persons who engage in self-harm will demonstrate high levels of the maladaptive emotion regulation and coping factor and low levels of the adaptive factors, in comparison to those who do not engage in self-harm.

8. Persons with a history of both self-injurious behavior and suicide attempts will have the highest scores on the maladaptive emotion regulation and coping factor, followed by those with a history of suicide attempts only, those with a history of self-injurious behavior only, and those with no such history.
9. Persons with a history of self-injurious behavior and suicide attempt will have the lowest scores on the adaptive problem-focused coping factor, followed by those with a history of suicide attempt only, those with a history of self-injurious behavior only, and those with no such history. Although adaptive problem-solving will be lower in groups with a history of self-harm relative to those with no such history, research has demonstrated that groups with a history of suicide attempt will show more extreme problem-solving deficits.
10. All self-harm groups will show similar scores on the adaptive emotion-focused coping factor. These scores will be lower relative to their high scores on the maladaptive emotion regulation and coping factor, and significantly lower than participants with no history of self-harm.

11. Scores on the maladaptive emotion regulation and coping factor, adaptive emotion-focused coping factor, and adaptive problem-focused coping factor will predict self-harm group. These scores will specifically predict self-harm group, as distinct from those who have not self-harmed but have engaged in risky behavior.
12. Within the group with a history of self-harm, scores on the maladaptive emotion regulation and coping factor, adaptive emotion-focused coping factor, and adaptive problem-focused coping factor will also predict continuous measures of self-harm, including frequency of self-harm behavior, number of different self-harm behaviors endorsed, duration of self-harm history, and length of time since last self-harm act.

Method

Participants

The sample included two hundred fifty undergraduate college students, recruited from the University of South Florida psychology research pool. This sample size was determined as it is adequate to meet the power requirements for factor analysis, the statistic in this study that requires the largest sample size. Although methodologists disagree as to how many participants are necessary to conduct a factor analysis, there are some agreed-upon rules as to what is most accepted. The "Rule of 10" suggests that there should be at least 10 participants or cases for each item in the instruments being analyzed. As there are 25 subtest scores to be analyzed, an adequate sample size would therefore be 250 participants. This sample size also satisfies other common rules, such as having a "Subject to Variable (STV) ratio" greater than five (Bryant & Yarnold, 1995), having greater than 200 participants (the "Rule of 200," Gorsuch, 1983), or having greater than 51 more cases than variables to support chi-square testing (the "Significance Rule," Lawley & Maxwell, 1971). (This sample size will also be more than sufficient to conduct the other analyses, including multivariate analysis of covariance, univariate analyses of covariance, and multinomial logistic regression analyses, described below.)

Criteria for inclusion were any student enrolled in a psychology course who was 18+ years of age and fluent in reading English; no other exclusionary criteria were applied. Participants received extra credit in psychology courses as a result of their

participation in this study. Students had a mean age of 21 (*SD* = 3.80), 77% of the sample was female, and participants were evenly split across the four years of college. Approximately 58% of the sample was Caucasian, an additional 20% was Black or African-American, and the remainder were either Asian, Native American, more than one race, or identified as another racial group; 17.5% of the sample identified as Hispanic or Latino/a. Ninety-two percent of the sample identified as heterosexual and 40% lived with roommates in off-campus housing (See Table 1 for more detailed information on sample demographics).

Based on previous research, it was estimated that up to a third of undergraduate students would have a lifetime history of self-harm behaviors (Gratz, 2001) and that this rate may be even further inflated for students living off-campus at a predominantly commuter school where many students live off-campus (Gillman, Kim, Alder, & Durrant, 2006). As such, it was anticipated that approximately 80 students would have a lifetime history of self-harm; in actuality, of the two hundred fifty undergraduates participating in the study, 108 persons (46.8% of the total sample) had engaged in self-harm behavior at some point in their lives.

Table 1.

Demographic characteristics of the sample.

	Mean (SD)	Min / Max
Age	21.00 (3.80)	18 / 43
	Frequency	%
Gender		
Male	57	22.8
Female	193	77.2
Year in School		
Freshman	63	25.2
Sophomore	61	24.4
Junior	61	24.4
Senior	46	18.4
More than four years	19	7.6
Ethnicity		
Hispanic or Latino/a	41	17.5
Not Hispanic or Latino/a	193	82.5

Table 1 (Continued).

	Frequency	%
Race		
Caucasian	143	58.4
Black or African-American	50	20.0
Asian	8	3.3
Native Hawaiian or Pacific Islander	2	0.8
More than one race	19	7.8
Other	23	9.4
Sexual Orientation		
Attracted to the opposite sex	229	91.6
Attracted to the same sex	15	6.0
Attracted to both sexes	6	2.4
Living Situation		
Live with parents or family	48	19.4
Live alone, on campus	8	3.2
Live alone, off campus	27	10.9
Live with roommates, on campus	64	25.8
Live with roommates, off campus	99	39.9
Other	2	0.8

Measures

Demographics. Demographic information, such as age, gender, sexual orientation, race/ethnicity, year of school, and living situation will be obtained via questionnaire. This questionnaire takes approximately two minutes to complete (See Appendix A). This demographic information was selected because previous research has suggested an association between these factors and increased risk for self-harm (Anderson & Smith, 2005; Borrill, Burnett, Atkins, Miller, Briggs, Weaver, et al., 2003; Center for Disease Control, 2004; Gillman, Kim, Alder, & Durrant, 2006; Gratz, 2001; Hawton, Hall, Simkin, Bale, Bond, Codd, et al., 2003; Izutsu, Shimotsu, Matsumoto, Okada, Kikuchi, Kojimoto, et al., 2006; Klonsky, Otlmanns, & Turkheimer, 2003; Krug, Dahlberg, Mercy, Zwi, & Lozano, 2004; Muehlenkamp & Gutierrez, 2004; Skegg, 2005; Zayas, Lester, Cabassa, & Fortuna, 2005).

Emotion regulation. Two measures of emotion regulation will be used: the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) and the Emotional Processing Scale (Baker, Thomas, Thomas, & Owens, 2007).

The Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004) is a 41-item self-report questionnaire designed to assess clinically-relevant difficulties in emotion regulation that takes approximately five minutes to complete. It asks participants to pick the best description of their emotions on a 5-point Likert scale, with response choices ranging from “almost never” (1) to “almost always” (5) (See Appendix B). Factor analysis suggests six distinct but related facets of emotional regulation in which difficulties may present: 1) nonacceptance of emotional responses, 2) difficulties engaging in goal-directed behavior, 3) impulse control difficulties, 4) lack of emotional

awareness, 5) limited access to emotion regulation strategies, and 6) lack of emotional clarity. Findings using the DERS support a multidimensional approach to emotion regulation, as the subscales showed differential associations with various behavioral and socioemotional outcomes (Gratz & Roemer, 2004). The psychometrics for the DERS are very good. The DERS has high overall internal consistency (reported $\alpha = .93$), and the DERS subscales also have sufficient internal consistency (Cronbach's alpha in this sample ranging from .76 to .88; see Table 7 in the preliminary analyses portion of the results section). Test–retest reliability for the entire DERS over a period ranging from four to eight weeks was good ($r = .88$, $p <. 01$), and test–retest reliabilities for subscales were adequate (rs ranging from .57 to .89, all $p < .01$). Construct validity was established via significant positive correlations of the DERS with measures of negative mood regulation and experiential avoidance and significant negative correlations between the DERS and emotional expression, and the DERS added incremental validity to these other measures (Gratz & Roemer, 2004). The DERS also shows predictive validity for a history of self-harm or partner abuse (Gratz & Roemer, 2004).

The *Emotional Processing Scale* (EPS; Baker, Thomas, Thomas, & Owens, 2007) is a new 25-item self-report questionnaire of emotional processing styles and deficits that takes approximately five minutes to complete. It asks participants to pick how closely they agree with a series of statements about emotions on a 10-point Likert scale, with response choices ranging from "Completely Disagree" (0) to "Completely Agree" (9) (See Appendix C). Factor analysis suggests a five factor solution, including 1) suppression, 2) unregulated emotion, 3) avoidance, 4) impoverished emotional experience, and 5) signs of unprocessed emotion (Baker, Thomas, Thomas, & Owens,

2007). The EPS has adequate preliminary psychometrics, with a reported overall internal consistency of .92 and the majority of subscales showing adequate internal consistency (Cronbach's alpha in this sample ranging from .58 to .83; see Table 7 in the preliminary analyses portion of the results section). Test–retest reliability for the entire EPS over a period ranging from four to six weeks was adequate (r = .79, p <. 001), and test–retest reliabilities for subscales ranged from high (r = .88, p < .001) to poor (r = .30, p = .25), possibly a result of the very small sample size (N = 17). However, construct validity was quite good, established via significant positive correlations of the EPS with measures of emotional control, difficulty identifying emotions, and difficulty describing feelings to others. Additionally, the EPS added incremental validity to these other measures (Baker, Thomas, Thomas, & Owens, 2007). The EPS also successfully differentiates between mental health patients and controls and shows sensitivity to treatment in mental health settings (Baker, Thomas, Thomas, & Owens, 2007).

Coping. The Coping Orientation to Problem Experience (COPE; Carver, Scheier, & Weintraub, 1989) inventory is a 53-item measure of how individuals typically cope with stress that takes approximately five minutes to complete. It asks participants to select how often they engage in a series of coping responses when stressed on a 4-point Likert scale, with response choices ranging from "I usually don't do this at all" (1) to "I do this a lot" (4) (See Appendix D). The COPE was created rationally, not empirically, but factor analyses are generally consistent with the 14 subscales (Carver, Scheier, & Weintraub, 1989). The COPE subscales can be broadly clustered as *problem-focused coping*, including active coping, planning, suppression of competing activities, restraint, and seeking social support for instrumental reasons subscales, *adaptive emotion-focused*

coping, including seeking support for emotional reasons, positive reinterpretation, acceptance, humor, and religion subscales, and *maladaptive emotion-focused coping*, including denial, mental disengagement, behavioral disengagement, focus on and venting of emotions, and the use of drugs and alcohol (Moos & Holahan, 2003).

The COPE demonstrates adequate psychometrics, with internal consistencies of the various subscales in this sample ranging from .44 to .97 (see Table 7 in the preliminary analyses portion of the results section for greater detail). Test-retest reliabilities were also mostly adequate over a period of six to eight weeks, ranging from high (Focus on and Venting of Emotions, $r = .89$, $p < .01$) to poor (Behavioral Disengagement, $r = .42$, $p < .01$). However, construct validity was quite good. Significant positive correlations were found between active coping/planning and optimism, self-esteem, hardiness, and Type A personality and significant negative correlations between active coping/planning and trait anxiety. Similarly, positive reinterpretation and growth show the same pattern of correlations (with the exception of Type A personality), and denial and behavioral disengagement show the opposite pattern of correlations. Lastly, focusing on and venting of emotions was inversely associated with optimism and locus of control and positively associated with measures of trait anxiety and monitoring (Carver, Scheier, & Weintraub, 1989).

Self-harm. Three measures of self-harm behavior will be used: the Deliberate Self-Harm Inventory (Gratz, 2001), the Self-Harm Behavior Questionnaire (Gutierrez, Osman, Barrios, & Kopper, 2001), and the Functional Assessment of Self-Multilation (Lloyd, Kelley, and Hope, 1997).

The *Deliberate Self-Harm Inventory* (DSHI; Gratz, 2001) is a 17-item behaviorally-based measure of lifetime history of self-injurious behavior (i.e., self-harmful acts without conscious suicidal intent). The amount of time needed to complete the measure varies based on the number of items endorsed, and can range from 2-15 minutes (See Appendix E). This measure assesses multiple aspect of self-injurious behavior, such as the type, frequency, severity, and duration. Types of self-injurious behavior specifically assessed include: cutting, burning with a cigarette, burning with a lighter or match, carving words into skin, carving pictures into skin, severe scratching, biting, rubbing sandpaper on skin, dripping acid on skin, using bleach, oven cleaner, or other noxious chemical agent to scrub skin, sticking pins/needles/staples into skin, rubbing glass into skin, intentionally breaking bones, banging head, punching self or other hard surfaces (i.e., wall), interference with wound healing, and other forms of self-injury. This measure gives both a dichotomous self-injury variable (i.e., yes or no to history of self-injury) as well as a frequency score. The DSHI has good psychometrics. The DSHI shows adequate internal consistency, with a Cronbach's alpha of .73 in this sample. Reported test-retest reliability was also mostly excellent over a period of two to four weeks ($r = .92$, $p < .001$). Construct validity was established via significant positive correlations between the DSHI and other measures of self-harm, borderline personality

organization, and history of therapy, and negligible correlations with social desirability in a college population (Gratz, 2001).

The *Self-Harm Behavior Questionnaire* (SHBQ; Gutierrez, Osman, Barrios, & Kopper, 2001) is composed of four separate sections that begin with screener questions about lifetime history of self-injurious behavior, suicide attempts, suicidal threats, and suicidal ideation; if the screener question is endorsed, follow-up questions regarding method, frequency, duration, age of onset and offset, medical seriousness, and whether the behavior was disclosed are completed. The questions administered and time to complete vary based on the items endorsed: if all items are endorsed, the measure consists of 41 yes/no and open-ended questions and takes approximately 20 minutes to complete; if no items are endorsed, the measure consists of five yes/no questions and takes approximately two minutes to complete (See Appendix F). Factor analysis revealed that the SHBQ has four relatively independent factors, corresponding to the four sections. The SHBQ has good psychometrics. The SHBQ demonstrates high internal consistency, with reported subscales ranging from .89 to .96. Test-retest reliability was not reported. Construct validity was established via significant positive correlations with extant measures of suicidality controlling for depression, and the SHBQ added incremental validity to these measures. The SHBQ also differentiated between suicidal and nonsuicidal college undergraduates and generates more information than most other current measures of self-harm (Gutierrez, Osman, Barrios, & Kopper, 2001).

The *Functional Assessment of Self-Mutilation* (FASM; Lloyd, Kelley, & Hope, 1997) is a 41-item self-report questionnaire regarding the frequency of different self-harm behaviors, the motivation for the self-harm behavior, and other facets of self-harm

(i.e., amount of time contemplated, degree of physical pain experienced, use of alcohol or drugs during self-harm, and knowledge of self-harm amongst friends). In this study, only the assessment of motivation for self-harm behavior was used, reducing the number of questions to twenty-two and the time of administration to five minutes. The scale asks participants how often they engaged in self-harm behavior for each of twenty-two different reasons, using a 4-point Likert scale with response choices ranging from "never" (0) to "often" (3) (See Appendix G). Confirmatory factor analysis suggests a four factor solution, including 1) automatic negative reinforcement, 2) automatic positive reinforcement, 3) social negative reinforcement, and 4) social positive reinforcement (Nock & Prinstein, 2004; 2005). The subscales of the FASM have adequate internal consistency (Cronbach's alphas in the current sample ranging from .68 to .90); however, no test-retest data is currently available. Despite this limitation, the FASM is the most commonly cited measure of functions of self-harm and construct validity is quite good, established via significant positive correlations of the FASM with history of outpatient and inpatient psychiatric treatment, suicidal ideation, and suicide attempt (Lloyd, 1998).

Other variables. The *State-Trait Personality Inventory* (STPI; Spielberger, Jacobs, Crane, Russell, Westberry, Barker, et al., 1995) is an 80-question self-report questionnaire of both transitory (state) and dispositional (trait) anxiety, anger, depression, and curiosity. In this study, only three of eight subscales will be used, the trait measures of anxiety, anger, and depression, reducing the number of questions to thirty and the time of administration to approximately five minutes. These scales ask participants to rate how they generally feel regarding a series of statements from a 4-point Likert scale, with response choices ranging from "almost never" (1) to "almost always" (4) (See Appendix

H). The STPI has good psychometrics, with internal consistencies ranging from .83 to .92 for the various subscales in this sample (see Table 8 in the preliminary analyses portion of the results section). Construct validity was established via significant positive correlations between the depression scales and other measures of depression, significant positive correlations between the anger subscales and the State-Trait Anger Inventory, and significant positive correlations between the anxiety scales and the State-Trait Anxiety Inventory. The three trait subtests were selected because anxiety, anger, and depression have all been empirically related to increased risk for self-harm (Brezo, Paris, & Turecki, 2006; Bronisch, 1996; Duberstein, Conwell, & Ciane, 1994; Goldston, Daniel, Reboussin, Kelley, Ievers, & Brunstetter, 1996; Van Heeringen, Audenaert, & Van Laere, 2003).

The *International Personality Item Pool* (IPIP; Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger, et al., 2006) is a public-domain pool of 2,413 personality items that can be constructed into free measures assessing the same constructs as common commercial broad-band personality measures. The IPIP successfully measures the "big five" personality traits assessed by the NEO-PI-R (Costa & McCrae, 1992): neuroticism, extraversion, openness, agreeableness, and conscientiousness (Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger, et al., 2006). In this study, each construct will be assessed by twenty items to assure the highest level of reliability and validity and reducing the time of administration to fifteen minutes. The 100-item scale asks participants to rate how accurately each behavior describes them, using a 5-point Likert scale raging from "very inaccurate" (1) to "very accurate" (5) (See appendix I). Although test-retest reliability and validity information for the IPIP is still forthcoming, high internal consistency

(Cronbach's alpha in this sample ranging from .83 to .92; see Table 8 in the preliminary analyses portion of the results section) and high correlations with the extensively validated NEO-PI-R (*r*s ranging between .88 and .93) suggest that the IPIP items will share similarly sufficient psychometric properties.

The *Inventory of College Students' Recent Life Experiences* (ICSRLE; Kohn, Lafreniere, & Gurevich, 1990) is a 49-item self-report questionnaire of recent life hassles that is relatively free of contamination by psychological distress (Kohn, Lafreniere, & Gurevich, 1990) and takes approximately five minutes to complete. The scale asks participants to rate the extent of their experience with each item over the last month on a 4-point Likert scale, ranging from "not at all part of my life" (1) to "very much part of my life" (4) (See Appendix J). Factor analysis suggests a seven factor solution, including: 1) developmental challenge, 2) time pressure, 3) academic alienation, 4) romantic problems, 5) assorted annoyances, 6) general social mistreatment, and 7) friendship problems. The ICSRLE demonstrates high internal consistency, with an overall alpha coefficient of .90 in this sample and the majority of subscales showing adequate internal consistency (Cronbach's alphas in this sample ranging from .51 to .84; see Table 8 in the preliminary analyses portion of the results section). Test-retest reliability was not reported, but is not expected to be high (i.e, since this is a measure of daily hassles, a construct that changes with time). Construct validity was established via significant positive correlations with the Perceived Stress Scale (PSS; Cohen, Kamarack, & Mermelstein, 1983), a reliable, valid, and commonly cited measure of perceived stress.

The *National College Health Risk Behavior Survey* (NCHRBS; Douglas, Collins, Warren, Kann, Clayton, et al., 1997) is a 75-item instrument created by the Center for

Disease Control (CDC) to monitor health-risk behaviors among American college students. The NCHRBS is a component of the Youth Risk Behavior Surveillance System (YRBSS), which consists of national, state, and local surveys of health risk behaviors among high school students, youth aged 12 through 21 who are both enrolled and not enrolled in school, and college students. Reliability and validity for the instrument are adequate (Douglas, Collins, Warren, Kann, Clayton, et al., 1997), and norms for the various behaviors have been collected every few years since 1995. Using various Likert scales and yes / no option choices, the NCHRBS measures six behaviors, including: 1) intentional and unintentional injury, 2) tobacco use, 3) alcohol and other drug use, 4) sexual behaviors, 5) dietary behaviors, and 6) physical inactivity. (As individual items are not scaled but rather produce frequencies for specific behaviors, internal consistencies are neither reported in the literature nor here.) In this study, information on intentional and unintentional injury was not assessed, due to the overlap in measurement of self-harm, therefore reducing the number of items to 49 (see appendix K) and the time of administration to ten minutes.

Procedure

Students enrolled in the USF research subject pool were recruited for participation. Students who agreed to participate came to the lab, where a research assistant explained the purpose of the study, the requirements of participation, any possible risks and benefits, and policies regarding confidentiality and its limits. After answering any and all questions about the paradigm, the research assistant obtained informed consent from the participant and administered the self-report questionnaires.

When all measures were completed, the research assistant debriefed the participant. Participation took between 30-60 minutes, depending on the students' responses, and students were awarded one extra credit point for each half hour of participation. All participants were assigned a random code so that their data was de-identified, and all consent documents and self-report questionnaires were stored in separate locked file cabinets.

Before the participant departed the laboratory, the research assistant checked all measures for current or past self-harm behavior or ideation and, if present, assessed current risk using a suicide risk assessment protocol (See appendix L and M; Totura, Tarquini, Caporino, Labouliere, Handelsman, & Karver, 2006). These protocols involved questions that further probed critical responses on the self-report questionnaires to ascertain whether an emergency risk assessment was necessary. Marc Karver, Ph.D., Vicky Phares, Ph. D., and Christine M. W. Totura, Ph.D. were available by telephone during data collection periods for consultation and to conduct such evaluations if the need for an emergency risk assessment arose. (Although the risk protocol needed to be administered to 125 participants, consultants only needed to be contacted for five emergency risk assessments.)

After data collection was completed, groups were made based on endorsement of self-harm items on the Deliberate Self-Harm Inventory and the Self-Harm Behavior Questionnaire. Persons were placed in the *history of self-harm behavior group* (SHB) if they endorsed any item on the Deliberate Self-Harm Inventory or the behavior items of the Self-Harm Behavior Questionnaire; in this manner, any persons who had engaged in deliberate non-suicidal self-injurious behavior or made a suicide attempt in their lifetime

was counted as having a history of self-harm behavior. Persons were placed in the *no history of self-harm behavior group* (NO-SHB) if they did not endorse any past self-harm behavior. A variable for subtypes of self-harm was also created, by which every participant was be assigned to one of five self-harm-related groups: 1) *non-suicidal self-injurious behavior only* (NSSI), 2) *suicide attempt only* (SA), 3) *both non-suicidal self-injurious behavior and suicide attempt* (Both), 4) *suicidal ideation only* (with no self-harm behavior attempted; SIO), and 5) *no self-harm behavior or ideation* (control) groups.

Additionally, information from specific questions on the National College Health Risk Behavior Survey was used to formulate groups based on different types of risky behaviors. The *alcohol-related risk group* (ALC) was composed of persons who had a lifetime history of driving while intoxicated, had binge-drank in the past 30 days, or had begun drinking before high school. The *illegal substance use group* (SUB) was composed of persons who had a lifetime history of taking illegal substances, including marijuana, cocaine, heroin, inhalants, stimulants, hallucinogens, steroids, or other illegal substances. The *sexual risk-taking group* (SEX) was composed of persons who had more than six sexual partners in their lifetime or had not used condoms during sexual intercourse in the last 30 days. The *disordered eating risk group* (ED) was composed of persons who were trying to lose weight despite being significantly underweight or who had purged after eating either by vomiting or misusing laxatives. The *safety risk-taking group* (SAFE) was composed of persons who did not wear a seatbelt while driving, did not wear a helmet while riding a motorcycle, carried a weapon (outside of law enforcement or military work obligations), or got into physical altercations after

childhood. The *smoking-related risk-taking group* (SMOKE) was composed of persons who had ever smoked regularly or who had begun smoking before the legal age of 18.

Results

Descriptive Statistics

All two-hundred fifty undergraduates completed a battery of questionnaires assessing emotion regulation and coping capacity, psychological and personality variables, and current life stress. Upon the completion of data entry, subtest scores were calculated from the individual items of the measures; missing data was minimal, and was addressed using mean imputation[1]. Descriptive statistics were run on all demographic variables and subtest scores to obtain means (continuous variables) or frequencies (categorical variables), standard deviations, and ranges. Before proceeding to hypothesis testing, coefficient alphas for all subscales were calculated to ascertain that the measures have adequate consistency in this sample. All data were also screened for linearity, normality, and homoscedasticity (although the statistics selected for subsequent hypothesis testing analyses are robust enough at this sample size that normality and homoscedasticity are not critical assumptions; Bryant & Yarnold, 1995; Garson, 2007).

[1] Mean imputation was done by taking the mean of all available data on a given subscale within subject, thereby filling any missing values with the mean for that subscale based on the other items of the subscale. Although mean imputation is sometimes criticized for positively biasing data (i.e., creating scale scores that may be higher than those obtained by other methods, such as summing all items of a subscale), it is traditionally considered to be less biased than other methods, such as creating sum scores using all available data. While data imputation using hierarchical modeling is preferred, such is not recommended for samples smaller than several hundred persons (Raudenbush & Bryk, 2002).

Additionally, the distributions of variables were examined to determine the presence of floor or ceiling effects.[2] The results of these analyses are presented throughout the descriptive statistics section (see Tables 2, 6 and 8).

Difficulties in Emotion Regulation Scale. Descriptive statistics, internal consistencies, and univariate normality parameters for the various subscales of the Difficulties in Emotion Regulation Scale are presented in Table 2. In general, scores on all subscales demonstrated high internal consistency, but most subscales demonstrated some small deviations from normality and were somewhat lower than scores reported in other college populations, suggesting that there may have been some range restriction on certain subscales. Scores on the *Difficulties Engaging in Goal-Directed Behavior* subscale were normally distributed and were not significantly different from scores in other college populations reported elsewhere (Gratz & Roemer, 2004; $t(248)=-1.65$, $p = .10$); no evidence of range restriction was present. Alternatively, scores on the *Impulse Control Difficulties* subscale were somewhat positively skewed, meaning that the mean of the distribution was skewed closer to zero and had a longer right tail than would be expected under a normal distribution, and leptokurtotic, meaning that the distribution had a sharper peak and shorter, fatter tails, a situation that occurs when there is a higher probability than a normally distributed variable of values around the mean and extreme

[2] In order to be considered a floor effect, the distribution had to be positively skewed (toward zero), evidence some degree of range restriction at the higher end of the distribution, and have a mean lower than results found in other samples. In order to be considered a ceiling effect, the distribution had to be negatively skewed, evidence some degree of range restriction at the lower end of the distribution, and have a mean higher than results found in other samples. Although some subscales used in this study showed non-normality and range restriction, if they were not significantly different from validation norms, these distributions were not considered to have a floor or ceiling effect; this is an artifact of the reality that several of the variables measured are not normally distributed in the population and are therefore unlikely to utilize the entirety of the range available in the scale (e.g., self-harm and other maladaptive behaviors, etc.).

Table 2.

Descriptive statistics and statistical assumption information for measures of affect regulation.

Subscales	N	Mean (SD)	Min / Max	Range	Skewness	Kurtosis	α
Difficulties in Emotion Regulation Scale (DERS)							
Difficulties Engaging in Goal-Directed Behavior	249	2.79 (0.90)	1.00 / 5.00	1-5	0.36	-0.14	0.88
Impulse Control Difficulties	250	1.67 (0.66)	1.00 / 4.83	1-5	1.66[a]	3.54[a]	0.87
Nonacceptance of Emotional Responses	249	1.87 (0.77)	1.00 / 5.00	1-5	1.57[a]	3.17[a]	0.88
Lack of Emotional Awareness	250	2.12 (0.63)	1.00 / 4.33	1-5	0.62	0.32	0.76
Lack of Emotional Clarity	249	1.99 (0.61)	1.00 / 4.20	1-5	0.89	1.05[a]	0.81
Limited Access to Emotion Regulation Strategies	249	1.87 (0.70)	1.00 / 4.75	1-5	1.34[a]	1.96[a]	0.88
Emotional Processing Scale (EPS)							
Avoidance	249	4.17 (1.41)	0.00 / 8.00	0-9	0.19	-0.17	0.58[b]
Impoverished Emotional Experience	249	2.68 (1.41)	0.00 / 8.80	0-9	0.61	0.99	0.67[b]
Suppression	250	3.66 (1.76)	0.00 / 8.60	0-9	0.18	-0.39	0.83

Table 2 (Continued).

Subscales	N	Mean (SD)	Min / Max	Range	Skewness	Kurtosis	α
Unprocessed Emotion	249	3.70 (1.69)	0.00 / 8.40	0-9	0.19	-0.20	0.81
Unregulated Emotion	249	3.37 (1.55)	0.00 / 7.20	0-9	0.26	-0.55	0.69[b]
Coping Orientation for Problem Experiences (COPE)							
Adaptive Emotion-Focused Coping	249	13.48 (2.52)	7.00 / 19.00	5-20	-0.13	-0.59	0.49[b]
Acceptance	249	2.77 (0.67)	1.00 / 4.00	1-4	-0.13	-0.51	0.72
Humor	249	2.24 (0.91)	1.00 / 4.00	1-4	0.31	-0.78	0.92
Positive Reinterpretation and Growth	249	3.17 (0.59)	1.00 / 4.00	1-4	-0.57	0.07	0.73
Religious Coping	249	2.47 (1.21)	1.00 / 4.00	1-4	0.02	-1.63[a]	0.96
Use of Emotional Social Support	249	2.84 (0.92)	1.00 / 4.00	1-4	-0.39	-0.97	0.90
Maladaptive Emotion-Focused Coping	249	9.32 (1.61)	6.00 / 15.00	5-20	0.74	1.00	0.44[b]
Behavioral Disengagement	249	1.51 (0.50)	1.00 / 4.00	1-4	1.31[c]	2.69[a]	0.58[b]
Denial	249	1.34 (0.47)	1.00 / 3.00	1-4	1.58[c]	2.11[a]	0.73
Focus on and Venting of Emotions	249	2.55 (0.74)	1.00 / 4.00	1-4	0.12	-0.58	0.77
Mental Disengagement	249	2.61 (0.55)	1.00 / 4.00	1-4	-0.21	-0.34	0.25[b]
Substance Use	249	1.31 (0.61)	1.00 / 4.00	1-4	2.32[c]	5.64[a]	0.97

Table 2 (Continued).

Subscales	N	Mean (SD)	Min / Max	Range	Skewness	Kurtosis	α
Problem-Focused Coping	249	13.29 (2.31)	5.00 / 19.00	5-20	-0.29	0.17	0.71
Active Coping	249	2.81 (0.63)	1.00 / 4.00	1-4	-0.10	-0.29	0.72
Planning	249	2.96 (0.68)	1.00 / 4.00	1-4	-0.19	-0.54	0.81
Restraint	249	2.38 (0.65)	1.00 / 4.00	1-4	0.17	-0.21	0.67[b]
Suppression of Competing Activities	249	2.29 (0.57)	1.00 / 4.00	1-4	0.13	-0.29	0.56[b]
Use of Instrumental Social Support	249	2.85 (0.82)	1.00 / 4.00	1-4	-0.41	-0.76	0.83

Note: [a] Measure exceeds the critical value of 1.0, suggesting some degree of non-normality. [b] Alpha-level is below the established standard of 0.70, suggesting some degree of scale unreliability.

values in the tails. These scores were significantly lower than scores in other college populations reported elsewhere (Gratz & Roemer, 2004; $t(248)=-4.62$, $p < .001$), and showed a slight degree of range restriction, as the highest score in the sample (4.83) was slightly lower than the subscale maximum of 5. As this range restriction is combined with a positively skewed distribution, it may be indicative of a floor effect on this subscale, suggesting that persons in this sample were less likely to report impulse control difficulties. Scores on the *Nonacceptance of Emotional Responses* subscale were also somewhat positively skewed and leptokurtotic. However, scores were not significantly different from scores in other college populations reported elsewhere (Gratz & Roemer, 2004; $t(248)=-1.32$, $p = .19$) and no evidence of range restriction was present. Scores on the *Lack of Emotional Awareness* subscale were normally distributed, but were significantly lower than scores in other college populations reported elsewhere (Gratz & Roemer, 2004; $t(248)=-10.83$, $p < .001$). Some range restriction was evident, as the highest score in the sample (4.33) was somewhat lower than the subscale maximum of 5. Scores on the *Lack of Emotional Clarity* subscale showed normal skewness but were very slightly leptokurtotic, and were significantly lower than scores in other college populations reported elsewhere (Gratz & Roemer, 2004; $t(248)=-3.81$, $p < .001$). Again, some degree of range restriction was evident, as the highest score in the sample (4.20) was lower than the subscale maximum of 5. Lastly, scores on the *Limited Access to Emotion Regulation Strategies* subscale were also somewhat positively skewed and leptokurtotic, and were significantly lower than scores in other college populations reported elsewhere (Gratz & Roemer, 2004; $t(248)=-3.34$, $p < .001$). A small degree of range restriction was evident, as the maximum score reported in the sample (4.75) was

slightly slower than the subscale maximum of 5. When coupled with the deviations from normality, this range restriction may be indicative of a floor effect on this subscale, suggesting that persons in this sample were less likely to report difficulties in accessing emotion regulation strategies.

Emotion Processing Scale. Descriptive statistics, internal consistencies, and univariate normality parameters for the various subscales of the Emotion Processing Scale are presented in Table 2. In general, subscale scores showed varying levels of internal consistency, were all normally distributed, and were somewhat higher than scores reported in the healthy normative sample (though still much lower than scores reported for a normative sample with mental health problems). Scores on the *Avoidance* subscale showed moderate internal consistency, but were significantly higher than scores reported for the healthy normative sample ($t(248)=-11.98$, $p < .001$), although the scores were still significantly lower than those reported for the sample with mental health problems (Baker, Thomas, Thomas, & Owens, 2007; $t(248)=-8.23$, $p < .001$). Some degree of range restriction was evident, as the maximum score in the sample (8.00) was somewhat lower than the subscale maximum of 9. Scores on the *Impoverished Emotion Experience* subscale also showed moderate internal consistency but were marginally higher than scores reported for the healthy normative sample ($t(248)=2.00$, $p = .05$), although the scores were still significantly lower than those reported for the sample with mental health problems (Baker, Thomas, Thomas, & Owens, 2007; $t(248)=-17.08$, $p < .001$). A very small degree of range restriction was present, as the maximum score in the sample (8.80) was slightly lower than the subscale maximum of 9. Scores on the *Suppression* subscale showed high internal consistency but were significantly higher than

scores reported for the healthy normative sample ($t(248)=2.34$, $p < .05$), although the scores were still significantly lower than those reported for the sample with mental health problems (Baker, Thomas, Thomas, & Owens, 2007; $t(248)=-13.86$, $p < .001$). A small degree of range restriction was evident, as the maximum score in the sample (8.60) was somewhat lower than the subscale maximum of 9. Scores on the *Unprocessed Emotion* subscale showed moderate internal consistency but were significantly lower than scores reported for the healthy normative sample ($t(248)=-2.78$, $p < .01$) and the sample with mental health problems ($t(248)=-22.35$, $p < .001$; Baker, Thomas, Thomas, & Owens, 2007). A degree of range restriction was evident, as the maximum score in the sample (8.40) was lower than the subscale maximum of 9. Lastly, scores on the *Unregulated Emotion* subscale showed moderate internal consistency but were significantly higher than scores reported for the healthy normative sample ($t(248)=2.71$, $p < .01$), although the scores were still significantly lower than those reported for the sample with mental health problems (Baker, Thomas, Thomas, & Owens, 2007; $t(248)=-10.54$, $p < .001$).A significant degree of range restriction was evident in this sample, as the maximum score (7.20) was a substantial amount lower than the subscale maximum of 9.

Coping Orientation to Problem Experiences inventory. Descriptive statistics, internal consistencies, and univariate normality parameters for the various subscales of the Coping Orientation to Problem Experiences are presented in Table 2. In general, subscale scores showed varying levels of internal consistency, were mostly normally distributed, and were mostly similar to scores reported for a college undergraduate sample. Scores on the *Adaptive Emotion-Focused Coping* scale were normally distributed and were not significantly different from scores in other college populations reported

elsewhere (Carver, Scheier, & Weintraub, 1989; $t(248)=1.46$, $p = .15$); however, this scale had low internal consistency and some range restriction was evident, as the lowest and highest scores in the sample (7 and 19, respectively) was somewhat discrepant from the scale minimum of 5 and maximum of 20. Scores on the *Acceptance* subscale were normally distributed, demonstrated good internal consistency, and were somewhat lower than scores in other college populations reported elsewhere (Carver, Scheier, & Weintraub, 1989; $t(248)=-4.64$, $p < .001$); no range restriction was present. Scores on the *Acceptance* subscale were normally distributed, demonstrated good internal consistency, and were somewhat lower than scores in other college populations reported elsewhere (Carver, Scheier, & Weintraub, 1989; $t(248)=-4.64$, $p < .001$); no range restriction was present. Scores on the *Humor* subscale were normally distributed, demonstrated excellent internal consistency, and evidenced no range restriction; however, these scores could not be compared to college student norms, as the humor subscale was a later addition to the measure and was not administered to the initial standardization sample (Carver, Scheier, & Weintraub, 1989). Scores on the *Positive Reinterpretation and Growth* subscale were normally distributed, demonstrated good internal consistency, and were not significantly different from scores reported for other college populations (Carver, Scheier, & Weintraub, 1989; $t(248)=1.72$, $p = .09$); no range restriction was present. Scores on the *Religious Coping* subscale showed normal skewness but were slightly platykurtotic, meaning that the distribution had a more shallow, rounded peak and shorter tails, suggesting a lower probability than a normally distributed variable of values around the mean. Examination of a histogram revealed a bimodal distribution, in which scores clustered either around a lower mode (1) or around a very high mode (4). The subscale

demonstrated excellent internal consistency, and was somewhat higher than scores in other college populations reported elsewhere (Carver, Scheier, & Weintraub, 1989; $t(248)=3.30$, $p < .001$); no range restriction was present. Scores on the *Use of Emotional Social Support* subscale were normally distributed, demonstrated excellent internal consistency, and were not significantly different from scores reported for college populations elsewhere (Carver, Scheier, & Weintraub, 1989; $t(248)=1.42$, $p = .16$); no range restriction was present.

Scores on the *Maladaptive Emotion-Focused Coping* scale were normally distributed and were not significantly different from scores in other college populations reported elsewhere (Carver, Scheier, & Weintraub, 1989; $t(248)=-0.74$, $p = .46$); however, this scale had low internal consistency and some range restriction was evident, as the lowest and highest scores in the sample (6 and 15, respectively) was somewhat discrepant from the scale minimum of 5 and maximum of 20. Scores on the *Behavioral Disengagement* subscale were somewhat positively skewed, leptokurtotic, and demonstrated only adequate internal consistency. No range restriction was present, and scores were not significantly different from scores reported for college populations elsewhere (Carver, Scheier, & Weintraub, 1989; $t(248)=0.67$, $p = .50$). Scores on the *Denial* subscale were also somewhat positively skewed and leptokurtotic, but demonstrated adequate internal consistency. Scores were significantly lower than scores reported for college populations elsewhere (Carver, Scheier, & Weintraub, 1989; $t(248)=-6.14$, $p < .001$), and some range restriction was evident, as the highest score in the sample (3) was somewhat lower than the scale maximum of 4. As this range restriction was coupled with positive skewness and leptokurtosis, this may be indicative of a floor effect

on this subscale, suggesting the persons in this sample were less likely to report using denial as a coping strategy. Scores on the *Focus on and Venting of Emotions* subscale were normally distributed, demonstrated good internal consistency, and were not significantly different from scores reported for other college populations (Carver, Scheier, & Weintraub, 1989; $t(248)=0.17$, $p = .87$); no range restriction was present. Scores on the *Mental Disengagement* subscale were normally distributed, but demonstrated poor internal consistency; scores were significantly higher than scores reported for other college populations (Carver, Scheier, & Weintraub, 1989; $t(248)=5.41$, $p < .001$). Scores on the *Substance Use* subscale were both highly positively skewed and highly leptokurtotic, but demonstrated excellent internal consistency and were not significantly different from scores reported for other college populations (Carver, Scheier, & Weintraub, 1989; $t(248)=1.77$, $p = .08$); no range restriction was present.

Scores on the *Problem-Focused Coping* scale were normally distributed and demonstrated adequate internal consistency, but were significantly lower than scores in other college populations reported elsewhere (Carver, Scheier, & Weintraub, 1989; $t(248)=-10.96$, $p < .001$). Some degree of range restriction was evident, as the highest score in the sample (19) was somewhat lower than the scale maximum of 20. Scores on the *Active Coping* subscale were normally distributed and demonstrated adequate internal consistency, but were significantly lower than scores reported for other college populations (Carver, Scheier, & Weintraub, 1989; $t(248)=-4.13$, $p < .001$); no range restriction was present. Scores on the *Planning* subscale also were normally distributed and demonstrated good internal consistency, but were significantly quite lower than scores reported for other college populations (Carver, Scheier, & Weintraub, 1989;

$t(248)=-28.95$, $p < .001$); no range restriction was present. Scores on the *Restraint* subscale were also normally distributed and demonstrated adequate internal consistency, but were significantly lower than scores reported for other college populations (Carver, Scheier, & Weintraub, 1989; $t(248)=-4.83$, $p < .001$); no range restriction was present. Scores on the *Suppression of Competing Activities* subscale were normally distributed, but demonstrated low internal consistency and were significantly lower than scores reported for other college populations (Carver, Scheier, & Weintraub, 1989; $t(248)=-5.56$, $p < .001$); no range restriction was present. Lastly, scores on the *Use of Instrumental Social Support* subscale were normally distributed, demonstrated good internal consistency, and were not significantly different from scores reported for other college populations (Carver, Scheier, & Weintraub, 1989; $t(248)=-0.53$, $p = .60$); no range restriction was present.

Deliberate Self-Harm Inventory. The frequency and percentages of endorsement of each item, means and standard deviations of the age of onset and offset, duration in years, and time since last episode (in years), and percentage of medically-serious episodes as reported on the Deliberate Self-Harm Inventory are presented in Table 3[3]. Percentages of endorsement of self-harm behaviors were not significantly different for cutting ($z=1.04$, $p=.30$), burning with a cigarette ($z=0.90$, $p=.37$) or a lighter/match ($z=0.12$, $p=.91$), carving words ($z=0.50$, $p=.62$) or pictures ($z=0.0$, $p=1.00$) into the skin, scratching until bleeding or scarring ($z=0.89$, $p=.37$), biting to the extent of breaking skin ($z=1.14$, $p=.25$), rubbing sandpaper on skin ($z=0.21$, $p=.84$), dripping acid ($z=0.00$, $p=1.00$) or using oven cleaner ($z=0.00$, $p=1.00$) on skin, breaking bones ($z=1.58$, $p=.11$),

[3] As the DSHI only produces frequency counts of behaviors, not subscales, internal consistencies and univariate normality parameters are not presented.

and other form of self-harm behavior not assessed (z=1.99, p=.05) in comparison to other college samples (Gratz, 2001). Rates of sticking sharp objects into skin (z=2.71, p<.01), rubbing glass onto the skin (z=2.76, p<.05), banging the head to the extent of bruising (z=3.15, p<.01), and interference with wound healing (z=2.24, p<.05) were significantly lower than those reported in other college samples (Gratz, 2001), whereas rates of punching the self or an object to the extent that a bruise or cut appeared were significantly higher than those reported in other college samples (z=3.15, p<.01; Gratz, 2001).

Overall, 91 persons (36.4% of the sample) endorsed engaging in non-suicidal self-injurious behavior on at least one occasion and 79 persons (78.2% of persons with a history of self-harm and 31.6% of the sample) had engaged in non-suicidal self-injurious behaviors repetitively, percentages not significantly different from numbers reported in other college populations (z=0.27, p=.78 and z=1.16, p=.25, respectively; Gratz, 2001). On average, persons who had engaged in non-suicidal self-injurious behavior began the behavior at approximately 14.5 years old, engaged in 11.75 episodes over the course of 2.5 years, and utilized more than one method (M=1.95, SD=1.83). The most frequently reported non-suicidal self-injurious behaviors were punching the self or an object to the extent that a bruise or cut appeared (49.1% of persons with a history of self-harm and 21.2% of the sample), cutting (41.7% of persons with a history of self-harm and 18.0% of the sample), and scratching until bleeding or scarring occurred (21.3% of persons with a history of self-harm and 9.2% of the sample).

Table 3.

Means and standard deviations for the number of episodes, age of onset and offset, duration (in years), and time since last episode (in years), and percentage of medically-serious instances of different self-harm behaviors.

Self-Harm Behaviors	Frequency	Number of Episodes	Age of Onset	Age of Offset	Duration	Last Episode	% Medically Serious
Non-suicidal self-injury							
Cut wrist, arm, or other areas of the body	45	6.76 (8.95)	14.93 (2.26)	16.80 (2.59)	2.11 (2.22)	3.61 (4.14)	6.8
Burned self with a cigarette	8	2.50 (1.23)	17.17 (1.72)	18.00 (1.55)	1.33 (1.03)	2.50 (2.35)	0.0
Burned self with a lighter or match	7	3.20 (1.79)	15.60 (1.95)	16.60 (2.51)	1.60 (1.52)	2.20 (2.39)	0.0
Carved words into skin	19	3.28 (2.99)	14.17 (2.33)	15.33 (2.57)	1.56 (1.62)	5.11 (3.68)	0.0
Carved pictures or designs into skin	10	3.22 (5.22)	14.22 (1.92)	15.67 (2.00)	1.89 (2.80)	4.44 (2.65)	0.0

Table 3 (Continued).

Self-Harm Behaviors	Frequency	Number of Episodes	Age of Onset	Age of Offset	Duration	Last Episode	% Medically Serious
Scratching until bleeding or scarring	23	9.36 (14.25)	15.00 (2.71)	17.04 (2.88)	2.46 (3.00)	3.00 (2.61)	4.5
Bit self to the extent of breaking skin	7	4.71 (3.73)	12.50 (3.42)	15.50 (4.50)	3.25 (4.98)	5.75 (3.77)	0.0
Rubbed sandpaper on body	2	1.00 (0.00)	25.00 (11.31)	25.00 (11.31)	0.00 (0.00)	2.50 (2.12)	0.0
Stuck sharp objects into skin	15	22.79 (29.58)	12.73 (3.33)	16.13 (3.60)	3.67 (4.27)	3.73 (3.77)	6.7
Rubbed glass into skin	1	1.00 (N/A)	18.00 (N/A)	18.00 (N/A)	0.00 (N/A)	1.00 (N/A)	0.0
Banged head to the extent of bruising	8	30.43 (24.52)	12.75 (4.71)	17.50 (2.67)	5.00 (3.63)	2.25 (3.50)	12.5
Punched self or object to the extent that a bruise or cut appeared	53	8.27 (14.39)	15.00 (3.02)	17.73 (2.93)	3.02 (3.09)	2.96 (3.62)	3.8

Table 3 (Continued).

Self-Harm Behaviors	Frequency	Number of Episodes	Age of Onset	Age of Offset	Duration	Last Episode	% Medically Serious
Prevented wounds from healing	6	230.60 (430.59)[a]	9.80 (4.49)	19.80 (1.48)	10.20 (5.07)	0.20 (0.45)	20.0
Other non-suicidal self-harm behavior	7	14.10 (19.82)	13.18 (3.92)	17.36 (3.83)	4.45 (6.06)	2.60 (2.63)	9.1
Suicide attempts	17	1.65 (1.17)	N/A[b]	17.12 (5.12)	N/A[b]	5.18 (3.97)	29.4

Note: Total number of persons with a history of engaging in any self-harm behavior was 108. An additional 30 persons reported a history of making suicidal threats, 79 persons reported a history of endorsing thinking about or wanting to die but not considering suicide, and 51 persons reported experiencing suicidal ideation; these persons were not counted in the self-harm behavior group, as they did not act on their thoughts. [a] Since the mean statistic is particularly sensitive to outliers and one extremely high outlier is present here, the median score of 50 may be a better representation of the average number of episodes. [b] Information was not provided.

Self-Harm Behavior Questionnaire. The frequency and percentages of endorsement of various suicide-related behaviors as reported on the Self-Harm Behavior Questionnaire are presented in Table 4[4]. Seventeen persons endorsed a lifetime history of suicide attempt (6.8% of the total sample and 15.7% of persons with a history of self-harm behavior), a percentage of endorsement not significantly different from percentages reported in other samples (z=0.37, p=.72; Brezo, Paris, Barker, Tremblay, Vitaro, Zoccolillo, et al., 2007). On average, persons had more than one attempt in their lifetime (M=1.65, SD=1.17), it had been approximately five years since the most recent attempt (M=5.18, SD=3.97), which occurred at approximately age 17 (M=17.12, SD=5.12), and 29.4% of these attempts necessitated medical attention. The most common method of attempted suicide was overdose (3.6% of the total sample and 8.3% of persons with a history of self-harm behavior). Additionally, fifty-one persons endorsed a lifetime history of suicidal ideation (20.4% of the total sample and 47.2% of persons with a history of self-harm behavior) and 30 persons reported making suicidal threats at some point in their lives (12.0% of the total sample and 27.8% of persons with a history of self-harm behavior), percentages that are not significantly different than those reported elsewhere in similar samples (z=0.84, p=.40; Brezo, Paris, Barker, Tremblay, Vitaro, Zoccolillo, et al., 2007). Lastly, an additional 79 people reported thinking about or wanting to die but without actually considering suicide (31.6% of the total sample and 73.1% of persons with a history of self-harm behavior).

[4] As the SHBQ only produces frequency counts of behaviors, not subscales, internal consistencies and univariate normality parameters are not presented.

Table 4.

Percentages of suicide-related behaviors as reported on the Self-Harm Behavior Questionnaire (SHBQ).

Suicide-Related Behaviors	Frequency	% of Sample	% of Self-Harm Group
Wanting to Die Without Considering Suicide	79	31.6	73.1
Suicidal Ideation	51	20.4	47.2
Suicide Threats	30	12	27.8
Suicide Attempts	17	6.8	15.7
Overdose	9	3.6	8.3
Hanging or asphyxiation	2	0.8	1.9
Slit wrists or throat	1	0.4	0.9
Jumping from a height	1	0.4	0.9
Multiple methods	1	0.4	0.9

Note: The total number of persons with a history of engaging in any self-harm behavior (NSSI or SA) was 108. Persons endorsing suicidal threats, suicidal ideation, or wanting to die but not considering suicide were not counted in the self-harm behavior (SHB) group in subsequent analyses, as they did not act on their thoughts.

Persons with a history of suicide attempts, suicidal ideation, or making suicide threats were asked to report life circumstances at the time of their suicide-related behavior; these life circumstances are reported in Table 5. Common life circumstances surrounding suicide-related behaviors were family conflicts, romantic or peer problems, academic difficulties, stressful life events, the death of a loved one, or mental health issues such as depression (see Table 5 for greater detail).

Functional Assessment of Self-Mutilation. All persons who had engaged in lifetime self-harm behavior completed the Functional Assessment of Self-Mutilation to determine the most common reasons for engaging in self-harm behavior; only persons with a lifetime history of self-harm behavior completed this measure. Descriptive statistics, internal consistencies, and univariate normality parameters for the various subscales are presented in Table 6. In general, subscale scores showed adequate to high levels of internal consistency and were not normally distributed. Scores on the *Automatic Negative Reinforcement* subscale had good internal consistency and normal levels of kurtosis, but were slightly positively skewed. Scores were significantly lower than scores in other self-harming populations (Nock & Prinstein, 2004; $t(106)=-2.81$, $p < .01$), but no range restriction was evident. Similarly, scores on the *Automatic Positive Reinforcement* subscale had good internal consistency and normal levels of kurtosis, but were slightly positively skewed. Scores were not significantly different from scores in other self-harming populations (Nock & Prinstein, 2004; $t(106)=0.68$, $p = .50$) and no range restriction was evident. Scores on the *Social Negative Reinforcement* subscale showed only adequate internal consistency, were strongly positively skewed and highly

Table 5.

Life circumstances around time of suicide attempt, threat, and ideation, as reported on the Self-Harm Behavior Questionnaire (SHBQ).

Life Circumstance	Suicide Attempts		Suicide Threats		Suicide Ideation	
	# of Persons Endorsing	%	# of Persons Endorsing	%	# of Persons Endorsing	%
Family problems or conflict	7	21.2%	13	21.7%	19	15.0%
Death of a relative or friend	4	12.1%	2	3.3%	4	3.1%
Depression	3	9.1%	3	5.0%	23	18.1%
Romantic problems or conflict	2	6.1%	11	18.3%	11	8.7%
Peer problems or conflict	2	6.1%	4	6.7%	9	7.1%
Body image issues or eating disorder	2	6.1%	1	1.7%	2	1.6%
Academic difficulties	2	6.1%	11	18.3%	10	7.9%
Loss of employment	2	6.1%	0	0.0%	5	3.9%
Other mental health issue	2	6.1%	1	1.7%	3	2.4%
Gender or sexual orientation issues	1	3.0%	0	0.0%	0	0.0%

Table 5 (Continued).

Life Circumstance	Suicide Attempts		Suicide Threats		Suicide Ideation	
	# of Persons Endorsing	%	# of Persons Endorsing	%	# of Persons Endorsing	%
Sexual assault or incest	1	3.0%	2	3.3%	2	1.6%
Physical abuse	1	3.0%	1	1.7%	1	0.8%
Substance abuse	1	3.0%	0	0.0%	2	1.6%
Stressful life events	1	3.0%	2	3.3%	11	8.7%
Health problems (self or family)	1	3.0%	1	1.7%	3	2.4%
Unknown reason	1	3.0%	3	5.0%	3	2.4%
Emotional abuse	0	0.0%	3	5.0%	2	1.6%
Move or transition to a new place	0	0.0%	1	1.7%	3	2.4%
Persecution or bullying	0	0.0%	1	1.7%	2	1.6%

Table 5 (Continued).

	Suicide Attempts		Suicide Threats		Suicide Ideation	
Life Circumstance	# of Persons Endorsing	%	# of Persons Endorsing	%	# of Persons Endorsing	%
Other circumstance	0	0.0%	0	0.0%	9	7.1%
Legal or disciplinary issues	0	0.0%	0	0.0%	2	1.6%
Partner violence	0	0.0%	0	0.0%	1	0.8%

Note: Of the total sample (*N*=250), an additional 79 persons had endorsed thinking about or wanting to die, but not considering suicide. Persons who had attempted suicide (*n*=17), threatened suicide (*n*=30), or experienced suicidal ideation (*n*=51) could list as many life circumstances as they desired. The minimum number listed was zero (SA: 5.8%; ST: 10%; SI: 2.4%) and the maximum number listed was four (SA: 5.8%; ST: 13.3%; SI: 4.7%). Differences between groups are not statistically significant.

Table 6.

Descriptive statistics and statistical assumption information for reasons persons engage in self-harm behavior, as reported on the Functional Assessment of Self-Mutilation (FASM).

Subscales	N	Mean (SD)	Min / Max	Skewness	Kurtosis	α
Automatic Negative Reinforcement	107	0.78 (0.97)	0.00 / 3.00	1.09[a]	-0.02	0.75
Automatic Positive Reinforcement	107	0.66 (0.87)	0.00 / 3.00	1.30[a]	0.63	0.8
Social Negative Reinforcement	107	0.11 (0.26)	0.00 / 1.50	3.16[a]	10.97[a]	0.68[b]
Social Positive Reinforcement	108	0.30 (0.53)	0.00 / 3.00	2.69[a]	7.88[a]	0.89

Note: N=108. The range of scores for all subscales was 0 to 3. [a] Measure exceeds the critical value of 1.0, suggesting some degree of non-normality. [b] Alpha-level is below the established standard of 0.70, suggesting some degree of scale unreliability.

leptokurtotic, and showed substantial range restriction, as the highest score in the sample (1.5) was somewhat lower than the subscale maximum of 3. Scores were significantly lower than scores reported for other self-harming populations (Nock & Prinstein, 2004; $t(106)=-8.42$, $p < .001$), suggesting a probable floor effect on this subscale in which persons were less likely to report social negative reinforcement as a reason for engaging in self-harm behavior. Scores on the *Social Positive Reinforcement* subscale showed good internal consistency and no evidence of range restriction, but were still quite positively skewed and highly leptokurtotic. Scores were significantly higher than scores reported for other self-harming populations ((Nock & Prinstein, 2004; $t(107)=3.81$, $p < .001$).

The frequencies and percentages of endorsement of each item are presented in Table 7. Reasons reflecting automatic reinforcement, both positive and negative, were the most commonly endorsed (ranging from 25.2-43.9%), suggesting that persons are most likely to engage in self-harm behavior to escape negative feelings, such as emotional pain or numbness, and to seek positive feelings, such as relief of the end of dissociative states. Social reinforcement was less commonly endorsed (ranging from 2.8-31.8%), but still was endorsed by a sizable minority of the sample, suggesting that, while emotion regulatory functions play a larger role in self-harm behavior, escape from unpleasant tasks and getting attention or a response from others still play an important role in a minority of self-harm behaviors. This is in concert with previous research on the functions of self-harm behavior (Nock & Prinstein, 2004; 2005).

Table 7.

Descriptive statistics for reasons persons engage in self-harm behavior, as endorsed on the Functional Assessment of Self-Mutilation (FASM).

Reasons	Frequency	%	Mean (SD)
Automatic Negative Reinforcement			
To stop bad feelings	44	41.1	0.79 (1.11)
To relieve feeling numb or empty	43	40.2	0.76 (1.06)
Automatic Positive Reinforcement			
To feel something, even if it is pain	47	43.9	0.79 (1.02)
To punish yourself	34	31.8	0.62 (1.03)
To feel relaxed	27	25.2	0.56 (1.06)
Social Negative Reinforcement			
To avoid doing something unpleasant you don't want to do	12	11.2	0.14 (0.44)
To avoid school, work, or other responsibilities	11	10.3	0.12 (0.38)
To avoid being with people	8	7.5	0.10 (0.39)
To avoid punishment or paying the consequences	6	5.6	0.06 (0.23)
Social Positive Reinforcement			
To get control of a situation	34	31.8	0.65 (1.06)
To get attention	31	29.0	0.49 (0.88)
To try to get a reaction from someone, even if it is a negative reaction	30	28.0	0.46 (0.85)
To receive more attention from your parents or friends	21	19.6	0.35 (0.80)

Table 7 (Continued).

Reasons	Frequency	%	Mean (SD)
To get other people to act differently or change	21	19.6	0.33 (0.76)
To let others know how desperate you were	21	19.6	0.32 (0.75)
To get your parents to understand or notice you	16	15.0	0.28 (0.74)
To get help	14	13.2	0.24 (0.68)
To give yourself something to do while alone	10	9.3	0.13 (0.48)
To feel more a part of a group	6	5.6	0.07 (0.36)
To be like someone you respect	3	2.8	0.04 (0.24)
To make others angry	3	2.8	0.03 (0.17)
Other Reasons			
For another reason	22	20.6	0.59 (1.02)
To give yourself something to do with others	1	0.9	0.01 (0.10)

Note: Only persons with a history of self-harm behavior (n = 108) completed this scale.

State-Trait Personality Inventory. Descriptive statistics, internal consistencies, and univariate normality parameters for the various subscales are presented in Table 8. In general, subscale scores showed high levels of internal consistency, were normally distributed, and were not significantly different from scores reported in other college populations. Scores on the *Trait-level Anger* subscale had good internal consistency and normal levels of skewness, but were very slightly leptokurtotic. Scores were not significantly different from scores in other college populations (Spielberger, Jacobs, Crane, Russell, Westberry, Barker, et al., 1995; $t(249)=-1.19$, $p = .24$), and only a small degree of range restriction was evident, as the highest score in the sample (3.90) was slightly lower than the subscale maximum of 4. Scores on the *Trait-level Anxiety* subscale also had good internal consistency, were normally distributed, and were not significantly different from scores in other college populations (Spielberger, Jacobs, Crane, Russell, Westberry, Barker, et al., 1995; $t(249)=0.72$, $p = .47$); some degree of range restriction was evident, as the highest score in the sample (3.60) was somewhat lower than the subscale maximum of 4. Lastly, Scores on the *Trait-level Depression* subscale had excellent internal consistency, were normally distributed, and were not significantly different from scores in other college populations (Spielberger, Jacobs, Crane, Russell, Westberry, Barker, et al., 1995; $t(249)=-1.83$, $p = .07$); some degree of range restriction was evident, as the highest score in the sample (3.70) was slightly lower than the subscale maximum of 4.

Table 8.

Descriptive statistics and statistical assumption information for measures of psychological and personality traits and current stress levels.

Subscales	*N*	Mean (SD)	Min / Max	Range	Skewness	Kurtosis	α
State-Trait Personality Inventory (STPI)							
Trait-level Anger	250	1.85 (0.54)	1.00 / 3.90	1-4	0.97	1.01[a]	0.83
Trait-level Anxiety	250	1.89 (0.59)	1.00 / 3.60	1-4	0.76	-0.04	0.87
Trait-level Depression	250	1.74 (0.59)	1.00 / 3.70	1-4	0.88	0.31	0.92
International Personality Item Pool (IPIP-NEOAC)							
Agreeableness	249	75.15 (10.93)	32.00 / 99.00	20-100	-0.72	1.54[a]	0.83
Conscientiousness	249	76.78 (12.99)	30.00 / 100.00	20-100	-0.55	0.12	0.92
Extraversion	249	72.71 (11.47)	35.00 / 99.00	20-100	-0.31	0.04	0.83
Neuroticism	249	50.27 (13.95)	24.00 / 85.00	20-100	0.40	-0.60	0.91
Openness	249	71.27 (11.37)	33.00 / 97.00	20-100	-0.25	-0.02	0.84

Table 8 (Continued).

Subscales	*N*	Mean (SD)	Min / Max	Range	Skewness	Kurtosis	α
Inventory of College Students' Recent Life Events (ICSRLE)							
Total Recent Life Stress	248	1.97 (0.40)	1.12 / 3.16	1-4	0.43	0.02	0.90
Academic Alienation	248	2.03 (0.80)	1.00 / 4.00	1-4	0.59	-0.35	0.71
Assorted Annoyances	248	1.52 (0.47)	1.00 / 3.60	1-4	1.35[a]	2.63[a]	0.51[b]
Developmental							
Challenge	248	2.29 (0.58)	1.00 / 3.90	1-4	0.22	-0.35	0.77
Friendship Problems	248	1.91 (0.85)	1.00 / 4.00	1-4	0.98	0.09	0.84

Table 8 (Continued).

Subscales	*N*	Mean (SD)	Min / Max	Range	Skewness	Kurtosis	α
General Social							
Mistreatment	248	1.82 (0.63)	1.00 / 4.00	1-4	0.84	0.29	0.77
Romantic Problems	248	2.00 (0.79)	1.00 / 4.00	1-4	0.64	-0.24	0.64[b]
Time Pressure	248	2.50 (0.67)	1.00 / 4.00	1-4	-0.11	-0.73	0.79

Note: [a] Measure exceeds the critical value of 1.0, suggesting some degree of non-normality. [b]Alpha-level is below the established standard of 0.70, suggesting some degree of scale unreliability.

International Personality Item Pool. Descriptive statistics, internal consistencies, and univariate normality parameters for the various subscales are presented in Table 8. In general, subscale scores showed high levels of internal consistency, were normally distributed, and were significantly different from scores reported in other college populations. Scores on the *Agreeableness* subscale had good internal consistency and normal levels of skewness, but were somewhat leptokurtotic. Scores were significantly lower than scores reported in other college populations (Dahlen & White, 2006; $t(249)=-6.10$, $p < .001$), and some degree of range restriction was evident, as the lowest and highest score in the sample (32 and 99, respectively) were somewhat discrepant from the subscale minimum of 20 and subscale maximum of 100. Scores on the *Conscientiousness* subscale had excellent internal consistency and were normally distributed. Scores were significantly higher than scores reported in other college populations (Dahlen & White, 2006; $t(249)=5.33$, $p < .001$) and some degree of range restriction was evident, as the lowest score in the sample (30) were somewhat higher than the subscale minimum of 20. Scores on the *Extraversion* subscale had good internal consistency and were normally distributed. Scores were significantly higher than scores reported in other college populations (Dahlen & White, 2006; $t(249)=8.77$, $p < .001$) and some degree of range restriction was evident, as the lowest and highest score in the sample (35 and 99, respectively) were somewhat discrepant from the subscale minimum of 20 and subscale maximum of 100. Scores on the *Neuroticism* subscale had excellent internal consistency and were normally distributed. Scores were significantly lower than scores reported in other college populations (Dahlen & White, 2006; $t(248)=-14.98$, $p < .001$), and some degree of range restriction was evident, as the lowest and highest score in the sample (24

and 85, respectively) were somewhat discrepant from the subscale minimum of 20 and subscale maximum of 100. Lastly, scores on the *Openness* subscale had good internal consistency and were normally distributed. Scores were significantly lower than scores reported in other college populations (Dahlen & White, 2006; $t(248)=-3.58$, $p < .001$), and some degree of range restriction was evident, as the lowest and highest score in the sample (33 and 97, respectively) were somewhat discrepant from the subscale minimum of 20 and subscale maximum of 100.

Inventory of College Students' Recent Life Experiences. Descriptive statistics, internal consistencies, and univariate normality parameters for the various subscales are presented in Table 8. In general, subscale scores showed adequate to good internal consistency, were mostly normally distributed, and were usually not significantly different from scores reported in other college populations. Scores on the *Total Recent Life Stress* scale had excellent internal consistency, were normally distributed, and were significantly lower than scores reported in other college populations (Osman, Barrios, Longnecker, & Osman, 1994; $t(247)=-3.88$, $p < .001$). Some degree of range restriction was evident, as the lowest and highest score in the sample (1.12 and 3.16, respectively) were somewhat discrepant from the scale minimum of 1 and scale maximum of 4. Scores on the *Academic Alienation* subscale had good internal consistency, were normally distributed, and were not significantly different from scores reported in other college populations (Osman, Barrios, Longnecker, & Osman, 1994; $t(247)=0.16$, $p = .87$); no range restriction was evident. Scores on the *Assorted Annoyances* subscale had barely adequate internal consistency, were quite positively skewed, and highly leptokurtotic. Scores were significantly lower than scores reported in other college populations (Osman,

Barrios, Longnecker, & Osman, 1994; $t(247)=-3.28$, $p < .001$). Some degree of range restriction was evident, as the highest score in the sample (3.60) was somewhat lower than the scale maximum of 4. This range restriction, in conjunction with the sizable deviations from normality, is suggestive of a floor effect on this variable wherein persons in this sample may be less likely to report assorted annoyances as being problematic and stressful in their lives. Scores on the *Developmental Challenge* subscale had good internal consistency, were normally distributed, and were not significantly different from scores reported in other college populations (Osman, Barrios, Longnecker, & Osman, 1994; $t(247)=-1.77$, $p = .08$). Only a slight degree of range restriction was evident, as the highest score in the sample (3.90) was slightly lower than the scale maximum of 4. Scores on the *Friendship Problems* subscale had good internal consistency and were normally distributed, but were significantly higher than scores reported in other college populations (Osman, Barrios, Longnecker, & Osman, 1994; $t(247)=2.93$, $p < .01$); no range restriction was evident. Scores on the *General Social Mistreatment* subscale had good internal consistency, were normally distributed, and were not significantly different from scores reported in other college populations (Osman, Barrios, Longnecker, & Osman, 1994; $t(247)=-1.01$, $p = .32$); no range restriction was evident. Scores on the *Romantic Problems* subscale had adequate internal consistency, were normally distributed, and were not significantly different from scores reported in other college populations (Osman, Barrios, Longnecker, & Osman, 1994; $t(247)=0.08$, $p = .94$); no range restriction was evident. Lastly, scores on the *Time Pressure* subscale had good internal consistency, were normally distributed, and were not significantly different from

scores reported in other college populations (Osman, Barrios, Longnecker, & Osman, 1994; $t(247)=1.66$, $p = .10$); no range restriction was evident.

National College Health Risk Behavior Survey. The frequency and percentages of endorsement of various health risk behaviors, as well as the frequency of endorsing a certain number of risky behavior groups are presented in Table 9[5].

Although not all behaviors measured by the National College Health Risk Behavior Survey have published normative values (Douglas & Collins, 1997), two-thirds of the behaviors utilized in this study had normative values available (12 out of 18 behaviors). Percentages of endorsement of health risk behaviors were not significantly different for marijuana use ($z=0.18$, $p=.85$), cocaine use ($z=0.36$, $p=.72$), intercourse without condom use ($z=0.86$, $p=.39$), and driving without wearing a seatbelt ($z=1.88$, $p=.06$) in comparison to other four-year college samples (Douglas & Collins, 1997). Rates of drunk driving ($z=5.35$, $p < .001$), engaging in physical fights after childhood ($z=8.98$, $p < .001$), carrying a weapon outside of work obligations ($z=2.37$, $p < .05$), and vomiting after eating or taking laxatives to lose weight or prevent weight gain ($z=7.63$, $p < .001$) were significantly higher than those reported for other four-year college samples (Douglas & Collins, 1997), whereas rates of binge drinking in the last 30 days ($z=3.03$, $p < .01$), having more than six lifetime sexual partners ($z=2.73$, $p < .01$), not wearing a helmet while riding a motorcycle ($z=8.59$, $p < .001$), and a lifetime history of smoking regularly ($z=3.79$, $p < .001$) were significantly lower than those reported for other four-year college samples (Douglas & Collin, 1997).

[5] As the National College Health Risk Behavior Survey only produces frequency counts of behaviors, not subscales, internal consistencies and univariate normality parameters are not presented.

Table 9.

Frequencies and percentages of membership in various risky behavior subgroups, as reported on the National College Health Risk Behavior Survey.

Risky Behavior Groups	Frequency	%	# of Risky Behaviors Endorsed[f]	Min / Max	Mean (SD)
Alcohol-Related Risk-Taking[a]	142	56.8	Number of Types	0 / 6	2.50 (1.69)
Drunk driving[a]	114	45.8		Frequency	%
Binge drinking in the past 30 days[a]	78	31.3	No risky behavior endorsed	35	14.0
Age of drinking onset before high school	60	24.0	One risky behavior	47	18.8
Illegal Substance Use[a]	119	47.6	Two risky behaviors	44	17.6
Marijuana use[a]	115	46.2	Three risky behaviors	53	21.2
Other illegal drugs (including heroin and	30	12.0	Four risky behaviors	36	14.4
hallucinogens)			Five risky behaviors	24	9.6
Cocaine use	27	10.8	All six risky behaviors	11	4.4

Table 9 (Continued).

Risky Behavior Groups	Frequency	%
Inhalants	14	5.6
Unprescribed steroid use	1	0.4
Sexual Risk-Taking[b]	118	47.2
Did not use condoms during intercourse in the past 30 days[c]	96	39.0
More than six sexual partners[b]	54	22.1
Safety Risk-Taking[a]	114	45.6
Engaging in physical fights (after childhood)[a]	72	28.9
Not wearing a seatbelt while driving	47	18.8
Carrying a weapon (outside of work obligations)[a]	29	11.6
Not wearing a helmet on a motorcycle	12	4.8

Table 9 (Continued).

Risky Behavior Groups	Frequency	%
Smoking-Related Risk-Taking	103	41.2
Smoked before age 18	99	39.6
Smoked regularly	38	15.2
Disordered Eating Behavior[d]	28	11.2
Dieting while underweight[d]	4	1.7
Vomited after eating or taken laxatives to lose weight / prevent weight gain[e]	26	10.6

Note: *N*=250. Group membership frequency totals do not equal the sum of the frequencies for their constituent questions because members of the group may have endorsed more than one question. [a] *N*=249. [b] *N*=244. [c] *N*=246. [d] *N*=234. [e] *N*=245. [f] These analyses did not include self-harm behavior as a risky behavior group, as descriptives of membership in self-harm groups have been presented elsewhere.

Originally, the inclusion of this measure was for the purpose of including a "risky behavior" comparison group to elucidate whether affect dysregulation was a specific predictor of self-harm behavior or merely a harbinger of negative outcomes more generally. The initial conception was that a participant endorsing any of the 18 risky behaviors (see Table 9) would be considered a member of the risky behavior group. However, upon completing descriptive statistics, it was determined that 86% of the sample would be classified into the risky behavior group (83.3% of persons without a history of self-harm and 90.7% of persons with a history of self-harm). Of those persons with a history of self-harm, only 10 participants (4% of the total sample and 9.25% of the persons with a history of self-harm) were not included in the risky behavior group, and of the persons without a history of self-harm, only 19 participants (7.6% of the total sample) were not included in the risky behavior group. With such small group sizes, many of the statistical analyses proposed would be underpowered; as such, the decision was made to make multiple risk groups, based on specific type of risk, so that cell sizes would not be so unbalanced.

Six risky behavior groups were created, based on the six major types of risks discussed on the National College Health Risk Behavior Survey. On average, participants endorsed between two and three different risky behaviors (M=2.50, SD=1.69), with 18.8% of the sample endorsing one risky behavior, 17.6% of the sample endorsing two risky behaviors, 21.2% of the sample endorsing three risky behaviors, and 28.4% of the sample endorsing four or more risky behaviors (see Table 9 for greater detail). One hundred forty two participants (56.8% of the total sample) were classified into the *alcohol-related risk group* (ALC), which was composed of persons who had a lifetime

history of driving while intoxicated, had binge-drank in the past 30 days, or had begun drinking before high school. One hundred nineteen participants (47.6% of the total sample) were classified into the *illegal substance use group* (SUB), which was composed of persons who had a lifetime history of taking illegal substances, including marijuana, cocaine, heroin, inhalants, stimulants, hallucinogens, steroids, or other illegal substances. One hundred eighteen participants (47.2% of the total sample) were classified into the *sexual risk-taking group* (SEX), which was composed of persons who had more than six sexual partners in their lifetime or had not used condoms during sexual intercourse in the last 30 days. One hundred fourteen participants (45.6% of the total sample) were classified into the *safety risk-taking group* (SAFE), which was composed of persons who did not wear a seatbelt while driving, did not wear a helmet while riding a motorcycle, carried a weapon (outside of law enforcement or military work obligations), or got into physical altercations after childhood. One hundred and three participants (41.2% of the total sample) were classified into the *smoking-related risk-taking group* (SMOKE), which was composed of persons who had ever smoked regularly or who had begun smoking before the legal age of 18. Lastly, twenty-eight participants (11.2% of the total sample) were classified into the *disordered eating risk group* (ED), which was composed of persons who were trying to lose weight despite being significantly underweight or who had purged after eating either by vomiting or misusing laxatives.

Significant correlations existed both between the risky behavior groups themselves and between risky behavior groups and the history of self-harm behavior group, suggesting significant overlap between maladaptive behaviors. Specifically, small to moderate associations were found between self-harm behavior and sexual risk-taking

(r=.24, p < .001), illegal substance use (r=.27, p < .001), safety risk-taking (r=.20, p < .01), and smoking-related risk-taking (r=.26, p < .001); sexual risk-taking and all risk categories except safety risk-taking; disordered eating behavior and sexual risk-taking (r=.25, p < .001), illegal substance use (r=.17, p < .01), alcohol-related risk-taking (r=.16, p < .05), and smoking-related risk-taking (r=.25, p < .001); illegal substance use and all other risk-categories; alcohol-related risk-taking and sexual risk-taking (r=.27, p < .001), disordered eating behavior (r=.16, p < .05), illegal substance use (r=.41, p < .001), and smoking-related risk-taking (r=.32, p < .001); safety risk-taking and self-harm behavior (r=.20, p < .01), illegal substance use (r=.19, p < .01), and smoking-related risk-taking (r=.17, p < .01); and lastly, smoking-related risk-taking and all other risk categories (see Table 10 for further details).

Table 10.

Intercorrelations of risky behavior group membership and a history of self-harm behavior.

	1	2	3	4	5	6	7
1. History of Self-Harm Behavior	1.00						
2. Sexual Risk-Taking	0.24***	1.00					
3. Disordered Eating Behavior	0.13	0.25***	1.00				
4. Illegal Substance Use	0.27***	0.39***	0.17**	1.00			
5. Alcohol-Related Risk-Taking	0.11	0.27***	0.16*	0.41***	1.00		
6. Safety Risk-Taking	0.20**	0.08	0.11	0.19**	0.09	1.00	
7. Smoking-Related Risk-Taking	0.26***	0.20**	0.25***	0.52***	0.32***	0.17**	1.00

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

Analysis Plan

Throughout the results section, omnibus tests (multivariate analysis of variance or covariance) were conducted first, and if these tests were significant, the appropriate univariate statistics (i.e., univariate analysis of variance or covariance, utilizing a modified Bonferroni correction) were employed to detect between group differences on each individual variable. Wherever *F*-values were significant and there were more than two groups, Tukey tests (for homogeneous variances) or Dunnett's C (for heterogeneous variances) for post-hoc comparisons utilizing a modified Bonferroni correction were conducted. The use of this nested scheme of MANOVAs/MANCOVAs, ANOVAs/ANCOVAs, and post-hoc tests reduces the chance of type I error, while still maintaining adequate power to observe group differences.

Assumptions of MANOVA/MANCOVA and ANOVA/ANCOVA (i.e., normality, homoscedasticity) were checked for each analysis and the results of this assumption checking were presented in the descriptive statistics section; however, it should be reiterated that violations to these assumptions are not critical, as MANOVA is very robust to such violations at this sample size (Bryant & Yarnold, 1995; Garson, 2007). The assumption of homogeneity of variance was addressed by the use of appropriate follow-up tests – if variances were heterogeneous, the Dunnett's C statistic was used post-hoc as opposed to the Tukey statistic for homogeneous variances. Lastly, as some scales were found to have low internal consistency, it should be stated that analyses to determine differences on those specific subscales may have an increased likelihood of type II error (i.e., inability to reject the null hypothesis when it is, in fact,

supposed to be rejected). As such, the significant differences presented in the subsequent analyses may be a conservative estimate of some effects.

Preliminary Analyses

Of the two-hundred fifty undergraduates participating in the study, 108 persons (46.8% of the total sample) had engaged in self-harm behavior at some point in their lives; ninety-one of these persons had a history of non-suicidal self-injury only (36.4% of the total sample and 84.3% of persons with a history of self-harm behavior), five had a history of suicide attempts without non-suicidal self-injury (2.0% of the total sample and 4.6% of persons with a history of self-harm behavior), 12 had a history of both non-suicidal self-injury and suicide attempts (4.8% of the total sample and 11.1% of persons with a history of self-harm behavior), 13 had a history of suicidal ideation without self-harm behavior (5.2% of the total sample and 12.3% of persons with a history of self-harm behavior), and 117 had no history of self-harm behavior or ideation (46.8% of the total sample). Descriptive statistics relating to self-harm behavior, both for the average and the most severe episode, are presented in Table 11.

Table 11.

Means and standard deviations for the number of episodes, age of onset, duration (in years), time since last episode (in years), and number of different types of self-harm endorsed, and frequencies and percentages of repetitive, medically-serious, or recent episodes, summarized across self-harm behaviors.

	Average Episode		Most Severe Episode	
	Min / Max	Mean (SD)	Min / Max	Mean (SD)
Number of episodes	1.00 / 334.00	11.75 (36.21)[a]	1.00 / 1000.00	21.49 (100.02)[c]
Age of onset[a]	6.00 / 33.00	14.67 (3.39)	5.00 / 33.00	13.86 (3.96)
Duration	0.00 / 16.00	2.54 (2.78)[b]	0.00 / 21.00	3.64 (3.95)[c]
Time since last episode[b]	0.00 / 22.50	3.61 (3.46)	0.00 / 21.00	3.09 (3.68)
Number of different types [d]	0.00 / 10.00	1.95 (1.83)	-	-
	Frequency	%		
Repetitive[c]	79	78.2		
Medically-serious[d]	9	8.3		
Recent (within 1 year)[d]	47	43.5		

Note: The most severe episode was determined by the self-harm behavior that was most repetitive, had the youngest age of onset, the longest duration, or was most recent, depending on the variable of interest. [a] *n*=96. [b] *n*=95. [c] *n*=101. [d] *n*=108.

Once self-harm group membership was determined, preliminary analyses, including multivariate analyses of variance (MANOVAs) and follow-up univariate analyses of variance (ANOVAs) with modified Bonferroni corrections, were conducted to detect differences between those participants with and without a history of self-harm behavior on all demographic variables and subscale scores. Results of these analyses are

presented in Tables 12-15. Some significant differences were evident on demographic factors, as well as measures of affect regulation, psychological and personality traits, current stress levels, and propensity to engage in risky behaviors; however, differences between those with and without a history of self-harm behavior on measures of affect regulation, psychological, and personality traits will be discussed further relating to specific hypotheses, while significant differences relating to demographics, current stress levels, and risky behavior group membership will be noted here, as no specific hypotheses regarding these constructs were proposed.

Demographics. A multivariate analysis of variance showed no significant differences on demographic factors between those members of the sample with and without a history of self-harm, $F(7,199) = 1.77$, $p = .10$. Univariate analysis of variance with a modified Bonferroni correction only revealed one demographic difference – persons with a history of self-harm behavior were significantly more likely to be of a sexual-orientation minority (i.e., homosexual or bisexual) than those persons without a history of self-harm behavior, $F(1,223) = 9.61$, $p < .01$ (See Table 12 for further details on demographics of persons with and without a history of self-harm behavior).

Current stress levels. A multivariate analysis of variance showed that significant differences existed on current stress levels between those members of the sample with and without a history of self-harm, $F(8,214) = 2.34$, $p < .01$; follow-up univariate analysis of variance with a modified Bonferroni correction showed that the only significant difference was that persons with a history of self-harm behavior endorsed significantly higher levels of general social mistreatment than those persons without a history of self-

Table 12.

Demographic differences between participants with and without a history of self-harm.

Variables	History of Self-Harm Behavior		No History of Self-Harm Behavior		*F*	*p*	η_p^2
	Mean (SD)		Mean (SD)		(*df* = 1, 223)		
Age	20.92 (3.63)		21.16 (4.24)		0.22[a]	.64	.00
	Frequency	%	Frequency	%			
Gender					2.04	.16	.01
Male	31	28.7	24	20.5			
Female	77	71.3	93	79.5			

Table 12 (Continued).

Variables	History of Self-Harm Behavior		No History of Self-Harm Behavior		F	p	η_p^2
	Frequency	%	Frequency	%	(df = 1, 223)		
Year in School					0.00	.97	.00
Freshman	26	24.1	30	25.6			
Sophomore	29	26.9	30	25.6			
Junior	26	24.1	25	21.4			
Senior	18	16.7	22	18.8			
More than four years	9	8.3	10	8.5			
Ethnicity					0.69[b]	.41	.00
Hispanic or Latino/a	19	18.8	16	14.5			
Not Hispanic or Latino/a	82	81.2	94	85.5			

Table 12 (Continued).

Variables	History of Self-Harm Behavior		No History of Self-Harm Behavior		*F*	*p*	η_p^2
	Frequency	%	Frequency	%	(*df* = 1, 223)		
Race					2.29[c]	.13	.01
Caucasian	67	63.8	64	54.7			
Black or African-American	17	16.2	26	22.2			
Asian	2	1.9	6	5.1			
Native Hawaiian or Pacific Islander	1	1.0	1	0.9			
More than one race	9	8.6	7	6			
Other	9	8.6	13	11.1			

Table 12 (Continued).

Variables	History of Self-Harm Behavior		No History of Self-Harm Behavior		F	p	η_p^2
	Frequency	%	Frequency	%	(df = 1, 223)		
Sexual Orientation					9.61	.002*	.03
Attracted to the opposite sex	94	87.0	114	97.4			
Attracted to the same sex	10	9.3	3	2.6			
Attracted to both sexes	4	3.7	0	0.0			

Table 12 (Continued).

Variables	History of Self-Harm Behavior		No History of Self-Harm Behavior		F	p	η_p^2
	Frequency	%	Frequency	%	(df = 1, 223)		
Living Situation					1.34[a]	.25	.00
Live with parents or family	25	23.4	19	16.2			
Live alone, on campus	4	3.7	2	1.7			
Live alone, off campus	11	10.3	13	11.1			
Live with roommates, on campus	23	21.5	36	30.8			
Live with roommates, off campus	43	40.2	46	39.3			
Other	1	0.9	1	0.9			

Note: N=249; n_{SHB}=98; $n_{NO\text{-}SHB}$=98, unless otherwise specified. No significant between group differences exist unless specified by an asterisk; items denoted by an asterisk passed a modified Bonferroni criteria by which type I error was controlled for multiple tests. [a]df=1,222. [b]df=1,209. [c]df=1,220.

Table 13.

Significant differences between participants with and without a history of self-harm behavior on measures of psychological and personality traits and current stress levels.

Subscales	History of Self-Harm Behavior	No History of Self-Harm Behavior	*F* (*df*=1,222)	*p*	η_p^2
State-Trait Personality Inventory (STPI)					
Trait-level Anger	1.99 (0.59)[a]	1.70 (0.48)	15.82[b]	.001*	.07
Trait-level Anxiety	2.06 (0.63)[a]	1.69 (0.48)	23.34[b]	.001*	.10
Trait-level Depression	1.90 (0.62)[a]	1.56 (0.49)	21.43[b]	.001*	.09
International Personality Item Pool (IPIP-NEOAC)					
Agreeableness	74.04 (11.62)	77.01 (10.07)	4.20	.04	.02
Conscientiousness	75.03 (13.09)	78.91 (11.88)	5.43	.02	.02
Extraversion	74.05 (12.16)	72.09 (10.79)	1.62	.20	.01
Neuroticism	54.33 (14.06)	45.03 (11.73)	29.09	.001*	.12
Openness	72.26 (12.33)	71.28 (10.10)	0.43	.52	.00

Table 13 (Continued).

Subscales	History of Self-Harm Behavior	No History of Self-Harm Behavior	*F* (*df*=1,222)	*p*	η_p^2
Inventory of College Students' Recent Life Events (ICSRLE)					
Total Recent Life Stress	2.02 (0.39)	1.90 (0.39)	5.20	.02	.02
Academic Alienation	2.07 (0.79)	1.94 (0.80)	1.39	.24	.01
Assorted Annoyances	1.58 (0.49)	1.46 (0.45)	3.83	.05	.02
Developmental Challenge	2.32 (0.57)	2.22 (0.59)	1.68	.20	.01
Friendship Problems	1.93 (0.85)	1.85 (0.79)	0.50	.48	.00
General Social Mistreatment	1.91 (0.62)	1.66 (0.53)	10.3	.002*	.05
Romantic Problems	2.14 (0.83)	1.87 (0.69)	7.14	.008	.03
Time Pressure	2.54 (0.67)	2.44 (0.67)	1.20	.27	.01

Note: N=248; n_{SHB}=107; $n_{NO\text{-}SHB}$=117, unless otherwise specified. No significant between group differences exist unless specified by an asterisk; items denoted by an asterisk passed a modified Bonferroni criteria by which type I error was controlled for multiple tests. [a]n=108. [b]df=1,223.

Table 14.

Significant differences between participants with and without a history of self-harm behavior on endorsement of risky behaviors.

Subscales	History of Self-Harm Behavior		No History of Self-Harm Behavior		*F* (*df*=1,205)	*p*	η_p^2
	Frequency	%	Frequency	%			
Alcohol-Related Risk-Taking	69	63.9	61	52.6[a]	2.51	.12	.01
Illegal Substance Use	65	60.7[b]	40	34.2	14.18	.001*	.07
Sexual Risk-Taking	63	58.9[b]	40	35.1[c]	11.98	.001*	.06
Safety Risk-Taking	60	55.6	41	35.3[a]	9.00	.003*	.04
Smoking-Related Risk-Taking	60	55.6	35	29.9	16.40	.001*	.07
Disordered Eating Behavior	17	17[d]	9	8.2[e]	3.70	.06	.02

Note: N=248; n_{SHB}=108; $n_{NO\text{-}SHB}$=117, unless otherwise specified. No significant between group differences exist unless specified by an asterisk; those items denoted by an asterisk passed a modified Bonferroni criteria by which type I error was controlled for multiple tests. [a]n=116. [b]n=107. [c]n=114. [d]n=100. [e]n=110.

Table 15.

Significant differences between participants with and without a history of self-harm behavior on measures of affect regulation.

Subscales	History of Self-Harm Behavior	No History of Self-Harm Behavior	*F* (*df*=1,222)	*p*	η_p^2
Difficulties in Emotion Regulation Scale (DERS)					
Difficulties Engaging in Goal-Directed Behavior	2.91 (0.90)	2.67 (0.86)	4.49	.04	.02
Impulse Control Difficulties	1.87 (0.82)[a]	1.45 (0.40)	25.05[b]	.001*	.10
Nonacceptance of Emotional Responses	2.01 (0.87)	1.77 (0.65)	5.71	.02	.03
Lack of Emotional Awareness	2.14 (0.62)[a]	2.08 (0.63)	0.39[b]	.53	.00
Lack of Emotional Clarity	2.08 (0.65)[a]	1.92 (0.60)	3.55[b]	.06	.02
Limited Access to Emotion Regulation Strategies	2.05 (0.76)	1.68 (0.61)	15.74	.001*	.07

Table 15 (Continued).

Subscales	History of Self-Harm Behavior	No History of Self-Harm Behavior	*F* (*df*=1,222)	*p*	η_p^2
Emotional Processing Scale (EPS)					
Avoidance	4.33 (1.40)	3.97 (1.43)	3.60	.06	.02
Impoverished Emotional Experience	2.97 (1.49)	2.35 (1.28)	11.27***	.001*	.05
Suppression	3.87 (1.84)[a]	3.44 (1.64)	3.34[b]	.07	.01
Unprocessed Emotion	3.99 (1.75)	3.35 (1.57)	8.21	.005*	.04
Unregulated Emotion	3.84 (1.68)	2.83 (1.30)	25.15	.001*	.10

Table 15 (Continued).

Subscales	History of Self-Harm Behavior	No History of Self-Harm Behavior	*F* (*df*=1,222)	*p*	η_p^2
Coping Orientation for Problem Experiences (COPE)					
Adaptive Emotion-Focused Coping	13.40 (2.53)	13.52 (2.38)	0.15	.70	.00
Acceptance	2.77 (0.69)	2.80 (0.65)	0.10	.75	.00
Humor	2.34 (0.99)	2.18 (0.83)	1.84	.18	.01
Positive Reinterpretation and Growth	3.16 (0.62)	3.18 (0.56)	0.09	.77	.00
Religious Coping	2.25 (1.19)	2.57 (1.20)	3.98	.05	.02
Use of Emotional Social Support	2.87 (0.89)	2.79 (0.92)	0.43	.52	.00
Maladaptive Emotion-Focused Coping	9.57 (1.63)	9.02 (1.63)	6.36	.01	.03
Behavioral Disengagement	1.51 (0.48)	1.49 (0.54)	0.06	.81	.00
Denial	1.34 (0.48)	1.32 (0.46)	0.11	.75	.00
Focus on and Venting of Emotions	2.63 (0.75)	2.45 (0.71)	3.48	.06	.02
Mental Disengagement	2.58 (0.56)	2.62 (0.51)	0.24	.63	.00

Table 15 (Continued).

Subscales	History of Self-Harm Behavior	No History of Self-Harm Behavior	*F* (*df*=1,222)	*p*	η_p^2
Substance Use	1.50 (0.74)	1.14 (0.38)	21.67	.001*	.09
Problem-Focused Coping Scale	13.38 (2.13)	13.22 (2.30)	0.28	.60	.00
Active Coping	2.79 (0.62)	2.84 (0.61)	0.36	.55	.00
Planning	2.92 (0.66)	3.01 (0.68)	1.01	.32	.01
Restraint	2.38 (0.66)	2.41 (0.62)	0.12	.73	.00
Suppression of Competing Activities	2.38 (0.55)	2.18 (0.53)	7.17	.01	.03
Use of Instrumental Social Support	2.91 (0.78)	2.78 (0.80)	1.54	.22	.01

Note: N=249; n_{SHB}=107; $n_{NO\text{-}SHB}$=117, unless otherwise specified. No significant between group differences exist unless specified by an asterisk; those items denoted by an asterisk passed a modified Bonferroni criteria by which type I error was controlled for multiple tests. [a] n=108. [b] df=1,223.

harm behavior, $F(1,221) = 10.30$, $p < .01$ (see Table 13 for further details on current stress levels of persons with and without a history of self-harm behavior).

Risky behavior group membership. A multivariate analysis of variance showed that significant differences existed on endorsement of risky behaviors between those members of the sample with and without a history of self-harm, $F(6,200) = 5.35$, $p <.001$; follow-up univariate analysis of variance with a modified Bonferroni correction revealed that persons with a history of self-harm behavior were significantly more likely to be members of the illegal substance use ($F(1,222) = 16.88$, $p < .001$), smoking-related risk-taking ($F(1,223) = 16.08$, $p < .001$), sexual risk-taking ($F(1,219) = 13.19$, $p < .001$), and safety risk-taking ($F(1,222) = 9.54$, $p < .01$) groups than those persons without a history of self-harm behavior (see Table 14 for further details on of risky behaviors in persons with and without a history of self-harm behavior).

Hypothesis Testing

Hypothesis 1: Persons engaging in self-harm will demonstrate higher levels of maladaptive emotion regulation, such as suppression of emotions, avoidance, nonacceptance of emotional responses, and lack of emotional awareness and clarity, than those who do not engage in self-harm. A multivariate analysis of variance showed that significant differences existed between those members of the sample with and without a history of self-harm on emotion regulation strategies, $F(11,212) = 3.29$, $p < .001$. Follow-up univariate analysis of variance tests showed that persons with a history of self-harm behavior had significantly greater difficulties with impulse control ($F(1,248) = 25.05$, $p < .001$), limited access to emotion regulation strategies ($F(1,248) = 15.74$, $p < .001$), impoverished emotional experience ($F(1,248) = 11.27$, $p < .001$), and unprocessed

and unregulated emotion ($F(1,248) = 8.21$, $p < .01$ and $F(1,248) = 25.15$, $p < .001$, respectively); there were no significant differences on other measures of maladaptive emotion regulation (e.g., avoidance, suppression, lack of emotional awareness or clarity, nonacceptance of emotions, difficulties engaging in goal-directed behavior, etc.; see Table 15). Therefore, hypothesis 1 was partially supported with small to medium effects.

Hypotheses 2, 3, and 4: Persons who engage in self-harm will demonstrate higher levels of maladaptive emotion-focused coping strategies, such as denial, disengagement, venting of emotions, and the use of substances (H2), reduced levels of adaptive emotion-focused coping, such as seeking social support, engaging in positive reappraisal or acceptance, or religious-based coping (H3), and reduced levels of adaptive problem-solving coping strategies, such as goal-directed behavior, planning, or suppression of competing activities (H4), than those who do not engage in self-harm. A multivariate analysis of variance showed that significant differences existed between those members of the sample with and without a history of self-harm on coping strategies, $F(15,208) = 3.09$, $p < .001$, $\eta_p^2 = .18$. Follow-up univariate analysis of variance tests showed that persons with a history of self-harm behavior had significantly greater utilization of substance use as a coping strategy ($F(1,248) = 21.67$, $p < .001$); there were no other significant group differences on maladaptive emotion-focused coping strategies (e.g., behavioral and mental disengagement, denial, focus on and venting of emotions, etc.; see Table 15). Therefore, hypothesis 2 was only partially supported, with medium effects for substance use. Hypotheses 3 and 4 were not supported, as there were no significant group differences on any measures of adaptive emotion-focused coping (e.g., acceptance, humor, positive reinterpretation and growth, religious coping, or use of emotional social

support; see Table 15) or problem-solving coping strategies (e.g., suppression of competing activities, active coping, planning, restraint, or use of instrumental social support; see Table 15).

Hypothesis 5: Persons who engage in self-harm will demonstrate higher neuroticism and lower extraversion, openness, agreeableness, and conscientiousness than those who do not engage in self-harm; however, these associations will not account for all of the differences in emotion regulation and coping strategies detected between groups. A multivariate analysis of variance showed that significant differences existed between those members of the sample with and without a history of self-harm on measures of personality, $F(5,218) = 7.77$, $p < .001$. Follow-up univariate analysis of variance tests showed that persons with a history of self-harm behavior had significantly higher levels of neuroticism ($F(1,222) = 29.09$, $p < .001$); there were no other significant group differences on personality variables (e.g., extraversion, agreeableness, conscientiousness, or openness; See Table 13).

However, despite the significant differences between those with and without a history of self-harm on neuroticism, an additional multivariate analysis of covariance showed that significant differences still remained on emotion regulation and coping strategies between those members of the sample with and without a history of self-harm, even after controlling for significant personality characteristic differences, $F(26, 196) = 2.20$, $p < .001$. Follow-up univariate analysis of covariance with a modified Bonferroni correction showed that differences between groups in substance use as a coping strategy remained significant even after accounting for the influence of neuroticism, $F(1,221)=12.86$, $p < .001$. The use of humor as a coping strategy also showed significant

differences between groups after accounting for the influence of neuroticism ($F(1,221)=11.12$, $p < .001$), whereas the difference had previously been insignificant before neuroticism was controlled. No other significant differences were present, possibly due to the large number of tests making the modified Bonferroni correction highly conservative. Significant differences between persons with and without a history of self-harm disappeared for limited access to emotion regulation strategies, unregulated emotion, impulse control difficulties, signs of unprocessed emotion, and impoverished emotional experience after controlling for levels of neuroticism, suggesting that these variables may be more related to neuroticism than a history of self-harm, per se. Therefore, hypothesis 5 was partially supported with a medium to large effect size for neuroticism.

Hypothesis 6: Persons who engage in self-harm will demonstrate higher trait levels of depression, anger, and anxiety than those who do not engage in self-harm; however, these associations will not account for all of the differences in emotion regulation and coping strategies detected between groups. A multivariate analysis of variance showed that significant differences existed between those members of the sample with and without a history of self-harm on measures of psychological traits, $F(3,221) = 10.19$, $p < .001$. Follow-up univariate analysis of variance tests with a modified Bonferroni correction showed that persons with a history of self-harm behavior had significantly higher levels of trait-anger ($F(1,223) = 15.82$, $p < .001$), trait-anxiety ($F(1,223) = 23.34$, $p < .001$), and trait-depression ($F(1,223) = 21.43$, $p < .001$; See Table 13).

However, despite the significant differences between those with and without a history of self-harm on psychological trait variables, an additional multivariate analysis of covariance showed that significant differences still remained on emotion regulation and coping strategies between those members of the sample with and without a history of self-harm, even after controlling for significant psychological trait differences, $F(26, 194) = 1.91$, $p < .01$. Follow-up univariate analysis of covariance with a modified Bonferroni correction showed that persons with a history of self-harm behavior continued to have significantly higher levels of substance use ($F(1,219) = 9.48$, $p < .01$. Significant differences between persons with and without a history of self-harm disappeared for unregulated emotion, impulse control difficulties, limited access to emotion regulation strategies, signs of unprocessed emotion, and impoverished emotional experience after controlling for differing levels of psychological traits, suggesting that these variables may be more related to trait levels of anxiety, anger, or depression than a history of self-harm, per se. Therefore, hypothesis 6 was partially supported with small to medium effect sizes.

Hypothesis 7. Maladaptive emotion regulation and maladaptive coping strategies will correlate directly and highly (i.e., those who are high in maladaptive emotion regulation strategies will also be most likely to be high in maladaptive coping strategies; those who are low in maladaptive emotion regulation strategies are most likely to also be low in maladaptive coping behaviors). Using factor analysis, the large number of specific emotion regulation and coping responses can be reduced to a smaller number of patterns of responding. It is likely that emotion dysregulation and maladaptive emotion-focused coping strategies will load on one factor, while adaptive problem-focused coping and adaptive emotion-focused coping will each load independently on additional factors.

Persons who engage in self-harm will demonstrate high levels of the maladaptive emotion regulation and coping factor and low levels of the adaptive factors, in comparison to those who do not engage in self-harm. Preliminary analyses for this hypothesis included exploring the intercorrelations between variables to assess for multicollinearity (see Table 16) and the testing of univariate skewness, kurtosis, and outliers to determine any non-normality of data. (Results of these analyses are presented in Table 2.) Although some deviations from normality were noted, factor analysis does not require normality unless significance testing is being conducted (which is not the case for principal-axis factor analysis), so the procedure was robust to any non-normality in the data.

Using the 26 subtest scores from the DERS, EPS, and COPE, an exploratory principal-axis factor analysis was conducted to determine the least number of factors that could account for the common (not unique) variance in this particular set of variables. In this manner, it was determined whether the 26 scores of different emotion regulation and coping strategies actually represented a smaller number of factors of strategies that typically hang together.

Table 16.

Intercorrelations of subscale scores included in the factor analysis of affect regulation measures.

Subscales	1	2	3	4	5	6	7
1. DERS: Difficulties Engaging in Goal-Directed Behavior	1.00						
2. DERS: Impulse Control Difficulties	.49***	1.00					
3. DERS: Lack of Emotional Awareness	.02	.29***	1.00				
4. DERS: Lack of Emotional Clarity	.32***	.43***	.49***	1.00			
5. DERS: Limited Access to Emotion Regulation Strategies	.52***	.63***	.22***	.44***	1.00		
6. DERS: Nonacceptance of Emotional Responses	.37***	.49***	.17**	.41***	.61***	1.00	
7. EPS: Avoidance	.27***	. 22***	-.06	.10	.24***	.24***	1.00
8. EPS: Impoverished Emotional Experience	.27***	.42***	.31***	.48***	.50***	.39***	.27***
9. EPS: Suppression	.10	.14*	.36***	.39***	.32***	.30***	.16**
10. EPS: Unprocessed Emotions	.42***	.51***	.17**	.43***	.68***	.48***	.46***
11. EPS: Unregulated Emotion	.45***	.64***	.15**	.31***	.55***	.37***	.35***
12. COPE: Acceptance	-.07	-.18**	-.08	.09	-.17**	-.01	.06
13. COPE: Active Coping	-.06	-.17**	-.41***	-.32***	.23***	-.06	.17**

Table 16 (Continued).

Subscales	1	2	3	4	5	6	7
14. COPE: Behavioral Disengagement	.29***	.33***	.20***	.36***	.40***	.36***	.17**
15. COPE: Denial	.20***	.23***	.19***	.31***	.23***	.33***	.30***
16. COPE: Focus on and Venting of Emotions	.38***	.32***	-.20***	.01	.36***	.20***	.16**
17. COPE: Humor	-.13*	-.14*	-.02	-.03	-.24***	-.04	-.02
18. COPE: Mental Disengagement	.14*	.03	-.03	.17**	.06	.12*	.19***
19. COPE: Planning	-.19***	-.25***	-.42***	-.27***	-.31***	-.15**	.03
20. COPE: Positive Interpretation and Growth	-.14*	-.22***	-.38***	-.13*	-.34***	-.06	.14*
21. COPE: Religious Coping	-.06	-.17**	-.24***	-.15**	-.23***	-.15**	.23***
22. COPE: Restraint	-.05	-.19***	-.24***	-.06	-.16**	-.04	.06
23. COPE: Substance Use	.19***	.33***	.05	.18**	.24***	.23***	.15**
24. COPE: Suppression of Competing Activities	.17**	.13*	-.20***	-.09	-.05	.08	.28***
25. COPE: Use of Emotional Social Support	.15**	.01	-.24***	-.08	-.01	.00	.06
26. COPE: Use of Instrumental Social Support	.13*	.02	-.25***	-.04	.04	.06	.15**

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

Table 16 (Continued).

Subscales	8	9	10	11	12	13	14
1. DERS: Difficulties Engaging in Goal-Directed Behavior							
2. DERS: Impulse Control Difficulties							
3. DERS: Lack of Emotional Awareness							
4. DERS: Lack of Emotional Clarity							
5. DERS: Limited Access to Emotion Regulation Strategies							
6. DERS: Nonacceptance of Emotional Responses							
7. EPS: Avoidance							
8. EPS: Impoverished Emotional Experience	1.00						
9. EPS: Suppression	.48***	1.00					
10. EPS: Unprocessed Emotions	.54***	.42***	1.00				
11. EPS: Unregulated Emotion	.45***	.27***	.62***	1.00			
12. COPE: Acceptance	-.01	.12*	.03	-.08	1.00		
13. COPE: Active Coping	-.12*	-.19***	-.07	-.10	.28***	1.00	

Table 16 (Continued).

Subscales	8	9	10	11	12	13	14
14. COPE: Behavioral Disengagement	.35***	.22***	.27***	.21***	.06	-.13*	.47***
15. COPE: Denial	.07	.31***	.35***	.40***	-.13*	.09	.10
16. COPE: Focus on and Venting of Emotions	-.02	.09	-.16**	-.16**	.32***	.23***	.05
17. COPE: Humor	.19***	.17*	.17**	.26***	.19***	.02	.21***
18. COPE: Mental Disengagement	-.16**	-.15**	-.19**	-.16**	.23***	.69***	-.30***
19. COPE: Planning	-.17**	-.16**	-.21***	-.23***	.36***	.50***	-.13*
20. COPE: Positive Interpretation and Growth	-.15**	-.25	-.05	-.10	.05	.26***	-.11*
21. COPE: Religious Coping	.04	.10	-.03	-.07	.33***	.33***	.01
22. COPE: Restraint	.19***	.09	.17**	.27***	.02	-.13*	.22***
23. COPE: Substance Use	.11*	-.02	.12*	.17**	.10	.52***	.00
24. COPE: Suppression of Competing Activities	-.15*	-.42***	.01	.10	-.01	.22***	-.02
25. COPE: Use of Emotional Social Support	-.09	-.30***	.06	.07	.07	.36***	-.08
26. COPE: Use of Instrumental Social Support	.35***	.22***	.27***	.21***	.06	-.13*	.47***

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

Table 16 (Continued).

Subscales	15	16	17	18	19	20	21
1. DERS: Difficulties Engaging in Goal-Directed Behavior							
2. DERS: Impulse Control Difficulties							
3. DERS: Lack of Emotional Awareness							
4. DERS: Lack of Emotional Clarity							
5. DERS: Limited Access to Emotion Regulation Strategies							
6. DERS: Nonacceptance of Emotional Responses							
7. EPS: Avoidance							
8. EPS: Impoverished Emotional Experience							
9. EPS: Suppression							
10. EPS: Unprocessed Emotions							
11. EPS: Unregulated Emotion							
12. COPE: Acceptance							
13. COPE: Active Coping							

Table 16 (Continued).

Subscales	15	16	17	18	19	20	21
14. COPE: Behavioral Disengagement							
15. COPE: Denial	1.00						
16. COPE: Focus on and Venting of Emotions	-.03	1.00					
17. COPE: Humor	.13*	-.33***	1.00				
18. COPE: Mental Disengagement	.24***	-.01	.18***	1.00			
19. COPE: Planning	-.16**	.02	.19***	.08	1.00		
20. COPE: Positive Interpretation and Growth	.03	-.07	.35**	.09	.53***	1.00	
21. COPE: Religious Coping	-.01	.14*	.03	.11*	.24***	.35***	1.00
22. COPE: Restraint	.04	-.06	.20***	.21***	.34***	.24***	.17**
23. COPE: Substance Use	.19**	.07	.11*	.13*	-.18**	-.06	-.18**
24. COPE: Suppression of Competing Activities	.09	.14*	.12*	.17**	.47***	.21***	.19***
25. COPE: Use of Emotional Social Support	-.01	.46***	.00	.13*	.18**	.19***	.25***
26. COPE: Use of Instrumental Social Support	.04	.34***	.11*	.13*	.32***	.31***	.28***

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

Table 16 (Continued).

Subscales	22	23	24	25	26
1. DERS: Difficulties Engaging in Goal-Directed Behavior					
2. DERS: Impulse Control Difficulties					
3. DERS: Lack of Emotional Awareness					
4. DERS: Lack of Emotional Clarity					
5. DERS: Limited Access to Emotion Regulation Strategies					
6. DERS: Nonacceptance of Emotional Responses					
7. EPS: Avoidance					
8. EPS: Impoverished Emotional Experience					
9. EPS: Suppression					
10. EPS: Unprocessed Emotions					
11. EPS: Unregulated Emotion					
12. COPE: Acceptance					
13. COPE: Active Coping					

Table 16 (Continued).

Subscales	22	23	24	25	26
14. COPE: Behavioral Disengagement					
15. COPE: Denial					
16. COPE: Focus on and Venting of Emotions					
17. COPE: Humor					
18. COPE: Mental Disengagement					
19. COPE: Planning					
20. COPE: Positive Interpretation and Growth					
21. COPE: Religious Coping					
22. COPE: Restraint	1.00				
23. COPE: Substance Use	-.07	1.00			
24. COPE: Suppression of Competing Activities	.24***	.10	1.00		
25. COPE: Use of Emotional Social Support	.03	-.01	.12*	1.00	
26. COPE: Use of Instrumental Social Support	.09	.01	.22***	.82***	1.00

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

Although principle component analysis (PCA) is the most commonly used extraction method for factor analysis in the social sciences, this procedure determines the number of factors that account for the most total variance (both unique and common) in a set of variables, and is therefore only properly used when data reduction into a typology of variables is desired (Costello & Osborne, 2005). PCA is inappropriate for situations when one hopes to reveal latent variables that cause manifest variables to covary (Costello & Osborne, 2005). Alternatively, principal-axis factor analysis (PFA) only analyzes shared variance, thereby yielding the same solution as most principle-component analyses without inflating estimates of variance accounted (Costello & Osbourne, 2005; Fabrigar, Wegener, MacCallum, & Strahan, 1999; Garson, 2007). An exploratory PFA was utilized because there were no theoretical or literature-driven conclusions as to which variables would covary, making confirmatory factor analysis inappropriate (Garson, 2007); it was hypothesized that that emotion dysregulation and maladaptive emotion-focused coping strategies would load on one factor, while adaptive problem-focused coping and adaptive emotion-focused coping would each load independently on additional factors.

The number of factors retained was determined using parallel analysis. Although the default in most statistical programs and the most common method of selection in the social sciences is to retain all factors with eigenvalues greater than 1.0 (i.e., the Kaiser criterion), there is broad consensus in the literature that this is one of the least accurate methods of factor selection (Velicer & Jackson, 1990). As an alternative to the Kaiser criterion, parallel analysis compares the scree plot of the data to a scree plot using

random data and keeps any factor that explains more than the random data (Costello & Osbourne, 2005; Fabrigar, Wegener, MacCallum, & Strahan, 1999). Parallel analysis was used because it works equally well as other methods of factor selection when data are favorable (i.e., sample size and communality are high), but is superior when data are less favorable (i.e., sample size and communality are low).

Initially, the number of factors to be retained was not specified, allowing SPSS to determine the appropriate number of factors using the default setting of the Kaiser criterion (eigenvalues > 1.0). During this step, eigenvalues and a scree plot were calculated, and these values were compared to the values generated by parallel analysis. Using the Kaiser criterion suggested six factors, examination of the scree plot suggested five-factors, and parallel analysis suggested ten factors. Since the number of factors selected by various methods differed, a series of factor analyses testing five, six, and ten factor solutions were conducted, specifying possible numbers of factors suggested by the Kaiser criterion, scree plot, and parallel analysis to determine the number of factors that was most readily interpretable. Eigenvalues, proportion of variance, and cumulative variance accounted for by different factor solutions is reported in Table 17. Once factor loadings were examined, the four-, six-, and ten-factor solutions all reduced to the same, easily-interpreted three-factor solution (i.e., all items had higher loadings on one of the first three factors than they did on the fourth through tenth factors. As items were assigned to the factor on which they loaded most highly and items always loaded most highly on one of the first three factors, the higher factors were dropped because they contained no items).

Table 17.

Eigenvalues, proportion of variance, and cumulative variance accounted for by different factor solutions suggested by the Kaiser criterion, examination of the scree plot, parallel analyses, and interpretability.

# of Factors	Eigenvalues	Proportion of Variance	Cumulative Variance
1	6.02	23.16	23.16
2	3.79	14.57	37.73
3	2.58	9.91	47.65
4	1.50	5.76	53.41
5	1.16	4.47	57.88
6	1.08	4.15	62.03
7	1.00	3.84	65.86
8	0.91	3.49	69.35
9	0.82	3.16	72.52
10	0.73	2.79	75.31

Note: Two-hundred fifty cases with 26 variables were factor analyzed. Six factors were suggested by the Kaiser criterion, five factors were suggested by examination of the scree plot, and ten factors were suggested by parallel analysis. Once factor loadings were examined, the four-, six-, and ten-factor solutions all reduced to the same, easily-interpreted three-factor solution.

Therefore, a three-factor solution was selected, and communality estimates were calculated. Communality is the sum of the loadings of a variable on all extracted factors, or the proportion of variance in that variable that can be accounted for by all extracted factors (Rietveld & Van Hout, 1993); when communality estimates are high (closer to 1.0 than to 0.0), the factor analysis is considered reliable, as the extracted factors account for a large proportion of the variable's variances. Communality estimates for this solution ranged from .23 to .75. The three factors together accounted for approximately 48% of the total variance in the original 26 items (see Table 17) and showed small intercorrelations (see Table 18), validating the choice of an oblique rotation.

Table 18.

Intercorrelations among factors.

Factors	1	2	3
Factor 1: Maladaptive affect regulation strategies	1.00		
Factor 2: Active adaptive affect regulation strategies	-0.05	1.00	
Factor 3: Passive adaptive (distress tolerance) affect regulation strategies	-0.07	0.12	1.00

The rotation method used to simplify and clarify the data structure was direct oblimin, an oblique method rather than an orthogonal method. Orthogonal methods produce factors that are uncorrelated, whereas oblique methods allow the factors to correlate. Although it is conventional for social scientists to utilize orthogonal rotations (usually varimax) to determine interpretable results, this is actually a flawed design, as some correlation between factors is to be expected in the social sciences where nearly

everything correlates to some (low-level) degree. Additionally, if factors are uncorrelated, oblique rotations will reproduce orthogonal results; the reverse is not true. As such, using orthogonal rotations results in the loss of valuable information if the factors are correlated, while oblique rotations provide more accurate and reproducible depictions of social science data (Costello & Osbourne, 2005). As all methods of oblique rotation tend to produce the same results (Febrigar et al., 1999), the default delta setting (0) for direct oblimin rotations was used. Interpretation of orthogonal and oblique methods are essentially the same, except that oblique rotations generate a factor correlation matrix (e.g., structure matrix) that reveals the correlations between factors in addition to the pattern matrix of factor loadings that is generated by orthogonal rotations. The factor structure matrix represents the correlations between the variables and the factors, whereas the factor pattern matrix represents linear combinations of the variables; these matrices are presented in Table 19.

The pattern matrix of the three-factor solution was examined to determine which items were associated with each factor (See Table 19). Twenty-five items had a pattern coefficient greater than 0.32 on at least one factor, and three items had a pattern coefficient greater than 0.32 on more than one factor. Subscale score items were selected for a factor if they had a minimum loading of .32 (Tabachnick & Fidell, 2001), which represents approximately 10% overlapping variance with the other items in that factor. No factors were kept with fewer than three items, as these factors are considered weak and unstable (Costello & Osborne, 2005; Kim & Mueller, 1978). To avoid multiple cross-loadings, cross-loading items (i.e., items that load greater than .32 on multiple factors) were assigned to the factor on which they loaded most highly. Examination of the

Table 19.

Pattern and structure coefficients of the three-factor solution to the factor analysis of affect regulation measures.

Item	Factor 1		Factor 2		Factor 3	
	P	S	P	S	P	S
Signs of unprocessed emotion	0.79*	0.79*				
Limited access to emotion regulation strategies	0.77*	0.78*				-0.33
Unregulated emotion	0.71*	0.71*				
Impulse control difficulties	0.69*	0.70*				
Impoverished emotional experiences	0.67*	0.68*				
Nonacceptance of emotional responses	0.64*	0.64*				
Lack of emotional clarity	0.58*	0.60*				
Difficulties engaging in goal-directed behavior	0.57*	0.57*				
Behavioral disengagement	0.54*	0.54*				
Denial	0.46*	0.46*				
Avoidance	0.45*	0.42*				
Substance use	0.34*	0.34*				
Use of emotional social support			0.70*	0.70*		
Focus on and venting of emotions	0.32		0.70*	0.65*		
Use of instrumental social support			0.65*	0.67*		
Suppression		0.45	0.47	-0.56*	-0.56*	
Lack of emotional awareness			-0.44*	-0.48*		

Table 19 (Continued).

Item	Factor 1		Factor 2		Factor 3	
	P	S	P	S	P	S
Religious coping				0.31*	0.35*	
Positive interpretation and growth					0.62*	0.65*
Active coping			0.40	0.47	0.61*	0.66*
Planning				0.39	0.60*	0.65*
Acceptance					0.52*	0.51*
Restraint					0.51*	0.51*
Humor					0.50*	0.48*
Suppression of competing activities				0.33	0.43*	0.45*
Mental disengagement						

Note: Mental disengagement did not load on any factor. Loadings less than 0.32 are excluded, as they are unstable. * denotes the highest loading for that item.

structure matrix supported the decisions made by the pattern matrix; each item showed a high correlation with the factor with which it was associated.

A team of persons previously unrelated to the project assigned labels to the factors, based on theory and face validity. The first factor contained twelve maladaptive affect regulation strategies (average loading of .60), the second factor contained seven active-adaptive affect regulation strategies (average loading of .56), and the third factor contained seven passive-adaptive, distress tolerance affect regulation strategies (average loading of .54). The affect regulation strategy mental disengagement did not load on any factor and was therefore removed from subsequent analyses.

Next, once the factor structure of the remaining 25 subscale scores was determined, factor scores for each participant were computed. Originally, conducting a multivariate analysis of variance was proposed to determine whether significant differences existed on the affect regulation factors between those with and without a history of self-harm behavior; however, as only very small correlations existed between the three affect regulation factors and MANOVA requires at least moderate correlations between dependent variables (e.g., in order to justify producing linear composites of variables; French, Poulsen, & Yu, 2002), group differences were examined using separate univariate analyses for each factor. Follow-up univariate analysis of variance with a modified Bonferroni correction showed that persons with a history of self-harm behavior had significantly higher scores on the first factor, maladaptive affect regulation strategies, ($F(1,223) = 20.12$, $p < .001$), but did not show any differences on active-adaptive ($F(1,223) = .55$, $p = .46$) or passive-adaptive, distress tolerance affect regulation strategies; ($F(1,223) = .13$, $p = .72$; See Table 20).

However, when the personality or psychological trait variables that differ between groups with and without a history of self-harm (e.g., neuroticism, trait-anger, trait-anxiety, and trait-depression) were statistically controlled as covariates in a series of univariate analyses of covariance utilizing a modified Bonferroni correction testing differences on the various factor scores between those with and without a history of self-harm, differences on the affect regulation factors disappeared ($F(1,218) = 0.32$, $p = .57$ for maladaptive, $F(1,218) = 0.11$, $p = .74$ for active adaptive, and $F(1,218) = 4.12$, $p = .04$ for passive adaptive, distress tolerance affect regulation strategies), suggesting that associations between personality and psychological traits and affect regulation patterns

Table 20.

Descriptive statistics for the three-factor solution to the factor analysis of affect regulation measures for the total sample and persons with and without a history of self-harm behavior.

Factors	Total Sample		SHB	NO-SHB			
	Min / Max	Mean (SD)	Mean (SD)	Mean (SD)	*F*	*p*	η_p^2
Factor 1: Maladaptive affect regulation strategies	0.95 / 5.15	2.35 (0.63)	2.53 (0.68)	2.16 (0.54)	20.12	0.001	.08
Factor 2: Active adaptive affect regulation strategies	1.37 / 4.56	3.16 (0.67)	3.11 (0.65)	3.17 (0.66)	0.55	.46	.00
Factor 3: Passive adaptive (distress tolerance) affect regulation strategies	1.04 / 3.89	2.66 (0.43)	2.68 (0.43)	2.66 (0.40)	0.13[a]	.72	.00

Note: N=250; n_{SHB}=108; $n_{NO\text{-}SHB}$=117. df=1,223. [a]df=1,222.

may be driving the associations between affect regulation and self-harm behavior. With covariates included, levels of trait-anger ($F(1,218) = 36.34$, $p < .001$), trait-anxiety ($F(1,218) = 11.20$, $p < .001$), and neuroticism ($F(1,218) = 5.71$, $p < .05$) significantly predicted the utilization of maladaptive affect regulation strategies; no personality or psychological-trait variables predicted the utilization of active-adaptive affect regulation strategies, and levels of neuroticism significantly predicted the utilization of passive-adaptive, distress tolerance affect regulation strategies ($F(1,218) = 12.64$, $p < .001$).

Therefore, hypothesis 7 was partially supported: Maladaptive emotion regulation and maladaptive coping strategies did show small-to-moderate correlations, the large number of specific emotion regulation and coping strategies was able to be reduced to a smaller number of patterns of responding using principal-axis factoring, and emotion dysregulation and maladaptive emotion-focused coping strategies all loaded on one factor, as was predicted. However, the hypothesis that adaptive problem-focused coping and adaptive emotion-focused coping would each load independently on additional factors was not supported; instead, the two remaining factors corresponded to active-adaptive and passive-adaptive, distress tolerance affect regulation strategies. Lastly, the hypothesis that persons who engage in self-harm would demonstrate high levels of the maladaptive affect regulation factor was supported; however, no significant differences were present between persons with and without a history of self-harm on active-adaptive and passive-adaptive, distress tolerance affect regulation strategies.

Hypotheses 8, 9, and 10: Persons with a history of both self-injurious behavior and suicide attempts will have the highest scores on the maladaptive affect regulation factor (H8) and the lowest scores on the adaptive problem-focused coping factor (H9), followed by those with a history of suicide attempts only, those with a history of self-injurious behavior only, and those with no such history; all self-harm groups will show similar scores on the adaptive emotion-focused coping factor (H10). As the factor analysis did not support the existence of an adaptive problem-focused coping factor or adaptive emotion-focused coping factor, this hypothesis was amended to test whether persons in different self-harm groups differed on the affect regulation strategies factors found (i.e., maladaptive affect regulation strategies, active-adaptive affect regulation strategies, and passive-adaptive, distress tolerance affect regulation strategies).

A series of univariate analyses of variance utilizing Tukey (for Factor 3, which has homogeneous variances across groups) or Dunnett's C (for Factors 1 and 2, which have heterogeneous variances across groups) post-hoc tests were conducted to detect differences existing between subtypes of self-harm (e.g., non-suicidal self-injury only, suicide attempts only, both non-suicidal self-injury and suicide attempts, suicide ideation only, and no history of self-harm-related behavior or ideation) on the affect regulation strategy factors. The only significant difference found was that persons with a history of non-suicidal self-injury had significantly higher utilization of maladaptive affect regulation strategies than persons with no history of self-harm-related behavior or ideation ($F(4, 233) = 5.86$, $p < .001$); there were no significant differences between self-harm groups in the utilization of active-adaptive ($F(4, 233) = 0.15$, $p = .96$); or passive-

adaptive, distress tolerance affect regulation strategies ($F(4, 232) = 0.73$, $p = .57$; See Table 21).

Table 21.

Descriptive statistics and group differences for affect regulation factors, as endorsed by various subgroups of persons with and without a history of self-harm.

Factors	Mean (SD)	*F*	*p*	η_p^2	Differences
Factor 1: Maladaptive affect regulation strategies					
NSSI	2.49 (0.65)	5.86	.001	.09	NSSI > Control
SA	2.54 (0.59)				
Both	2.77 (0.93)				
SIO	2.48 (0.48)				
Control	2.16 (0.54)				
Factor 2: Active adaptive affect regulation strategies					
NSSI	3.12 (0.65)	0.15	.96	.00	None
SA	3.09 (1.07)				
Both	3.06 (0.54)				
SIO	3.15 (0.87)				
Control	3.18 (0.67)				

Table 21 (Continued).

Factor 3: Passive adaptive (distress tolerance) affect regulation strategies					
NSSI	2.66 (0.45)	0.73[a]	0.57	.01	None
SA	2.70 (0.30)				
Both	2.79 (0.41)				
SIO	2.50 (0.53)				
Control	2.66 (0.40)				

Note: df=4,233. NSSI = History of non-suicidal self-injury only (n_{NSSI}=91); SA = History of suicide attempt only (n_{SA}=5); Both = History of both NSSI and SA (n_{Both}=12); SIO=History of suicide ideation only (n_{SIO}=13); Control = No history of self-harm behavior or ideation ($n_{Control}$=117). [a]*df*=4,232.

Therefore, in summary, hypotheses 8, 9, and 10 were not supported, as persons with a history of both suicide attempts and non-suicidal self-injurious behavior did not differ in their endorsement of maladaptive affect regulation strategies. Only persons with a history of non-suicidal self-injury differed significantly from those with no history of self-harm behavior, and no significant differences were evident in endorsement of adaptive affect regulation strategies.

Hypothesis 11: Scores on the maladaptive emotion regulation and coping factor, adaptive emotion-focused coping factor, and adaptive problem-focused coping factor will predict self-harm group. These scores will specifically predict self-harm group, as distinct from those who have not self-harmed but have engaged in risky behavior. As the factor analysis did not support the existence of an adaptive problem-focused coping factor or adaptive emotion-focused coping factor, this hypothesis was amended to test whether scores on the affect regulation strategies factors found (i.e., maladaptive affect regulation strategies, active-adaptive affect regulation strategies, and passive-adaptive, distress tolerance affect regulation strategies) could predict self-harm group (e.g., non-suicidal self-injury only, suicide attempts only, both non-suicidal self-injury and suicide attempts, suicide ideation only, and no history of self-harm-related behavior or ideation).

A multinomial logistical regression with factor scores as predictive of self-harm group was conducted and this regression equation fit significantly better than the null model, $\chi^2(df=2)=249.34$, $p < .001$, Nagelkerke $R^2 = .68$, meaning that the inclusion of the affect regulation factor scores results in 68% more variance accounted for than the null model. Endorsement of maladaptive affect regulation strategies was significantly associated with a history of non-suicidal self-injury, $B = .61$, Wald = 9.42, $p < .01$, $OR =$

1.83, in that a one-unit increase in endorsement of maladaptive affect regulation strategies was associated with an 83% increase in the likelihood of having a history of non-suicidal self-injury. Endorsement of active adaptive affect regulation strategies was significantly associated with a history of both suicide attempts and non-suicidal self-injury, $B = -.82$, Wald = 4.01, $p < .05$, $OR = 0.44$, in that a one-unit increase in endorsement of active adaptive affect regulation strategies was associated with a 127% increase in the likelihood of having no history of self-harm behavior or ideation. Lastly, endorsement of passive adaptive (distress tolerance) affect regulation strategies was significantly associated with a history of suicide ideation only, $B = -1.20$, Wald = 4.74, $p < .05$, $OR = 0.30$, in that a one-unit increase in endorsement of passive adaptive, distress tolerance affect regulation strategies was associated with a 233% increase in the likelihood of having no history of self-harm behavior or ideation. Beta weights, odds ratios, and p-values for all factors are reported in Table 22.

Table 22.

Summary of logistic regression analysis, predicting self-harm group from affect regulation factor scores.

Group	B (SE_B)	Wald	*p*	OR
History of non-suicidal self-injury only (NSSI)				
Factor 1: Maladaptive	.61 (.20)	9.42	.002	1.83
Factor 2: Active adaptive	-.26 (.20)	1.65	.20	0.78
Factor 3: Passive adaptive (distress tolerance)	-.31 (.26)	1.43	.23	0.73
History of suicide attempt only (SA)				
Factor 1: Maladaptive	.32 (.58)	0.30	.58	1.38
Factor 2: Active adaptive	-.63 (.61)	1.07	.30	0.53
Factor 3: Passive adaptive (distress tolerance)	-.71 (.80)	0.79	.37	0.49
History of both NSSI and SA (Both)				
Factor 1: Maladaptive	.67 (.37)	3.22	.07	1.96
Factor 2: Active adaptive	-.82 (.41)	4.01	.05	0.44
Factor 3: Passive adaptive (distress tolerance)	-.49 (.52)	0.86	.35	0.62

Table 22 (Continued).

Group	B (SE_B)	Wald	*p*	OR
History of suicide ideation only (SIO)				
Factor 1: Maladaptive	.51 (.38)	1.78	.18	1.66
Factor 2: Active adaptive	-.07 (.41)	.03	.87	0.93
Factor 3: Passive adaptive (distress tolerance)	-1.20 (.55)	4.74	.03	0.30

Note: n_{NSSI}=91; n_{SA}=5; n_{Both}=12; n_{SIO}=13; $n_{Control}$=117. Reference category is persons with no history of self-harm behavior or ideation (Control).

Results of a classification analysis are presented in Table 23. The regression equation accurately classified 54.4% of the cases; more specifically, 43.3% of those who had a history of non-suicidal self-injury only, 0% of those with a history of suicide attempt only, both non-suicidal self-injury and suicide attempt, and suicide ideation only, and 76.9% of those with no history of suicide behavior or ideation were accurately classified.

As some self-harm groups had significantly smaller sample sizes than others, all self-harm behavior categories were collapsed and a binary logistic regression was conducted with factor scores as predictive of a history of self-harm behavior. This regression equation fit significantly better than the null model, $\chi^2(df=3)=21.42$, $p < .001$, Nagelkerke $R^2 = .12$, meaning that the inclusion of the affect regulation factor scores results in 12% more variance accounted for than the null model. Endorsement of maladaptive affect regulation strategies was significantly associated with a history of self-harm behavior, $B = 1.06$, Wald = 17.76, $p < .001$, $OR = 2.91$, in that a one-unit

Table 23.

Classification analysis with predictions of self-harm group based on affect regulation factor scores.

Observed	NSSI	SA	Both	SIO	Control	%-Correct
History of non-suicidal self injury only (NSSI)	39	0	0	0	51.0	43.3
History of suicide attempt only (SA)	2	0	0	0	3.0	0
History of both NSSI and SA (Both)	5	0	0	0	7.0	0
History of suicide ideation only (SIO)	4	0	0	0	9.0	0
No history of self-harm behavior or ideation (Control)	27	0	0	0	90.0	76.9

Note: n_{NSSI}=91 (36.4%); n_{SA}=5 (2%); n_{Both}=12 (4.8%); n_{SIO}=13 (5.2%); $n_{Control}$=117 (46.8%).

increase in endorsement of maladaptive affect regulation strategies was associated with an 191% increase in the likelihood of having a history of self-harm behavior; endorsement of adaptive affect regulation strategies was not significantly associated with a history of self-harm behavior. The regression equation accurately classified 64.3% of the cases; more specifically, 70.9% of those with no history of self-harm behavior and 57.0% of those with a history of self-harm behavior were accurately classified. Beta weights, odds ratios, and p-values for all factors are reported in Table 24 and results of the classification analysis are provided in Table 25.

Table 24.

Summary of logistic regression analysis, predicting a history of self-harm behavior from affect regulation factor scores.

Group	B (SE_B)	Wald	*p*	OR
History of self-harm behavior (SHB)				
Factor 1: Maladaptive	1.07 (0.25)	17.75	.001	2.91
Factor 2: Active adaptive	-.03 (.22)	0.01	.91	0.98
Factor 3: Passive adaptive (distress tolerance)	-.43 (.35)	1.45	.23	1.53

Note: n_{SHB}=107; $n_{Control}$=117. Reference category is persons with no history of self-harm behavior.

Table 25.

Classification analysis with predictions of a history of self-harm behavior based on affect regulation factor scores.

	Predicted		
Observed	SHB	Control	%-Correct
History of self-harm behavior (SHB)	61	46	57
No history of self-harm behavior (Control)	34	83	70.9

Note: n_{SHB}=107 (42.8%); $n_{Control}$=117 (46.8%).

Lastly, multinomial regressions were conducted to test whether affect regulation factor scores could significantly predict membership in self-harm groups as opposed to persons who had never engaged in self-harm but had engaged in other risky behaviors. Beta weights, odds ratios, and p-values for all factors for these analyses are reported in Table 26 and results of the classification analyses are provided in Table 27.

The first multinomial logistic regression predicted groups with self-harm behavior only, sexual risk-taking behavior only, or both self-harm and sexual risk-taking behavior in comparison to those with no history of self-harm or sexual risk-taking, based on affect regulation factor scores. This regression equation fit significantly better than the null model, $\chi^2(df=9)=45.80$, $p < .001$, Nagelkerke $R^2 = .20$, meaning that the inclusion of the affect regulation factor scores results in 20% more variance accounted for than the null model. Endorsement of maladaptive affect regulation strategies ($B = 0.94$, Wald = 14.33, $p < .001$, $OR = 2.57$) and passive adaptive (distress tolerance) affect regulation strategies were significantly associated with a history of both self-harm and sexual risk-taking

Table 26.

Summary of logistic regression analysis, predicting endorsement of self-harm and risky behavior from affect regulation factor scores.

Group	B (SE_B)	Wald	*p*	OR
Sexual Risk-Taking as a Comparison Group				
Self-harm behavior only (*n*=44)				
Factor 1: Maladaptive	.10 (.28)	0.12	.73	1.10
Factor 2: Active adaptive	-.51 (.26)	3.77	.05	0.60
Factor 3: Passive adaptive (distress tolerance)	.31 (.34)	0.82	.37	1.37
Sexual risk-taking only (*n*=40)				
Factor 1: Maladaptive	-.15 (.30)	0.24	.63	0.86
Factor 2: Active adaptive	.31 (.29)	1.21	.27	1.37
Factor 3: Passive adaptive (distress tolerance)	-.51 (.39)	1.71	.19	0.60
Both self-harm behavior and sexual risk-taking (*n*=62)				
Factor 1: Maladaptive	.94 (.25)	14.33	.001	2.57
Factor 2: Active adaptive	.03 (.25)	0.01	.92	1.03
Factor 3: Passive adaptive (distress tolerance)	-.95 (.35)	7.38	.007	0.39

Table 26 (Continued).

Group	B (SE_B)	Wald	*p*	OR
Disordered Eating as a Comparison Group				
Self-harm behavior only (*n*=82)				
Factor 1: Maladaptive	.53 (.22)	5.98	.01	1.69
Factor 2: Active adaptive	-.26 (.21)	1.54	.21	0.77
Factor 3: Passive adaptive (distress tolerance)	-.21 (.27)	0.59	.44	0.81
Disordered eating only (*n*=9)				
Factor 1: Maladaptive	.02 (.52)	0.00	.96	1.03
Factor 2: Active adaptive	-.10 (.51)	0.04	.84	0.9
Factor 3: Passive adaptive (distress tolerance)	-.84 (.69)	1.50	.22	0.43
Both self-harm behavior and disordered eating (*n*=17)				
Factor 1: Maladaptive	1.51 (.36)	17.23	.001	4.53
Factor 2: Active adaptive	-.81 (.38)	4.59	.03	0.44
Factor 3: Passive adaptive (distress tolerance)	-1.20 (.51)	5.62	.02	0.30

Table 26 (Continued).

Group	B (SE_B)	Wald	*p*	OR
Illegal Substance Use as a Comparison Group				
Self-harm behavior only (*n*=42)				
Factor 1: Maladaptive	.22 (.27)	0.64	.42	1.24
Factor 2: Active adaptive	-.25 (.27)	0.89	.35	0.78
Factor 3: Passive adaptive (distress tolerance)	-.11 (.35)	0.10	.76	0.90
Illegal substance use only (*n*=40)				
Factor 1: Maladaptive	-.12 (.29)	0.18	.67	0.88
Factor 2: Active adaptive	-.07 (.28)	0.06	.81	0.94
Factor 3: Passive adaptive (distress tolerance)	-.07 (.36)	0.04	.94	0.94
Both self-harm behavior and illegal substance use (*n*=64)				
Factor 1: Maladaptive	.85 (.24)	12.55	.00	2.33
Factor 2: Active adaptive	-.35 (.24)	2.13	.15	0.70
Factor 3: Passive adaptive (distress tolerance)	-.39 (.32)	1.54	.22	0.68

Table 26 (Continued).

Group	B (SE_B)	Wald	*p*	OR
Alcohol Risk-Taking as a Comparison Group				
Self-harm behavior only (*n*=39)				
Factor 1: Maladaptive	.50 (.28)	3.18	.07	1.65
Factor 2: Active adaptive	-.25 (.29)	0.75	.39	0.78
Factor 3: Passive adaptive (distress tolerance)	-.27 (.38)	0.5	.48	0.76
Alcohol risk-taking only (*n*=61)				
Factor 1: Maladaptive	-.31 (.27)	1.31	.25	0.73
Factor 2: Active adaptive	.08 (.26)	0.09	.77	1.08
Factor 3: Passive adaptive (distress tolerance)	.20 (.34)	0.33	.57	1.22
Both self-harm behavior and alcohol risk-taking (*n*=68)				
Factor 1: Maladaptive	.52 (.25)	4.45	.04	1.68
Factor 2: Active adaptive	-.27 (.25)	1.10	.29	0.77
Factor 3: Passive adaptive (distress tolerance)	-.06 (.33)	0.03	.86	0.94

Table 26 (Continued).

Group	B (SE_B)	Wald	*p*	OR
Safety Risk-Taking as a Comparison Group				
Self-harm behavior only (*n*=47)				
Factor 1: Maladaptive	.47 (.26)	3.33	.07	1.60
Factor 2: Active adaptive	-.07 (.27)	0.08	.78	.93
Factor 3: Passive adaptive (distress tolerance)	-.49 (0.35)	1.91	.17	.62
Safety risk-taking only (*n*=41)				
Factor 1: Maladaptive	-.06 (.28)	0.04	.84	0.94
Factor 2: Active adaptive	-.21 (.28)	0.59	.44	0.81
Factor 3: Passive adaptive (distress tolerance)	.08 (.36)	0.05	.82	1.08
Both self-harm behavior and safety risk-taking (*n*=60)				
Factor 1: Maladaptive	.77 (.24)	9.99	.002	2.16
Factor 2: Active adaptive	-.66 (.25)	6.94	.008	0.52
Factor 3: Passive adaptive (distress tolerance)	.03 (.32)	0.00	.94	1.03

Table 26 (Continued).

Group	B (SE_B)	Wald	*p*	OR
Smoking Risk-Taking as a Comparison Group				
Self-harm behavior only (*n*=48)				
Factor 1: Maladaptive	.32 (.25)	1.55	.21	1.37
Factor 2: Active adaptive	-.50 (.26)	3.84	.05	0.61
Factor 3: Passive adaptive (distress tolerance)	.13 (.33)	0.15	.70	1.14
Smoking risk-taking only (*n*=35)				
Factor 1: Maladaptive	-.33 (.30)	1.20	.27	0.72
Factor 2: Active adaptive	-.35 (.28)	1.57	.21	0.70
Factor 3: Passive adaptive (distress tolerance)	.38 (.37)	1.07	.30	1.46
Both self-harm behavior and smoking risk-taking (*n*=59)				
Factor 1: Maladaptive	.75 (.24)	10.05	.002	2.11
Factor 2: Active adaptive	-.35 (.24)	2.03	.15	0.71
Factor 3: Passive adaptive (distress tolerance)	-.36 (.32)	1.26	.26	0.70

Note: Reference category is persons with no history of self-harm or risky behavior (*n*=74 for sexual risk-taking as a comparison group, *n*=101 for disordered eating as a comparison group, *n*=77 for illegal substance use as a comparison group, *n*=55 for alcohol risk-taking as a comparison group, *n*=75 for safety risk-taking as a comparison group, and *n*=82 for smoking risk-taking as a comparison group).

Table 27.

Classification analysis with predictions of a history of self-harm and/or risky behavior based on affect regulation factor scores.

	Predicted				
Observed	No SHB or RB	SHB only	RB Only	Both SHB & RB	%-Correct
Sexual Risk-Taking as a Comparison Group[a]					
History of no self-harm or sexual risk-taking behavior (*n*=74; 33.6%)	55	4	0	15	74.3
History of self-harm behavior only (*n*=44; 20.0%)	30	1	0	13	2.3
History of sexual risk-taking only (*n*=40; 18.2%)	25	2	0	13	0.0
History of both self-harm and sexual risk-taking behavior (*n*=62; 28.2%)	26	2	0	34	54.8

Table 27 (Continued).

Observed	Predicted				
	No SHB or RB	SHB only	RB Only	Both SHB & RB	%-Correct
Disordered Eating as a Comparison Group[b]					
History of no self-harm or disordered eating behavior (*n*=101; 48.3%)	78	21	0	2	77.2
History of self-harm behavior only (*n*=82; 39.2%)	49	33	0	0	40.2
History of disordered eating only (*n*=9; 4.3%)	5	4	0	0	0.0
History of both self-harm and disordered eating behavior (*n*=17; 8.1%)	3	13	0	1	5.9

Table 27 (Continued).

Observed	Predicted				
	No SHB or RB	SHB only	RB Only	Both SHB & RB	%-Correct
Illegal Substance Use as a Comparison Group[c]					
History of no self-harm behavior or illegal substance use (*n*=77; 34.5%)	58	0	0	19	75.3
History of self-harm behavior only (*n*=42; 18.8%)	29	0	0	13	0.0
History of illegal substance use only (*n*=40; 17.9%)	28	0	0	12	0.0
History of both self-harm behavior and illegal substance use (*n*=64; 28.7%)	29	0	0	35	54.7

Table 27 (Continued).

Observed	Predicted				
	No SHB or RB	SHB only	RB Only	Both SHB & RB	%-Correct
Alcohol Risk-Taking as a Comparison Group[c]					
History of no self-harm or alcohol risk-taking behavior (*n*=55; 24.7%)	0	0	32	23	0.0
History of self-harm behavior only (*n*=39; 17.5%)	0	0	9	30	0.0
History of alcohol risk-taking only (*n*=61; 27.4%)	0	0	33	28	54.1
History of both self-harm and alcohol risk-taking behavior (*n*=68; 30.5%)	0	0	23	45	66.2

Table 27 (Continued).

Observed	Predicted				
	No SHB or RB	SHB only	RB Only	Both SHB & RB	%-Correct
Safety Risk-Taking as a Comparison Group[c]					
History of no self-harm or safety risk-taking behavior (*n*=75; 33.6%)	60	1	0	14	80.0
History of self-harm behavior only (*n*=47; 21.1%)	32	3	0	12	6.4
History of safety risk-taking only (*n*=41; 18.4%)	28	0	0	13	0.0
History of both self-harm and safety risk-taking behavior (*n*=60; 26.9%)	25	0	0	35	58.3

Table 27 (Continued).

Observed	Predicted				
	No SHB or RB	SHB only	RB Only	Both SHB & RB	%-Correct
Smoking Risk-Taking as a Comparison Group[d]					
History of no self-harm or smoking risk-taking behavior (*n*=82; 36.6%)	64	3	0	15	78.0
History of self-harm behavior only (*n*=48; 21.4%)	33	2	0	13	4.2
History of smoking risk-taking only (*n*=35; 15.6%)	25	1	1	8	2.9
History of both self-harm and smoking risk-taking behavior (*n*=59; 26.3%)	33	0	0	26	44.1

Note: SHB = Self-Harm Behavior. RB = Risky Behavior. [a]*N*=220. [b]*N*=209. [c]*N*=223. [d]*N*=224.

behavior (B = -0.95, Wald = 7.38, $p < .01$, OR = 0.39), in that a one-unit increase in endorsement of maladaptive affect regulation strategies was associated with an 157% increase in the likelihood of having a history of both self-harm and sexual risk-taking behavior and a one-unit increase in endorsement of passive adaptive (distress tolerance) affect regulation strategies was associated with a 156% increase in the likelihood of having no history of self-harm or sexual risk-taking behavior. Endorsement of adaptive affect regulation strategies were not significant predictors. The regression equation accurately classified 40.9% of the cases; more specifically, 74.3% of those with no history of self-harm or sexual risk-taking behavior, 2.3% of those with self-harm behavior only, 0% of those with sexual risk-taking behavior only, and 54.8% of those with a history of both self-harm and sexual risk-taking behavior were accurately classified.

The next multinomial logistic regression predicted groups with self-harm behavior only, disordered eating behavior only, or both self-harm and disordered eating behavior in comparison to those with no history of self-harm or disordered eating, based on affect regulation factor scores. This regression equation fit significantly better than the null model, $\chi^2(df = 9) = 165.59$, $p < .001$, Nagelkerke $R^2 = .58$, meaning that the inclusion of the affect regulation factor scores results in 58% more variance accounted for than the null model. Endorsement of maladaptive affect regulation strategies (B = 0.53, Wald = 5.98, $p < .01$, OR = 1.69) was significantly associated with a history of self-harm behavior only, in that a one-unit increase in endorsement of maladaptive affect regulation strategies was associated with a 69% increase in the likelihood of having a history of self-harm behavior only. Endorsement of maladaptive affect regulation strategies (B = 1.51,

Wald = 17.23, $p < .001$, $OR = 4.53$), active adaptive affect regulation strategies ($B = -.81$, Wald = 4.59, $p < .05$, $OR = 0.44$), and passive adaptive (distress tolerance) affect regulation strategies ($B = -1.20$, Wald = 5.62, $p < .05$, $OR = 0.30$) were significantly associated with a history of both self-harm and disordered eating behavior, in that a one-unit increase in endorsement of maladaptive affect regulation strategies was associated with an 353% increase in the likelihood of having a history of both self-harm and disordered eating behavior and a one-unit increase in endorsement of active adaptive or passive adaptive (distress tolerance) affect regulation strategies was associated with 127% and 233% increases, respectively, in the likelihood of having no history of self-harm or disordered eating behavior. The regression equation accurately classified 53.6% of the cases; more specifically, 77.2% of those with no history of self-harm or disordered eating behavior, 40.2% of those with self-harm behavior only, 0% of those with disordered eating behavior only, and 5.9% of those with a history of both self-harm and disordered eating behavior were accurately classified.

The next multinomial logistic regression predicted groups with self-harm behavior only, illegal substance use only, or both self-harm behavior and illegal substance use in comparison to those with no history of self-harm behavior or illegal substance use, based on affect regulation factor scores. This regression equation fit significantly better than the null model, $\chi^2(df = 9) = 36.93$, $p < .001$, Nagelkerke $R^2 = .16$, meaning that the inclusion of the affect regulation factor scores results in 16% more variance accounted for than the null model. Endorsement of maladaptive affect regulation strategies ($B = 0.84$, Wald = 12.55, $p < .001$, $OR = 2.33$) was significantly associated with a history of both self-harm behavior and illegal substance use, in that a one-unit increase

in endorsement of maladaptive affect regulation strategies was associated with a 133% increase in the likelihood of having a history of both self-harm behavior and illegal substance use. Endorsement of adaptive affect regulation strategies was not a significant predictor. The regression equation accurately classified 41.7% of the cases; more specifically, 75.3% of those with no history of self-harm behavior or illegal substance use, 0% of those with self-harm behavior only, 0% of those with illegal substance use only, and 54.7% of those with a history of both self-harm behavior and illegal substance use were accurately classified.

The next multinomial logistic regression predicted groups with self-harm behavior only, alcohol risk-taking behavior only, or both self-harm and alcohol risk-taking behavior in comparison to those with no history of self-harm or alcohol risk-taking behavior, based on affect regulation factor scores. This regression equation fit significantly better than the null model, $\chi^2(df=9)=24.46$, $p < .01$, Nagelkerke $R^2 = .11$, meaning that the inclusion of the affect regulation factor scores results in 11% more variance accounted for than the null model. Endorsement of maladaptive affect regulation strategies ($B = 0.52$, Wald = 4.45, $p < .05$, $OR = 1.68$) was significantly associated with a history of both self-harm and alcohol risk-taking behavior, in that a one-unit increase in endorsement of maladaptive affect regulation strategies was associated with a 68% increase in the likelihood of having a history of both self-harm and alcohol risk-taking behavior. Endorsement of adaptive affect regulation strategies was not a significant predictor. The regression equation accurately classified 35.0% of the cases; more specifically, 0% of those with no history of self-harm or alcohol risk-taking behavior, 0% of those with self-harm behavior only, 54.1% of those with alcohol risk-taking behavior

only, and 66.2% of those with a history of both self-harm and alcohol risk-taking behavior were accurately classified.

The next multinomial logistic regression predicted groups with self-harm behavior only, safety risk-taking behavior only, or both self-harm and safety risk-taking behavior in comparison to those with no history of self-harm or safety risk-taking behavior, based on affect regulation factor scores. This regression equation fit significantly better than the null model, $\chi^2(df=9)=32.32$, $p < .001$, Nagelkerke $R^2 = .14$, meaning that the inclusion of the affect regulation factor scores results in 14% more variance accounted for than the null model. Endorsement of maladaptive ($B = 0.77$, Wald = 9.99, $p < .01$, $OR = 2.16$) and active adaptive ($B = -0.66$, Wald = 6.94, $p < .01$, $OR = 0.52$) affect regulation strategies were significantly associated with a history of both self-harm and safety risk-taking behavior, in that a one-unit increase in endorsement of maladaptive affect regulation strategies was associated with a 116% increase in the likelihood of having a history of both self-harm and safety risk-taking behavior and a one-unit increase in endorsement of active adaptive affect regulation strategies was associated with a 92% increase in the likelihood of having no history of self-harm or safety risk-taking behavior. Endorsement of passive adaptive (distress tolerance) affect regulation strategies was not a significant predictor. The regression equation accurately classified 43.9% of the cases; more specifically, 80% of those with no history of self-harm or safety risk-taking behavior, 6.4% of those with self-harm behavior only, 0% of those with safety risk-taking behavior only, and 58.3% of those with a history of both self-harm and safety risk-taking behavior were accurately classified.

The final multinomial logistic regression predicted groups with self-harm behavior only, smoking risk-taking behavior only, or both self-harm and smoking risk-taking behavior in comparison to those with no history of self-harm or smoking risk-taking behavior, based on affect regulation factor scores. This regression equation fit significantly better than the null model, $\chi^2(df=9)=39.79$, $p < .001$, Nagelkerke $R^2 = .17$, meaning that the inclusion of the affect regulation factor scores results in 17% more variance accounted for than the null model. Endorsement of active adaptive affect regulation strategies ($B = -0.50$, Wald = 3.84, $p < .05$, $OR = 0.61$) was significantly associated with a history of self-harm behavior only, in that a one-unit increase in endorsement of active adaptive affect regulation strategies was associated with a 64% increase in the likelihood of having no history of self-harm or smoking risk-taking behavior. Additionally, endorsement of maladaptive affect regulation strategies ($B = 0.75$, Wald = 10.05, $p < .01$, $OR = 2.11$) was significantly associated with a history of both self-harm and smoking risk-taking behavior, in that a one unit increase in endorsement of maladaptive affect regulation strategies was associated with a 111% increase in the likelihood of having a history of both self-harm and smoking risk-taking behavior. Endorsement of passive adaptive (distress tolerance) affect regulation strategies was not a significant predictor. The regression equation accurately classified 41.5% of the cases; more specifically, 78% of those with no history of self-harm or smoking risk-taking behavior, 4.2% of those with self-harm behavior only, 2.9% of those with smoking risk-taking behavior only, and 44.1% of those with a history of both self-harm and smoking risk-taking behavior were accurately classified.

In summary, hypothesis 11 was only partially supported, in that only endorsement of maladaptive affect regulation strategies could differentiate between persons with a history of non-suicidal self-injury only and those with no history of self-harm behavior or ideation; other self-harm groups could not be accurately predicted based on their endorsement of affect regulation strategies, possibly due to small sample sizes for some groups. In contrast, when group sizes were not so disparate, persons with a history of self-harm behavior or history of both self-harm and risky-behavior could often be differentiated from persons with no history of self-harm or risky behavior on the basis of affect regulation scores.

Hypothesis 12: Within the group with a history of self-harm, scores on the maladaptive emotion regulation and coping factor, adaptive emotion-focused coping factor, and adaptive problem-focused coping factor will also predict continuous measures of self-harm, including frequency of self-harm behavior, number of different self-harm behaviors endorsed, duration of self-harm history, and length of time since last self-harm act. As the factor analysis did not support the existence of an adaptive problem-focused coping factor or adaptive emotion-focused coping factor, this hypothesis was amended to test whether scores on the affect regulation strategies factors found (i.e., maladaptive affect regulation strategies, active-adaptive affect regulation strategies, and passive-adaptive, distress tolerance affect regulation strategies) could predict continuous measures of self-harm.

A series of multiple regressions were conducted using affect regulation factor scores to predict frequency of self-harm behavior, number of different self-harm behaviors endorsed, duration of self-harm history, and length of time since last self-harm

act. *B* and beta-weights, standard errors, *t*-tests and associated *p*-values, and correlations (zero-order, part, and partial) from these analyses are presented in Table 28.

Affect regulation factor scores did not significantly predict frequency of self-harm behavior ($F(3,96)=2.46$, $p = .07$, adjusted $R^2=.04$), duration of self-harm behavior ($F(3,90)=1.98$, $p = .12$, adjusted $R^2=.03$), or length of time since last self-harm act ($F(3,96)=2.03$, $p = .12$, adjusted $R^2=.03$). A model including the three affect regulation factor scores significantly predicted the number of types of self-harm behavior endorsed ($F(3,103)=4.97$, $p < .01$), adjusted $R^2=.13$), accounting for 12.6% of the total variance associated with types of self-harm behavior endorsed. When examined more closely, it was determined that the influence of active adaptive ($t=-1.62$, $p = .11$) and passive adaptive distress tolerance ($t=-0.42$, $p = .68$) affect regulation factor scores was not significant (together accounting for less than 2.5% of the variance in number of types of self-harm behavior), whereas scores on the maladaptive affect regulation factor were driving this association ($t=3.22$, $p < .01$), accounting for 9.1% of the variance associated with the number of types of self-harm behavior endorsed. For every one-unit increase in the endorsement of maladaptive affect regulation strategies, there was a 0.81 increase in the number of self-harm behaviors endorsed.

Therefore, hypothesis 12 was only partially supported, in that scores on one of the affect regulation factors did moderately predict one continuous measure of self-harm, the number of types of self-harm behavior endorsed. However, affect regulation factor scores did not predict several other continuous measures of self-harm, such as frequency of self-harm behavior, duration of self-harm history, and length of time since last self-harm act.

Table 28.

Results of a series of multiple regression analyses predicting continuous measures of self-harm behavior from affect regulation factor scores.

	Unstandardized		Standardized	Significance		Correlations			
	B	SE	β	*t*	*p*	Zero order	Partial	Part	*F*
Model 1: Frequency of self-harm regressed on affect regulation factors									2.46[a]
Factor 1: Maladaptive	-1.18	14.85	-0.01	-0.08	.94	-.01	-.01	-.01	
Factor 2: Active adaptive	-39.23	15.06	-0.26	-2.61	.01	-.25	-.26	-.26	
Factor 3: Passive adaptive (distress tolerance)	21.07	23.2	0.09	0.91	.37	.08	.09	.09	
Model 2: Number of types of self-harm regressed on affect regulation factors									4.97[b]
Factor 1: Maladaptive	0.81	0.25	0.3	3.22	.002	.32	.31	.31	
Factor 2: Active adaptive	-0.42	0.26	-0.15	-1.62	.11	-.17	-.16	-.15	
Factor 3: Passive adaptive (distress tolerance)	-0.17	0.40	-0.04	-0.42	.68	-.10	-.04	-.04	

Table 28 (Continued).

	Unstandardized		Standardized	Significance		Correlations			
	B	SE	β	*t*	*p*	Zero order	Partial	Part	*F*
Model 3: Duration of self-harm history regressed on affect regulation factors									1.98[c]
Factor 1: Maladaptive	0.95	0.60	0.17	1.58	.12	.20	.16	.16	
Factor 2: Active adaptive	-0.57	0.63	-0.09	-0.90	.37	-.11	-.10	-.09	
Factor 3: Passive adaptive (Distress tolerance)	-1.03	0.93	-0.12	-1.1	.27	-.16	-.12	-.11	
Model 4: Time since last self-harm act regressed on affect regulation factors									2.03[a]
Factor 1: Maladaptive	-1.01	0.48	-0.21	-2.10	.04	-.23	-.21	-.21	
Factor 2: Active adaptive	0.43	0.49	0.09	0.88	.38	.11	.09	.09	
Factor 3: Passive adaptive (Distress tolerance)	0.21	0.75	0.03	0.28	.78	.08	.03	.03	

Note: Analyses were only conducted for persons reporting a history of self-harm behavior (n = 108). [a]df=3,96. [b]df=3,103. [c]df=3,90.

Discussion

The purpose of this study was to explore the relationships between affect regulation, specifically emotion regulation and coping, and self-harm behavior, including non-suicidal self-injury, suicide attempts, and health risk behavior, in a sample of college undergraduates. While many studies have looked at a few emotion regulation or coping strategies separately in relationship to self-harm, this is the first study to systematically examine the relationships and balance between a large number of adaptive and maladaptive affect regulation strategies, as well as the associations they share, and how this relates to the presence or absence of a history of self-harm behavior, all in one study. Additionally, exploring the correlations between coping and emotion regulation strategies to create affect regulation factors, or patterns of strategies that people use for coping and emotion regulation that may underlie many types of psychosocial risk, is a boon to researchers in the area of self-harm, who have been plagued by the inconsistencies of nomenclature for years, limiting progress in the field. Similarly, few studies have explored whether certain coping and emotion regulation factors can differentiate the multiple levels along the spectrum of self-harm behavior simultaneously, as is done in this study with suicidal, non-suicidal self-injurious, and health risk behaviors.

As expected, persons with and without a history of self-harm differed on personality and psychological traits. Persons with a history of self-harm had higher levels of neuroticism, anger, anxiety, and depression than their non-self-harming

counterparts. These findings coincide with the large body of literature that has found important differences in negative affectivity between those with and without a history of self-harm (Yen, Shea, Sanislow, Skodol, Grilo, Edelen, et al., 2009). Also, as expected, trait-level differences did not entirely account for the differences in utilization of maladaptive affect regulation strategies. When levels of neuroticism, anger, anxiety, and depression were controlled, only differences in substance use and humor as affect regulation strategies existed between those with and without a history of self-harm. While these two specific strategies were not suspected to differ between groups apriori, it is possible that, regardless of negative affect, these two strategies may play an important role in whether self-harm is committed. While negative affect certainly sets the stage for self-harm behavior, substance use may lower the inhibitions against engaging in self-harm, regardless of the level of negative affect. This finding would be in concert with the large body of literature that states substance abuse is a serious risk factor for engaging in self-harm behavior (Langbehn & Pfohl, 1993; Zlotnick, Mattia, & Zimmerman, 1999). In an opposite fashion, the ability to have a sense of humor about one's troubles may be protective against self-harm, even despite high levels of negative affect. Although this has not yet been studied in the realm of self-harm, research in other areas has shown that humor can be a sign of resiliency and positive coping (Masten, 1986; Davidson, Payne, Connor, Foa, Rothbaum, Hertzberg, et al., 2005). Future research should explore whether humor plays such a role in self-harm behavior as well.

Differences between persons with and without a history of self-harm disappeared for the other maladaptive affect regulation strategies (i.e., limited access to emotion regulation strategies, unregulated emotion, impulse control difficulties, signs of

unprocessed emotion, and impoverished emotional experience), suggesting that these variables may be more related to personality or psychological constructs than a history of self-harm, per se. This makes theoretical sense, as maladaptive affect regulation strategies are often used to deal with overwhelming levels of negative emotion (Favazza & Conterio, 1989; Herpertz, 1995; Kumar, Pepe, & Steer, 2004; Laye-Gindhu & Schonert-Reichl, 2005; Linehan, 1993; Nixon, Cloutier, & Aggarwal, 2002), most notably the negative affectivity associated with neuroticism, anger, anxiety, and depression. However, it is possible that, with the sheer number of variables, there was simply not enough power to detect other differences of smaller effect size. Possibly with a larger sample size, some of these group differences may have become evident. It's also possible that persons with current self-harm behavior may have had a different profile than those with a history of remitted self-harm; however, further splitting the sample would have reduced statistical power, making it even less likely to find group differences. Future research, using larger samples of persons with and without a history of self-harm and persons with current self-harm behavior, would better delineate if other clinically significant differences may exist.

However, even though these findings merit replication, they also suggest important clinical implications. Negative affectivity is often considered more of a psychological or personality trait, suggesting that affect may be less amenable to treatment. This idea is consistent with "set point" theory, that positive and negative affect may have homeostatic "set points" (Headey & Wearing, 1992; Seligman, 2002), similar to those found for weight (Bennett & Gurin, 1982). On the other hand, utilization of maladaptive affect regulation strategies is highly correlated with negative affectivity

but is more behavioral, suggesting that affect regulation may be more amenable to treatment. While negative affectivity may be somewhat stable and trait-like, perhaps affect regulatory capacity may be a more productive venue for self-harm prevention and intervention efforts. As such, despite the significant associations between negative affectivity and maladaptive affect regulation, the patterns of how persons with and without a history of self-harm regulate their affect may have important treatment implications that are lacking from the study of more fixed psychological traits.

Not quite as expected, the hypothesis that there would be differences between those persons with and without a history of self-harm in specific affect regulation strategies utilized was only partially supported. Interestingly, the only significant differences between those with and without a history of self-harm was in their utilization of maladaptive affect regulation strategies, such as difficulties with impulse control, limited access to emotion regulation strategies, impoverished emotional experience, unprocessed and unregulated emotion, and substance abuse; there were no differences on any measures of adaptive affect regulation strategies. This finding contradicts previous research that showed that persons engaging in self-harm tended to utilize fewer coping strategies in general (Rotherham-Borus, Trautman, Dopkins, & Shrout, 1990) – in this study, persons with a history of self-harm actually utilized more coping strategies than their non-self-harming peers, having similar levels of adaptive strategies but also much high levels of maladaptive strategies. It is likely that, because this study assessed lifetime usage of affect regulation strategies rather than simply the number of strategies used after a specific event, this study was able to get a more broad view of the affect regulation repertoire of those who have a history of self-harm. Additionally, the measures of affect

regulation in this study assessed both positive and negative coping styles, whereas many studies only assess maladaptive coping. Lastly, the measures chosen for this study were specifically selected because they were psychometrically-sound and were scaled so that people could endorse the frequency of strategy use, not simply a dichotomous “yes” or “no” choice that may have limited variability in other samples. As such, it is likely that this study was able to capture variability in coping strategies that was not captured in other studies.

An alternative hypothesis could be that, since this sample contained persons with a history of self-harm and assessed lifetime use of affect regulation strategies, that the sample measured in this study had learned affect regulation strategies over time that they had not utilized when they were actively engaging in self-harm behavior. However, this viewpoint is contradicted by the fact that even those members of the sample who were currently engaged in self-harm behavior demonstrated the same profile of similar levels of adaptive affect regulation strategies but very high levels of maladaptive affect regulation strategies. A more likely conclusion is that persons with a history of self-harm may not be as effective in their use of affect regulation skills and may therefore need to utilize more strategies; when their adaptive methods are overwhelmed, they may turn to maladaptive methods. This possibility is in concert with the body of research that suggests that persons engaging in self-harm are more likely to utilize maladaptive, more specifically avoidant, affect regulation strategies (Curry et al., 1992; Spirito et al., 1996). Future research should determine the efficacy of the affect regulation strategies selected by persons with and without a history of self-harm to determine if those with a history of self-harming behavior are less effective in their affect regulatory attempts, as well as the

sequencing and duration of their strategies. This research would also have important clinical implications, as many current modalities of therapy teach affect regulation skills as part of their regimen. It is possible that those with a history of self-harm might not respond as well to treatments that simply teach adaptive affect regulation strategies, as these strategies are already in their repertoire but have not kept them from engaging in maladaptive means of affect regulation in the past. Future research should determine if treatment focused on enhancing the strength of adaptive affect regulation strategies already in the repertoire, as well as treatments focused on selecting newly strengthened adaptive strategies over maladaptive strategies even in the face of crisis, may be more effective than traditional treatments for self-harm. The vast literature supporting Dialectical Behavior Therapy, which includes such a skills training and strengthening component, suggests that this might be the case (Linehan, 1993).

As many differences between persons with and without a history of self-harm existed in the utilization of affect regulation strategies, the case for studying the utilization of these behaviors is strong. However, the sheer number of affect regulation strategies that could be assessed is overwhelming, suggesting that finding particularly salient patterns of affect regulation strategies may be both more efficient and effective for researchers and clinicians alike. As such, it was hypothesized that many of the affect regulation strategies assessed would be highly correlated and that this large number of specific strategies could be reduced to a smaller number of patterns of responding. The initial hypothesis that there would be three patterns of responding – one for active problem-focused affect regulation, one for adaptive emotion-focused affect regulation, and one for maladaptive emotion-focused affect regulation – was only partially

supported; three distinct patterns of responding were found, but they corresponded more closely to maladaptive, active-adaptive and passive-adaptive, distress tolerance affect regulation strategies. Although it was assumed initially that problem-focused and emotion-focused affect regulation would fall on separate factors, this assumption was based off a more theoretical division than an empirical one (Carver, Scheier, & Weintraub, 1989; Moos & Holahan, 2003). Researchers have long suggested that problem-focused affect regulation (what is typically referred to as problem-focused or active coping) and emotion-focused affect regulation (what is typically referred to as emotion-focused coping or emotion regulation) address different circumstances (Folkman & Moskowitz, 2004; Folkman & Lazarus, 1980; Lazarus & Folkman, 1984; Moos & Holahan, 2003) – problem-focused affect regulation exists for the purpose of actively contending with the situation that elicited the affect, whereas emotion-focused affect regulation exists for the purpose of contending with problematic levels of affect. However, while these two constructs are theoretically different, in practice, people often use emotion-focused and problem-focused affect regulation strategies simultaneously, as emotions must be managed in order to address the problematic situation effectively, and effectively resolving a problematic situation subsequently leads to decrements in negative affect. As such, although this study predicted two different factors on the basis of theoretical differences, what was found instead was a more practical solution, with one factor relating to active adaptive problem- and emotion-focused affect regulation and one factor relating to passive adaptive problem- and emotion-focused affect regulation. In retrospect, the factors found have far less overlap in the real world than the previously proposed factor structure, and therefore it is unsurprising that they were far more likely to

fall on separate factors in a factor analysis. In any case, this specific formulation of factors bears future replication in samples with and without a history of self-harm, especially since only 48% of the total variance was accounted for by the factor solution, suggesting an imperfect fit to the data. Future studies should explore if other "mini-factors" exist, if the factor solution would be strengthened by allowing items to be cross-loaded on multiple factors, or if a structural equation model would better address the complexities of the data than a simple factor analysis. Nevertheless, despite the need to replicate these findings, the creation of specific affect regulation strategy patterns is a novel approach to the difficulties of exploring the associations between affect regulation and self-harm, and has enormous research and clinical utility.

As was suggested by the preliminary analyses conducted with the myriad specific affect regulation strategies, persons with a history of self-harm endorsed higher levels of maladaptive affect regulation, but showed no differences in active-adaptive or passive-adaptive, distress tolerance affect regulation. Up to this point, the literature has widely studied active adaptive and maladaptive affect regulation in relationship to self-harm behavior, and has consistently found maladaptive affect regulation to be highly associated with self-harm (Cantanzaro, 2000; Curry et al., 1992; Groholt, Ekeberg, & Haldorsen, 2000; Hjelmeland & Groholt, 2005; Spirito et al., 1996; Zlotnick, et al., 1997), as found in this study. However, studies are less conclusive regarding the role of active adaptive affect regulation in self-harm, excluding studies that have found that those engaging in self-harm behavior are more likely to utilize avoidant than active problem-focused strategies (Spirito et al., 1996). Even more disconcerting, no studies have explored the role of passive adaptive affect regulation in relation to self-harm behavior, despite the

importance of distress tolerance in Linehan's Dialectical Behavior Therapy (Linehan, 1993), one of the few therapies empirically-supported to reduce self-harm behavior. Future research should more clearly determine the role that passive adaptive techniques, such as humor, acceptance, restraint, and positive reinterpretation, play in the prevention and intervention of self-harm behavior.

Even more importantly, future research needs to measure the full spectrum of affect regulation, or at least more clearly define the variant of affect regulation measured in their studies. Most research only measures maladaptive affect regulation, but in a manner that is confusing at best, many researchers discuss their findings as if they studied the full construct of affect regulation, calling no attention to their de-emphasis and neglect to measure adaptive affect regulation. Without measuring the full spectrum of affect regulation, statements regarding the affect regulation capacity of persons with a history of self-harm are misleading. For example, despite a vast literature suggesting that "deficits in affect regulation" are associated with self-harm behavior (Cantanzaro, 2000; Curry et al., 1992; Groholt, Ekeberg, & Haldorsen, 2000; Hjelmeland & Groholt, 2005; Spirito et al., 1996; Zlotnick, et al., 1997), the current study suggests that persons with a history of self-harm show no deficits whatsoever in adaptive affect regulation in comparison to their peers without a history of self-harm; rather, the only difference between the two groups is an overabundance of maladaptive affect regulation, a reality not well-represented by the current conclusions in the literature. Studies that explore the role of affect regulation in self-harm should be careful to measure both adaptive and maladaptive affect regulation, to differentiate the potentially different roles played by

active adaptive, passive adaptive, and maladaptive affect regulation, and to clearly define which types of affect regulation are associated with self-harm behavior.

Besides examining patterns of affective regulation relative to the presence or absence of self-harm behavior, it was also hypothesized that the patterns of affect regulation would predict frequency of self-harm behavior, number of different self-harm behaviors endorsed, duration of self-harm history, and length of time since last self-harm act, but this hypothesis was only partially supported, in that only endorsement of maladaptive affect regulation predicted the number of types of self-harm behavior endorsed. While it is possible that only the number of types of self-harm endorsed was actually related to patterns of affect regulation, it is more likely an artifact of the statistical methods used that so few findings were significant. The number of types of self-harm endorsed was the only continuous self-harm variable that was normally-distributed, whereas the other variables all showed significant deviations from normality. As this was a non-clinical sample, the distributions for the other self-harm variables were simply too skewed toward zero to be corrected to normal. Unfortunately, normality is an assumption of regression analysis, and non-normality can obscure significant results in the form of type II error. As such, it is entirely possible that other relationships between patterns of affect regulation and duration, frequency, or length of time since last self-harm act actually exist, but the statistics used in this study simply could not detect these associations utilizing such non-normal data. Future studies should replicate these results in a sample of persons with a history of self-harm that has greater variability – possibly clinical outpatient or inpatient samples.

In addition to predicting different continuous measures of self-harm, the patterns of affect regulation were hypothesized to be able to differentiate between persons engaging in different types of self-harm, such that persons with a history of non-suicidal self-injurious behavior only, suicide attempts only, both non-suicidal self-injury and suicide attempts, and suicidal ideation only would display different patterns of affect regulation than persons with no such history and that those with a history of self-harm would have distinct patterns from those who had not self-harmed but had engaged in risky behavior. Although research has found some important differences between persons engaging in different subtypes of self-harm in relation to desire for death, attitudes towards life, depression, and hopelessness (Muehlenkamp & Gutierrez, 2004), this study was novel for exploring differences in patterns of affect regulation between subtypes of persons who engage in self-harm, and found that affect regulation patterns could only partially differentiate between persons engaging in different subtypes of self-harm. While persons with a history of non-suicidal self-injury had higher levels of maladaptive affect regulation than persons with no history of self-harm, other subtypes of self-harmers did not show such obvious differences. It is possible that persons engaging in non-suicidal self-injurious behavior had especially high levels of maladaptive coping, evidencing a general trend of responding poorly to negative stimuli; however, there is little research evidence to suggest that their levels of maladaptive affect regulation should be worse than persons engaging in any other subtype of self-harm. A more likely competing hypothesis is that the small numbers of persons who engaged in certain subtypes of self-harm did not provide adequate power to detect differences for these groups. Future studies should utilize comparably-sized samples of persons engaging in various different

subtypes of self-harm to determine if actual differences in affect regulation patterns exist and were obscured by low power, or if all persons engaging in different self-harm behaviors have similar patterns of affect regulation.

In contrast, when comparing persons with a history of self-harm to those with a history of risky behavior where group sizes were not so disparate, persons with a history of self-harm behavior or history of both self-harm and risky-behavior could often be differentiated from persons with no such history on the basis of their patterns of affect regulation. Those with both self-harm and sexual risk-taking behavior could be differentiated from those with no history of self-harm or sexual risk-taking by both maladaptive and passive adaptive (distress tolerance) affect regulation strategies, those with both self-harm and disordered eating behavior could be differentiated from those with no history of self-harm or disordered eating by their utilization of all affect regulation strategies, those with both self-harm and illicit substance use could be differentiated from those with no history of self-harm or illicit substance use by their utilization of maladaptive affect regulation strategies, those with a history of both self-harm and alcohol-related risk-taking, those with both self-harm and safety risk-taking could be differentiated from those with no history of self-harm or safety risk-taking by their utilization of maladaptive and active adaptive affect regulation strategies, and those with both self-harm and smoking risk-taking could be differentiated from those with no history of self-harm or smoking by the utilization of maladaptive affect regulation strategies. It is not surprising that differences in affect regulation strategies could differentiate those persons engaging in multiple risks, as several of these risky behaviors have been proposed in their own respective literatures to serve affect regulatory functions

(Carmody, 1989; Cooper, Agocha, & Sheldon, 2000; Pierce, Frone, Russell, & Cooper, 1994; Taylor, 1997a; 1997b), all risky behaviors can be considered to fall somewhere along the spectrum of self-harm (Perez, 2005; Karver & Tarquini, under review; King et al., 2003) and the spectrum of self-harm behaviors has been so strongly linked to affect regulatory functions (Crowell, Beauchaine, McCauley, Smith, Stevens, & Sylvers, 2005; Herpertz, 1995; Klonsky, 2007; Laye-Gindhu, & Schonert-Reichl, 2005; Nixon, Cloutier, & Aggarwal, 2002; Suyemoto, 1998; Zlotnick, Donaldson, Spirito, & Pearlstein, 1997). These findings only emphasize the clinical implications that assessing students' patterns of affect regulation could have some utility for predicting who will and will not engage in dangerous health risk behavior; however, as is true with all low base-rate behaviors, patterns of affect regulation are more effective at classifying the more frequent constellations of risk behavior. Future research should continue exploring the role that both adaptive and maladaptive affect regulation plays in the initiation and maintenance of health risk behaviors.

It is interesting to note that very few people in this sample made a suicide attempt without previously engaging in non-suicidal self-injury and that none had made a suicide attempt without engaging in multiple health risk behaviors. This finding challenges the myth that self-harm without direct suicidal intent is not dangerous, and lends credence to the Joiner theory that enacting lethal self-harm requires self-harm capability acquired over time in addition to desire (Joiner, 2005). It is possible that affect dysregulation and the selection of maladaptive affect regulation strategies may contribute to one's desire to escape the pains of life, but without the actual capability to overcome one's innate self-preservation instinct, self-harm does not progress from ideation to action.

This acquired capability component is already part of the Joiner conceptualization of suicide risk, but may also play an important role in other health risk behavior, as well. It is quite possible that all health risk behavior requires an acquired capability in order to occur. That is, while many distressed individuals may have the emotional vulnerability and environmental stressors that lead one to desire escape from noxious stimuli such as overwhelming affect, demands or unpleasant situations, not all of these individuals engage in maladaptive methods of affect regulation. It is proposed here that only those who have acquired the capability for specific maladaptive health risk behaviors will engage in those behaviors. For example, it is fairly well-established that only those with the capability to habituate to pain go on to engage in self-harm. Along similar lines, it is probable that only those who develop the capability to habituate to hunger would go on to develop eating disordered behaviors (Heatherton, Polivy, & Herman, 1989), and only those who develop the capability to ingest intoxicating substances and habituate to the consequences would go on to develop problematic usages of nicotine, alcohol, or illicit substances (Park, 2003).

Perhaps the reason that research has had so little success differentiating between similar but distinct groups of risk is that most research has measured vulnerabilities that may similarly underlie many problem behaviors, such as affective dysregulation, without assessing an individual's acquired ability to engage in problematic behavior despite natural instinct to avoid pain, sickness, and other aversive feelings. That is, prior research may have mistakenly been measuring the vulnerabilities, stressors, and affective regulation methods that are common across groups of risk whereas what may distinguish risk groups may be separate lines of acquired maladaptive capability. Perhaps future

research should begin to assess the substance use capability of addicted persons, the ability to endure bodily harm or risk of bodily harm of those taking sexual, safety, and self-harm risk, and the ability to tolerate hunger, nausea, and gastrointestinal distress of those with disordered eating. It is possible that all risky behaviors require an acquired capability, but that other fields have yet to recognize this important component. Future research should determine what factors make some persons able to habituate to some risks and not others, while others cannot tolerate any level of risk, and yet others can overcome their self-preservation instinct on myriad levels. Additionally, future research will need to determine how and at what point these capabilities develop if prevention and intervention programs hope to address the burgeoning rates of problematic behavior in youth.

Finally, it is worth mentioning that preliminary data analyses revealed some noteworthy findings. Preliminary analyses revealed that nearly 47% of the total sample had engaged in self-harm behavior at some point in their lives, a percentage much higher than was to be expected based on previous studies (Gratz, 2001; Kisch, Leino, & Silverman, 2005). Nearly 42% of students had a history of non-suicidal self-injury, nearly 7% a history of suicide attempts, and nearly 22% of persons a history of suicidal ideation. While the rates of suicide attempt and suicidal ideation are only slightly higher than other epidemiological samples of same-aged community members and college students, the rates of non-suicidal self-injurious behavior are alarmingly high. As no differences in demographic factors or total current stress levels were detected between those with and without a history of self-harm, it is somewhat a mystery as to why these rates are so inflated. There are many commonly cited reasons for increasing rates of non-suicidal

self-injury among college students. Some have reported that the higher percentage of females in psychology-related disciplines may lead to inflated rates of depression and self-harm in research subject pools; however, as this sample was a quarter male, there was adequate power to test for gender differences and no differences were found. Likewise, studies have suggested that commuter schools with many students living off-campus may lead to greater isolation and higher rates of self-harm (Gillman, Kim, Alder, & Durrant, 2006); however, no differences were found between groups based on residency. As self-harm behavior is traditionally considered a problem more prevalent in white females (Boudewyn & Liem, 1995; Suyemoto, 1998), this raises an interesting question of whether self-harm behaviors amongst males and minority group members have recently increased to levels comparable with their white female counterparts or if earlier research simply utilized homogeneous samples that had too few males or minorities to detect similarities in rates of self-harm behavior. As males and minority group members are less likely to seek or receive medical or psychiatric attention for their instances of self-harm (Frost, 1995; Ministry of Health, 2006; Olfson, Gameroff, Marcus, Greenberg, & Shaffer, 2005; Taylor, 2003), low numbers of these group members engaging in self-harm in many research studies may have been an artifact of using clinical samples composed predominantly of white females, an oversight corrected by this study's use of a diverse community sample. As competing hypotheses cannot adequately explain the upward trend evident in this study, the possibility that rates of non-suicidal self-injury have sharply increased must be seriously considered. Certainly, the media has suggested this is the case, especially among certain subcultures of youth, but scientific research is beginning to bear witness, as well (Lubell, 2007). Studies

looking at different generational cohorts at the same age as well as following cohorts across time, utilizing diverse samples of both males and females, will be necessary to clarify this issue.

What is clear from the literature is that the number of persons with serious mental illness and problematic behavior on college campuses has risen precipitously over the past decade (Gallagher, Gill, & Sysko, 2000; Gallagher, Sysko, & Zhang, 2001; O'Malley, Wheeler, Murphey, & O'Connell, 1990; Pledge, Lapan, Heppner, & Roehlke, 1998; Robbins, May, & Corazini, 1985), leaving college counseling centers overwhelmed and advocates calling for legislation to address this critical mental health need (Substance Abuse and Mental Health Administration, 2008). The results of this study strongly support this position. It must be emphasized that the sample utilized in this study was not selected for any particular mental health issue; rather, they were typical college undergraduates, not a clinical sample. This fact paints a truly frightening picture – that although university populations are usually considered to be more privileged and healthy for having made it to higher education, nearly half of these young students will have intentionally injured themselves to the point of tissue damage at some point in their lives, with almost 20% in the past year. More than one in five will have seriously considered ending their lives, and seven out of one hundred students will make an actual attempt. When you consider that nearly 20 million students are enrolled in college nationwide (National Center for Educational Statistics, 2008), such high percentages equal epic proportions of serious mental health problems.

A finding that was equally alarming, and is certainly also a concern of advocates for campus mental health, is the extremely high rates of risky behavior among college

students. In this typical, non-clinical sample of college undergraduates, 48% had engaged in unsafe sexual practices, 12% had experienced clinically significant eating disorder symptoms, nearly 48% had used illegal substances, 57% had engaged in dangerous use of alcohol, 46% had taken risks with their personal safety, and approximately 41% had increased health risk associated with tobacco use. Even worse, persons with a history of self-harm behavior were significantly more likely to use illegal substances, smoke cigarettes, and engage in sexual or safety risk-taking than those persons without a history of self-harm behavior, further compounding the problem in this already vulnerable population. As devastating as the conclusion may be, taking dangerous risks with their health and lives appears to be a "normal" part of the college student experience, one with considerable morbidity and mortality. Unfortunately, this finding is not unique, according to recent campus mental health research (Gallagher, Gill, & Sysko, 2000; Gallagher, Sysko, & Zhang, 2001).

As such, prevention and intervention efforts addressing mental health needs on college campuses are critical. Nonetheless, how best to help still remains an elusive question for both researchers and clinicians. This study aimed to clarify the relationships between self-harm, health risk behavior, and affect regulation, specifically how deficits in the ability to cope with life's stressors and effectively regulate one's emotions can lead to self-destructive behavior.

Limitations

In addition to previously mentioned caveats, such as the small numbers of persons engaging in certain subtypes of self-harm, deviations from normality for some variables, and the need for replication of findings, this study had several other limitations that

should be considered. First and foremost, the study employed a cross-sectional, retrospective design, which precludes the ability to determine directionality of effects. As such, while the literature suggests that affective dysregulation may precede and even potentially cause self-harm ideation and behavior (Suyemoto, 1998), a competing hypothesis could be that engaging in self-harm may itself cause affect dysregulation. As such, temporal precedence can only be shown through the use of longitudinal designs and causation can only be shown using true experimental designs. Given that such necessities of experimental design as random assignment to groups would be both impossible and unethical, future studies should explore quasi-experimental longitudinal designs that may be more amenable to structural equation modeling to further explore directionality of effects.

It is also possible that the self-report nature of the measures used in this study may have skewed the results in some way, in comparison to the results that may have been obtained if affect regulation strategies had been observed or reported by multiple informants. However, as many affect regulation strategies involve internal, cognitive events that would be difficult for others to observe or report, the self-report format was selected. Additionally, there is some evidence that anonymous self-report measures assessing self-harm result in greater disclosure than face-to-face interviews regarding the same subject matter (Scoliers, Portzky, Madge, Hewitt, Hawton, de Wilde, et al., 2009), suggesting that self-report measures may actually reduce social desirability and other reporting biases. Nevertheless, it is possible that the self-report format may have affected the results found; future studies should endeavor to obtain data from multiple informants or by observation when possible.

An additional limitation of this study is that the results are not generalizable to all persons who engage in self-harm. Although the emphasis on college students can be justified, as this is an age bracket that is particularly burdened with the morbidity and mortality of self-harm behavior (Gratz 2001; White, Trepal-Wollenzier, & Nolan, 2002), it remains a limitation that this research, conducted with a sample of college undergraduates currently-enrolled in psychology courses, may not be generalizable to younger adolescents, older adults, or even same-age peers in different courses or who are not pursuing higher education. Similarly, this research may not generalize cross-culturally, or even to ethnic or sexual minorities whose groups were not well-represented in this sample. Nevertheless, the sample contained both genders and was relatively racially and ethnically diverse, an improvement over many previous studies.

Lastly, some of the measures utilized in this study did not meet criterion levels of normality and internal consistency, creating a higher level of noise in the dataset than would be preferred. However, normality violations should not have too strong of an adverse affect on the results presented herein, as normality is not required for factor analysis with samples over 100 and MANOVA is not very sensitive to violations of normality. In cases where normality assumptions are violated, it is harder to reject the null hypothesis, so it is possible that there were increased rates of type II errors in this study. However, this should not cast aspersions on the significant findings that have been reported, as violations of normality actually make it more difficult to obtain significant results, not less. Similarly, low internal consistency on some subscales would make it more difficult for a subscale to demonstrate significant differences between groups and less likely to load on a factor in factor analysis. In fact, the subscale with the lowest

internal consistency did not load on any factor, probably due to the high degree of error variance on the scale. For the other subscales which did load on factors, the use of factor analysis should limit the effects of error variance; however, the fact that only 48% of the total variance was accounted for by the factor solution may reflect the high level of error variance present within some subscales.

Summary

However, despite these limitations, this study also had several substantial strengths. First and foremost, this study is unique for using a large diverse sample with a more equal gender distribution than most other published research, making its findings potentially more generalizable. However, more importantly, this study was innovative in its scope for utilizing multiple measures of emotion regulation and coping to determine patterns of affect regulation that encompassed both adaptive and maladaptive, as well as both problem-focused and emotion-focused coping. It is a leap forward that persons demonstrating patterns of affect regulation empirically associated with self-harm can now be more carefully assessed and monitored by clinicians and researchers who are more informed of how these constructs intricately interplay.

Likewise, this study is the first to explore differences in affect regulation between persons engaging in different subtypes of self-harm, as well as many other variants of risky behavior. It is uncommon for research studies to assess the full spectrum of self-harm behavior, as most studies focus on only one subgroup (e.g., suicide attempters, those with self-injurious behavior, etc.). As such, this study is unique for exploring characteristics of persons engaging in multiple types of health risk behavior, both with (e.g., self-harm) and without (e.g., risky behavior) the direct intent to injure oneself.

Finally, the finding that similar patterns of affect regulation differentiated persons engaging in self-harm as well as persons engaging in health risk behavior from their healthy counterparts provides exciting implications for prevention and intervention. While intervention and public health efforts typically target only one problem area (i.e., suicidality, teen pregnancy, drug abuse, etc.), identification of patterns of risk that underlie multiple problematic domains can lead to more efficient and effective prevention and intervention efforts.

Future research should continue to explore the role that both adaptive and maladaptive problem- and emotion-focused affect regulation play across the spectrum of self-harm, not only in relation to suicide and self-injurious behavior, but also as it applies to the realm of risky behavior where affect regulatory functions have been less frequently studied. Likewise, future research should continue to utilize samples evidencing the full-spectrum of self-harm behavior to gain a more clear perspective on the complicated interrelations that exist between suicidal, self-injurious, and health risk behavior, the risk factors, such as affect regulation, that may be common to all subtypes, and the risk factors, such as acquired capability to habituate to the different adverse consequences associated with different subtypes of self-harm, that may serve to differentiate between different constellations of risk. Lastly, future research should explore the trajectories of how risk factors, both shared and distinct to certain subtypes, develop and are maintained over time. Nevertheless, this exploratory research lays the groundwork and provides critical guidance for such future endeavors. As such, this study is an invaluable addition to the literature on the spectrum of self-harm behavior.

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Appendices

Appendix A.

Demographics

1. What is your age? _____

2. What is your year in school?
   - ☐ Freshman
   - ☐ Sophomore
   - ☐ Junior
   - ☐ Senior
   - ☐ Senior-plus (More than four years)

3. What is your gender?
   - ☐ Male
   - ☐ Female

4. What is your sexual orientation?
   - ☐ Attracted to the opposite sex
   - ☐ Attracted to the same sex
   - ☐ Attracted to both sexes

5. Which ethnic group best describes you?
   - ☐ Hispanic or Latino/a
   - ☐ Not Hispanic or Latino/a

(Please continue, see next page)

Appendix A (Continued).

6. Which racial group best describes you? Please check all that apply.

   - ☐ American Indian or Alaskan Native
   - ☐ Asian
   - ☐ Black or African-American
   - ☐ Native Hawaiian or Pacific Islander
   - ☐ White or Caucasian
   - ☐ Other - Specify: _____
   - ☐ More than one race - Specify: _____

7. What is your living situation?

   - ☐ Live with parents / family
   - ☐ Live alone, on campus
   - ☐ Live alone, off campus
   - ☐ Live with roommate(s), on campus
   - ☐ Live with roommate(s), off campus
   - ☐ Other - Specify: _____

Appendix B.

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item:

1	2	3	4	5
almost never (0-10%)	sometimes (11-35%)	about half the time (36-65%)	most of the time (66-90%)	almost always (91-100%)

_____ 1) I am clear about my feelings.

_____ 2) I pay attention to how I feel.

_____ 3) I experience my emotions as overwhelming and out of control.

_____ 4) I have no idea how I am feeling.

_____ 5) I have difficulty making sense out of my feelings.

_____ 6) I am attentive to my feelings.

_____ 7) I know exactly how I am feeling.

_____ 8) I care about what I am feeling.

_____ 9) I am confused about how I feel.

_____ 10) When I'm upset, I acknowledge my emotions.

_____ 11) When I'm upset, I become angry with myself for feeling that way.

_____ 12) When I'm upset, I become embarrassed for feeling that way.

_____ 13) When I'm upset, I have difficulty getting work done.

_____ 14) When I'm upset, I become out of control.

_____ 15) When I'm upset, I believe that I will remain that way for a long time.

_____ 16) When I'm upset, I believe that I'll end up feeling very depressed.

_____ 17) When I'm upset, I believe that my feelings are valid and important.

_____ 18) When I'm upset, I have difficulty focusing on other things.

(Please continue, see next page)

Appendix B (Continued).

1	2	3	4	5
almost never (0-10%)	sometimes (11-35%)	about half the time (36-65%)	most of the time (66-90%)	almost always (91-100%)

_____ 19) When I'm upset, I feel out of control.

_____ 20) When I'm upset, I can still get things done.

_____ 21) When I'm upset, I feel ashamed with myself for feeling that way.

_____ 22) When I'm upset, I know that I can find a way to eventually feel better.

_____ 23) When I'm upset, I feel like I am weak.

_____ 24) When I'm upset, I feel like I can remain in control of my behaviors.

_____ 25) When I'm upset, I feel guilty for feeling that way.

_____ 26) When I'm upset, I have difficulty concentrating.

_____ 27) When I'm upset, I have difficulty controlling my behaviors.

_____ 28) When I'm upset, I believe that there is nothing I can do to make myself feel better.

_____ 29) When I'm upset, I become irritated with myself for feeling that way.

_____ 30) When I'm upset, I start to feel very bad about myself.

_____ 31) When I'm upset, I believe that wallowing in it is all I can do.

_____ 32) When I'm upset, I lose control over my behaviors.

_____ 33) When I'm upset, I have difficulty thinking about anything else.

_____ 34) When I'm upset, I take time to figure out what I'm really feeling.

_____ 35) When I'm upset, it takes me a long time to feel better.

_____ 36) When I'm upset, my emotions feel overwhelming.

Appendix C.

Emotion Processing Scale (EPS)

The idea of this questionnaire is to try to understand something about your emotions and feelings. This questionnaire lists different descriptions of how you may have felt or acted in the past. Each description has a sliding scale under it. The scale moves from "complete disagree" (0) to "completely agree" (9). After reading each description, show how much it applies to you in general by putting a circle around one of the numbers on the sliding scale.

1. I smother my feelings.

0 1 2 3 4 5 6 7 8 9
Completely----------Disagree----------In Between----------Agree----------Completely
Disagree Agree

2. Unwanted feelings keep intruding.

0 1 2 3 4 5 6 7 8 9
Completely----------Disagree----------In Between----------Agree----------Completely
Disagree Agree

3. When upset or angry, it is difficult to control what I say.

0 1 2 3 4 5 6 7 8 9
Completely----------Disagree----------In Between----------Agree----------Completely
Disagree Agree

4. I avoid looking at unpleasant things (e.g., on TV/in magazines).

0 1 2 3 4 5 6 7 8 9
Completely----------Disagree----------In Between----------Agree----------Completely
Disagree Agree

5. My emotions feel blunt/dull.

0 1 2 3 4 5 6 7 8 9
Completely----------Disagree----------In Between----------Agree----------Completely
Disagree Agree

6. I cannot express my feelings.

0 1 2 3 4 5 6 7 8 9
Completely----------Disagree----------In Between----------Agree----------Completely
Disagree Agree

7. My emotional reactions last for more than a day.

0 1 2 3 4 5 6 7 8 9
Completely----------Disagree----------In Between----------Agree----------Completely
Disagree Agree

(Please continue, see next page)

Appendix C (Continued).

8. I react too much to what people say or do.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

9. Talking about negative feelings seems to make them worse.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

10. My feelings do not seem to belong to me.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

11. I keep quiet about my feelings.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

12. I tend to repeatedly experience the same emotion.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

13. I want to get my own back on someone.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

14. I try to talk only about pleasant things.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

15. It is hard to work out if I feel ill or emotional.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

16. I bottle up my emotions.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

(Please continue, see next page)

Appendix C (Continued).

17. I feel overwhelmed by my emotions.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

18. I felt the urge to smash something.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

19. I cannot tolerate unpleasant feelings.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

20. There seems to be a big blank in my feelings.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

21. I try not to show my feelings to others.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

22. I keep thinking about the same emotional situation again and again.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

23. It is hard for me to wind down.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

24. I try very hard to avoid things that might make me upset.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

25. Sometimes I get strong feelings but I'm not sure if they are emotions.

0 1 2 3 4 5 6 7 8 9

Completely----------Disagree----------In Between----------Agree----------Completely Disagree Agree

Appendix D.

Coping Orientation to Problem Experiences (COPE)

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what you generally do and feel, when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

Then respond to each of the following items by blackening one number on your answer sheet for each, using the response choices listed just below. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item. There are no "right" or "wrong" answers, so choose the most accurate answer for YOU – not what you think "most people" would say or do. Indicate what YOU usually do when YOU experience a stressful event.

1 = I usually don't do this at all
2 = I usually do this a little bit
3 = I usually do this a medium amount
4 = I usually do this a lot

_____ 1. I try to grow as a person as a result of the experience.

_____ 2. I turn to work or other substitute activities to take my mind off things.

_____ 3. I get upset and let my emotions out.

_____ 4. I try to get advice from someone about what to do.

_____ 5. I concentrate my efforts on doing something about it.

_____ 6. I say to myself "this isn't real."

_____ 7. I put my trust in God.

_____ 8. I laugh about the situation.

_____ 9. I admit to myself that I can't deal with it, and quit trying.

_____ 10. I restrain myself from doing anything too quickly.

_____ 11. I discuss my feelings with someone.

_____ 12. I use alcohol or drugs to make myself feel better.

_____ 13. I get used to the idea that it happened.

_____ 14. I talk to someone to find out more about the situation.

(Please continue, see next page)

Appendix D (Continued).

1 = I usually don't do this at all
2 = I usually do this a little bit
3 = I usually do this a medium amount
4 = I usually do this a lot

_____ 15. I keep myself from getting distracted by other thoughts or activities.

_____ 16. I daydream about things other than this.

_____ 17. I get upset, and am really aware of it.

_____ 18. I seek God's help.

_____ 19. I make a plan of action.

_____ 20. I make jokes about it.

_____ 21. I accept that this has happened and that it can't be changed.

_____ 22. I hold off doing anything about it until the situation permits.

_____ 23. I try to get emotional support from friends or relatives.

_____ 24. I just give up trying to reach my goal.

_____ 25. I take additional action to try to get rid of the problem.

_____ 26. I try to lose myself for a while by drinking alcohol or taking drugs.

_____ 27. I refuse to believe that it has happened.

_____ 28. I let my feelings out.

_____ 29. I try to see it in a different light, to make it seem more positive.

_____ 30. I talk to someone who could do something concrete about the problem.

_____ 31. I sleep more than usual.

_____ 32. I try to come up with a strategy about what to do.

_____ 33. I focus on dealing with this problem, and if necessary let other things slide a little.

_____ 34. I get sympathy and understanding from someone.

_____ 35. I drink alcohol or take drugs, in order to think about it less.

_____ 36. I kid around about it.

_____ 37. I give up the attempt to get what I want.

_____ 38. I look for something good in what is happening.

(Please continue, see next page)

Appendix D (Continued).

1 = I usually don't do this at all
2 = I usually do this a little bit
3 = I usually do this a medium amount
4 = I usually do this a lot

_____ 39. I think about how I might best handle the problem.

_____ 40. I pretend that it hasn't really happened.

_____ 41. I make sure not to make matters worse by acting too soon.

_____ 42. I try hard to prevent other things from interfering with my efforts at dealing with this.

_____ 43. I go to movies or watch TV, to think about it less.

_____ 44. I accept the reality of the fact that it happened.

_____ 45. I ask people who have had similar experiences what they did.

_____ 46. I feel a lot of emotional distress and I find myself expressing those feelings a lot.

_____ 47. I take direct action to get around the problem.

_____ 48. I try to find comfort in my religion.

_____ 49. I force myself to wait for the right time to do something.

_____ 50. I make fun of the situation.

_____ 51. I reduce the amount of effort I'm putting into solving the problem.

_____ 52. I talk to someone about how I feel.

_____ 53. I use alcohol or drugs to help me get through it.

_____ 54. I learn to live with it.

_____ 55. I put aside other activities in order to concentrate on this.

_____ 56. I think hard about what steps to take.

_____ 57. I act as though it hasn't even happened.

_____ 58. I do what has to be done, one step at a time.

_____ 59. I learn something from the experience.

_____ 60. I pray more than usual.

Appendix E.

Deliberate Self-Harm Inventory (DSHI)

This questionnaire asks about a number of different things that people sometimes do to hurt themselves. Please be sure to read each question carefully and respond honestly. Often, people who do these kinds of things to themselves keep it a secret, for a variety of reasons. However, honest responses to these questions will provide us with greater understanding and knowledge about these behaviors and the best way to help people. Please answer yes to a question only if you did the behavior intentionally, or on purpose, to hurt yourself. Do not respond yes if you did something accidentally (e.g., you tripped and banged your head on accident). Also, please be assured that your responses are completely confidential.

Have you ever intentionally (i.e., on purpose, meaning to hurt yourself, not accidentally)**:**

1. Cut your wrist, arms, or other area(s) of your body (without intending to kill yourself)?

Yes **No**

If yes,

_____ How old were you when you first did this?

_____ How many times have you done this?

_____ When was the last time you did this?

_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)

_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

2. Burned yourself with a cigarette?

Yes **No**

If yes,

_____ How old were you when you first did this?

_____ How many times have you done this?

_____ When was the last time you did this?

_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)

_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

(Please continue, see next page)

Appendix E (Continued).

3. Burned yourself with a lighter or a match?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

4. Carved words into your skin?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

5. Carved pictures, designs, or other marks into your skin?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

6. Severely scratched yourself, to the extent that scarring or bleeding occurred?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

(Please continue, see next page)

Appendix E (Continued).

7. Bit yourself, to the extent that you broke the skin?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

8. Rubbed sandpaper on your body?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

9. Dripped acid onto your skin?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

10. Used bleach, comet, oven cleaner, or another noxious chemical to scrub your skin?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

(Please continue, see next page)

Appendix E (Continued).

11. Stuck sharp objects such as needles, pins, staples, etc. into your skin, not including tattoos, ear piercing, needles used for drug use, or body piercing?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

12. Rubbed glass into your skin?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

13. Broken your own bones?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

(Please continue, see next page)

Appendix E (Continued).

14. Banged your head against something, to the extent that you caused a bruise to appear?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

15. Punched yourself or punched another item (i.e., wall, etc.), to the extent that a bruise or cut appeared?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

16. Prevented wounds from healing?

Yes **No**

If yes,

_____ How old were you when you first did this?
_____ How many times have you done this?
_____ When was the last time you did this?
_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)
_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

(Please continue, see next page)

Appendix E (Continued).

17. Done anything else to hurt yourself that was not asked about in this questionnaire?

Yes **No**

If yes,

_____ How old were you when you first did this?

_____ How many times have you done this?

_____ When was the last time you did this?

_____ How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?)

_____ Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

What did you do to hurt yourself?

_____

_____

_____

_____

Appendix F.

Self-Harm Behavior Questionnaire (SHBQ)

A lot of people do things that 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.

We are interested in learning more about the ways in which you may have intentionally or unintentionally hurt yourself. We are also interested in trying to understand why people may do some of these dangerous things. It is important for you to understand that if you tell us about things you've done which may have been unsafe or make it possible that you may not be able to keep yourself safe, we will encourage you to discuss this with a counselor or other confidant in order to keep you safe in the future.

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, please do not give specific names. We only want to know if it was someone like a parent, teacher, doctor, friend, etc.

PART A. Things you may have actually done to yourself on purpose

1. Have you ever hurt yourself on purpose? (e.g., scratched yourself with a fingernail 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 anyone 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**

(Please continue, see next page)

Appendix F (Continued).

PART B: 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?

_____

_____

(**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**

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**

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

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

_____

(Please continue, see next page)

Appendix F (Continued).

c. Did you get the reaction you wanted? ……. **YES** **NO**

If NO, what type of reaction was there to your attempt?

_____

_____

d. Who knew about your attempt?

_____

PART C. 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**

(Please continue, see next page)

Appendix F (Continued).

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 threat?

PART D. Times you talked or thought seriously about attempting suicide

5. Have you ever talked or thought about:

- wanting to die …….. **YES** **NO**
- committing suicide ……... **YES** **NO**

If NO, go on to next measure.

If YES:

a. What did you talk about doing?

_____

b. With whom did you discuss this?

_____

c. What made you feel like doing that?

---

d. Did you have a specific plan(s) for how you would try to kill yourself?

YES **NO**

If YES, what plan(s) did you have?

(Please continue, see next page)

Appendix F (Continued).

e. In looking back, how did you imagine people would react to your attempt?

_____

_____

f. Did you think about how people would react if you did succeed in killing yourself?

YES NO

If yes, how did you think they would react?

_____

_____

g. Did you ever take steps to prepare for this plan?

YES NO

If yes, what did you do to prepare?

_____

_____

Appendix G.

Functional Assessment of Self-Mutilation (FASM)

Select how often you have harmed yourself for any of the reasons listed below:

0 = Never
1 = Rarely
2 = Sometimes
3 = Often

_____ 1. To avoid school, work, or other activities

_____ 2. To relieve feeling "numb" or empty

_____ 3. To get attention

_____ 4. To feel something, even if it is pain

_____ 5. To avoid having to do something unpleasant you don't want to do

_____ 6. To get control of a situation

_____ 7. To try to get a reaction from someone, even if it is a negative reaction

_____ 8. To receive more attention from your parents or friends

_____ 9. To avoid being with people

_____ 10. To punish yourself

_____ 11. To get other people to act differently or change

_____ 12. To be like someone you respect

_____ 13. To avoid punishment or paying the consequences

_____ 14. To stop bad feelings

_____ 15. To let others know how desperate you were

_____ 16. To feel more a part of a group

_____ 17. To get your parents to understand or notice you

_____ 18. To give yourself something to do when alone

_____ 19. To give yourself something to do when with others

_____ 20. To get help

_____ 21. To make others angry

_____ 22. To feel relaxed

_____ 23. For another reason. Please specify:

_____

Appendix H.

State-Trait Personality Inventory-Trait Measure (STPI-T)

A number of statements that people have used to describe themselves are given below. Read each statement and then blacken the appropriate space on the answer sheet to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer that seems to describe how you *generally* feel.

1 = Almost Never
2 = Sometimes
3 = Often
4 = Almost Always

_____ 1. I am a steady person.

_____ 2. I am quick tempered.

_____ 3. I feel gloomy.

_____ 4. I feel satisfied with myself.

_____ 5. I have a fiery temper.

_____ 6. I feel happy.

_____ 7. I get into a state of tension or turmoil as I think over my recent concerns and interests.

_____ 8. I am a hotheaded person.

_____ 9. I feel depressed.

_____ 10. I wish I could be as happy as others seem to be.

_____ 11. I get angry when I'm slowed down by others mistakes.

_____ 12. I feel sad.

_____ 13. I feel like a failure.

_____ 14. I feel annoyed when I am not given recognition for doing good work.

_____ 15. I feel hopeless.

_____ 16. I feel nervous and restless.

_____ 17. I fly off the handle.

_____ 18. I feel low.

_____ 19. I feel secure.

(Please continue, see next page)

Appendix G (Continued).

_____ 20. When I get mad, I say nasty things.

_____ 21. I feel whole.

_____ 22. I lack self-confidence.

_____ 23. It makes me furious when I am criticized in from of others.

_____ 24. I feel safe.

_____ 25. I feel inadequate.

_____ 26. When I get frustrated, I feel like hitting someone.

_____ 27. I feel peaceful.

_____ 28. I worry too much over something that does not really matter.

_____ 29. I feel infuriated when I do a good job and get a poor evaluation.

_____ 30. I enjoy life.

Appendix I.

The International Personality Item Pool Five Factor - NEOAC (IPIP-NEOAC)

On the following pages, there are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then fill in the bubble that corresponds to the number on the scale.

1 = Very Inaccurate
2 = Moderately Inaccurate
3 = Neither Inaccurate nor Accurate
4 = Moderately Accurate
5 = Very Accurate

_____ 1. I often feel blue.

_____ 2. I feel comfortable around people.

_____ 3. I believe in the importance of art.

_____ 4. I have a good word for everyone.

_____ 5. I am always prepared.

_____ 6. I rarely lose my composure.

_____ 7. I keep others at a distance.

_____ 8. I have difficulty understanding abstract ideas.

_____ 9. I am out for my own personal gain.

_____ 10. I need a push to get started.

_____ 11. I dislike myself.

_____ 12. I make friends easily.

_____ 13. I have a vivid imagination.

_____ 14. I believe that others have good intentions.

_____ 15. I pay attention to details.

_____ 16. I remain calm under pressure.

_____ 17. I find it difficult to approach others.

_____ 18. I am not interested in theoretical discussions.

(Please continue, see next page)

Appendix I (Continued).

1 = Very Inaccurate
2 = Moderately Inaccurate
3 = Neither Inaccurate nor Accurate
4 = Moderately Accurate
5 = Very Accurate

_____ 19. I hold a grudge.

_____ 20. I make a mess of things.

_____ 21. I am often down in the dumps.

_____ 22. I am skilled in handling social situations.

_____ 23. I tend to vote for liberal political candidates.

_____ 24. I respect others.

_____ 25. I get chores down right away.

_____ 26. I am not easily frustrated.

_____ 27. I retreat from others.

_____ 28. I believe that too much tax money goes to support artists.

_____ 29. I make demands on others.

_____ 30. I don't put my mind on the task at hand.

_____ 31. I have frequent mood swings.

_____ 32. I am the life of the party.

_____ 33. I carry the conversation to a higher level.

_____ 34. I accept people as they are.

_____ 35. I carry out my plans.

_____ 36. I seldom get mad.

_____ 37. I am hard to get to know.

_____ 38. I rarely look for a deeper meaning in things.

_____ 39. I contradict others.

_____ 40. I leave things unfinished.

_____ 41. I panic easily.

_____ 42. I know how to captivate people.

(Please continue, see next page)

Appendix I (Continued).

1 = Very Inaccurate
2 = Moderately Inaccurate
3 = Neither Inaccurate nor Accurate
4 = Moderately Accurate
5 = Very Accurate

_____ 43. I enjoy hearing new ideas.

_____ 44. I make people feel at ease.

_____ 45. I make plans and stick to them.

_____ 46. I am relaxed most of the time.

_____ 47. I avoid contact with others.

_____ 48. I do not like poetry.

_____ 49. I believe that I am better than others.

_____ 50. I mess things up.

_____ 51. I am filled with doubts about things.

_____ 52. I start conversations.

_____ 53. I enjoy thinking about things.

_____ 54. I am concerned about others.

_____ 55. I complete tasks successfully.

_____ 56. I am very pleased with myself.

_____ 57. I don't talk a lot.

_____ 58. I tend to vote for conservative political candidates.

_____ 59. I insult people.

_____ 60. I shirk my duties.

_____ 61. I feel threatened easily.

_____ 62. I warm up quickly to others.

_____ 63. I can say things beautifully.

_____ 64. I trust what people say.

_____ 65. I do things according to a plan.

_____ 66. I am not easily bothered by things.

(Please continue, see next page)

Appendix I (Continued).

1 = Very Inaccurate
2 = Moderately Inaccurate
3 = Neither Inaccurate nor Accurate
4 = Moderately Accurate
5 = Very Accurate

_____ 67. I don't like to draw attention to myself.

_____ 68. I do not enjoy going to art museums.

_____ 69. I get back at others.

_____ 70. I don't see things through.

_____ 71. I get stressed out easily.

_____ 72. I talk to a lot of different people at parties.

_____ 73. I enjoy wild flights of fancy.

_____ 74. I sympathize with others' feelings.

_____ 75. I am exacting in my work.

_____ 76. I rarely get irritated.

_____ 77. I would describe my experiences as somewhat dull.

_____ 78. I avoid philosophical discussions.

_____ 79. I suspect hidden motives in others.

_____ 80. I do just enough work to get by.

_____ 81. I fear for the worst.

_____ 82. I don't mind being the center of attention.

_____ 83. I get excited by new ideas.

_____ 84. I am easy to satisfy.

_____ 85. I finish what I start.

_____ 86. I feel comfortable with myself.

_____ 87. I keep in the background.

_____ 88. I do not like art.

_____ 89. I cut others to pieces.

_____ 90. I find it difficult to get down to work.

(Please continue, see next page)

Appendix I (Continued).

1 = Very Inaccurate
2 = Moderately Inaccurate
3 = Neither Inaccurate nor Accurate
4 = Moderately Accurate
5 = Very Accurate

_____ 91. I worry about things.

_____ 92. I cheer people up.

_____ 93. I have a rich vocabulary.

_____ 94. I treat all people equally.

_____ 95. I follow through with my plans.

_____ 96. I seldom feel blue.

_____ 97. I have little to say.

_____ 98. I am not interested in abstract ideas.

_____ 99. I have a sharp tongue.

_____ 100. I waste my time.

Appendix J.

The Inventory of College Students' Recent Life Experiences (ICSRLE)

Following is a list of experiences which many students have some time or other. Please indicate for each experience how much it has been a part of your life *over the past month*. Put a "1" in the space provided next to an experience if it was *not at all part* of your life over the past month (e.g., "trouble with mother in law" – 1); "2" for an experience which was *only slightly* part of your life over that time; "3" for an experience that was *distinctly* part of your life; and "4" for an experience which was *very much* part of your life over the past month.

Intensity of Experience Over Past Month:

1 = *Not at all* part of my life
2 = *Only slightly* part of my life
3 = *Distinctly* part of my life
4 = *Very much* part of my life

_____ 1. Conflict with boyfriend's / girlfriend's / spouse's family

_____ 2. Being let down or disappointed by friends

_____ 3. Conflict with professor(s)

_____ 4. Social rejection

_____ 5. Too many things to do at once

_____ 6. Being taken for granted

_____ 7. Financial conflicts with family members

_____ 8. Having your trust betrayed by a friend

_____ 9. Separation from people you care about

_____ 10. Having your contributions overlooked

_____ 11. Struggling to meet your academic standards

_____ 12. Being taken advantage off

_____ 13. Not enough leisure time

_____ 14. Struggling to meet the academic standards of others

_____ 15. A lot of responsibilities

_____ 16. Dissatisfaction with school

_____ 17. Decisions about intimate relationship(s)

_____ 18. Not enough time to meet your obligations

(Please continue, see next page)

Appendix J (Continued).

_____ 19. Dissatisfaction with your mathematical ability

_____ 20. Important decisions about your education

_____ 21. Financial burdens

_____ 22. Dissatisfaction with your reading ability

_____ 23. Important decisions about your education

_____ 24. Loneliness

_____ 25. Lower grades than you hoped for

_____ 26. Conflict with teaching assistant(s)

_____ 27. Not enough time for sleep

_____ 28. Conflicts with your family

_____ 29. Heavy demands from extracurricular activities

_____ 30. Finding courses too demanding

_____ 31. Conflicts with friends

_____ 32. Hard effort to get ahead

_____ 33. Poor health of a friend

_____ 34. Disliking your studies

_____ 35. Getting "ripped off" or cheated in the purchase of services

_____ 36. Social conflicts over smoking

_____ 37. Difficulties with transportation

_____ 38. Disliking fellow student(s)

_____ 39. Conflicts with boyfriend/girlfriend/spouse

_____ 40. Dissatisfaction with your ability at written expression

_____ 41. Interruptions of your school work

_____ 42. Social isolation

_____ 43. Long wait to get service (e.g., at banks, stores, etc.)

_____ 44. Being ignored

_____ 45. Dissatisfaction with your physical appearance

_____ 46. Finding course(s) uninteresting

(Please continue, see next page)

Appendix J (Continued).

_____ 47. Gossip concerning someone your care about

_____ 48. Failing to get expected job

_____ 49. Dissatisfaction with your athletic skills

Appendix K.

National College Health Risk Behavior Survey (NCHRBS)

Please keep in mind that all data you provide will be keep completely confidential. As such, please answer honestly! No data will ever be linked to your name or other identifying information.

Safety and Violence

1. How often do you wear a seat belt while riding in a car driven by someone else?
   A. Never
   B. Rarely
   C. Sometimes
   D. Most of the time
   E. Always

2. How often do you wear a seat belt when driving a car?
   A. I do not drive a car
   B. Never
   C. Rarely
   D. Sometimes
   E. Most of the time
   F. Always

3. When you ride a motorcycle, how often do you wear a helmet?
   A. I do not ride a motorcycle
   B. Never
   C. Rarely
   D. Sometimes
   E. Most of the time
   F. Always

4. When you ride a bicycle, how often do you wear a helmet?
   A. I do not ride a bicycle
   B. Never
   C. Rarely
   D. Sometimes
   E. Most of the time
   F. Always

5. When you go boating or swimming, how often do you drink alcohol?
   A. I do not go boating or swimming
   B. Never
   C. Rarely
   D. Sometimes
   E. Most of the time
   F. Always

(Please continue, see next page)

Appendix K (Continued).

6. How many times have ridden in a car or other vehicle with someone who had been drinking alcohol?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or more times

7. How many times have you driven a car or other vehicle when you had been drinking alcohol?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or more times

8. On how many days have you carried a weapon, such as a gun, knife, or club? Do not count carrying a weapon as part of your job (i.e., law enforcement, security, etc.).
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or more times

9. How many times have you been in a physical fight? Do not count childhood squabbles, but physical fights in adolescence can count.
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or 7 times
    F. 8 or 9 times
    G. 10 or 11 times
    H. 12 or more times

10. When you were in physical fights, with whom did you fight? Select all that apply.
    A. I did not fight.
    B. A total stranger
    C. A friend or someone I know
    D. A boyfriend, girlfriend, or date
    E. A spouse or domestic partner
    F. A parent, brother, sister, or other family member
    G. Other (Please specify: _____)

(Please continue, see next page)

Appendix K (Continued).

11. How many times were you in a physical fight in which you were injured and had to be treated by a doctor or nurse?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 or 5 times
    E. 6 or more times

Tobacco Use

12. Have you ever tried cigarette smoking, even one or two puffs?
    A. Yes
    B. No

13. How old were you when you first smoked a cigarette for the first time?
    A. I have never tried smoking.
    B. I have never smoked a whole cigarette.
    C. 12 years old or younger
    D. 13 or 14 years old
    E. 15 or 16 years old
    F. 17 or 18 years old
    G. 19 or 20 years old
    H. 21 to 24 years old
    I. 25 or older

14. During the past 30 days, on how many days did you smoke cigarettes?

    A. I have never smoked.
    B. 0 days
    C. 1 or 2 days
    D. 3 to 5 days
    E. 6 to 9 days
    F. 10 to 19 days
    G. 20 to 29 days
    H. Everyday

(Please continue, see next page)

Appendix K (Continued).

15. During the past 30 days, on the days that you smoked, how many cigarettes did you smoke per day?
    A. I have never smoked.
    B. I did not smoke during the past 30 days.
    C. Less than 1 cigarette per day.
    D. 1 cigarette per day
    E. 2 to 5 cigarettes per day
    F. 6 to 10 cigarettes per day
    G. 11 to 20 cigarettes per day
    H. More than 20 cigarettes per day

16. Have you ever smoked cigarettes regularly, that is, at least one cigarette every day for 30 days?
    A. I have never smoked.
    B. Yes
    C. No

17. How old were you when you first started smoking cigarettes regularly (at least one cigarette every day for 30 days)?
    A. I have never smoked.
    B. I have never smoked cigarettes regularly.
    C. 12 years old or younger
    D. 13 or 14 years old
    E. 15 or 16 years old
    F. 17 or 18 years old
    G. 19 or 20 years old
    H. 21 to 24 years old
    I. 25 or older

18. Have you ever tried to quit smoking?
    A. I have never smoked.
    B. Yes
    C. No

19. Have you ever used chewing tobacco or snuff, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen?
    A. Yes
    B. No

(Please continue, see next page)

Appendix K (Continued).

Alcohol

The next three questions ask about drinking alcohol. This includes drinking beer, wine, wine coolers, and liquor such as rum, gin, vodka, or whiskey. For these questions, drinking alcohol does not include drinking a few sips of wine for religious purposes.

20. How old were you when you had your first drink of alcohol other than a few sips?
    A. I have never had a drink of alcohol other than a few sips.
    B. 12 years old or younger
    C. 13 or 14 years old
    D. 15 or 16 years old
    E. 17 or 18 years old
    F. 19 or 20 years old
    G. 21 to 24 years old
    H. 25 or older

21. During the past 30 days, on how many days did you have at least one drink of alcohol?
    A. I have never had a drink of alcohol other than a few sips.
    B. 0 days
    C. 1 or 2 days
    D. 3 to 5 days
    E. 6 to 9 days
    F. 10 to 19 days
    G. 20 to 29 days
    H. Everyday

22. During the past 30 days, on how many days did you have five or more drinks of alcohol in a raw, that is, within a couple of hours?
    A. I have never had a drink of alcohol other than a few sips.
    B. 0 days
    C. 1 or 2 days
    D. 3 to 5 days
    E. 6 to 9 days
    F. 10 to 19 days
    G. 20 to 29 days

(Please continue, see next page)

Appendix K (Continued).

Marijuana

23. During your life, how many times have you used marijuana?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 to 99 times
    G. 100 or more times

24. How old were you when you tried marijuana for the first time?
    A. I have never tried marijuana.
    B. 12 years old or younger
    C. 13 or 14 years old
    D. 15 or 16 years old
    E. 17 or 18 years old
    F. 19 or 20 years old
    G. 21 to 24 years old
    H. 25 or older

25. During the past 30 days, how many times did you use marijuana?
    A. I have never tried marijuana.
    B. 0 times
    C. 1 or 2 times
    D. 3 to 9 times
    E. 10 to 19 times
    F. 20 to 39 times
    G. 40 or more times

Other drug use

26. How many times have you used any form of cocaine, including powder, crack, or freebase?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 to 99 times
    G. 100 or more times

(Please continue, see next page)

Appendix K (Continued).

27. How many times have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 to 99 times
    G. 100 or more times

28. How many times have you taken steroid pills or shots without a doctor's prescription?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 to 99 times
    G. 100 or more times

29. How many times have you used any other type of illegal drug, such as LCD, PCP, ecstasy, mushrooms, speed, ice, or heroin?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 to 99 times
    G. 100 or more times

30. How many times have you used any illegal drug in combination with alcohol?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 to 99 times
    G. 100 or more times

(Please continue, see next page)

Appendix K (Continued).

31. How many times have you used a needle to inject any drug into your body?
    A. 0 times
    B. 1 or 2 times
    C. 3 to 9 times
    D. 10 to 19 times
    E. 20 to 39 times
    F. 40 to 99 times
    G. 100 or more times

Sexuality

The next seven questions ask about sexual behavior. For the purpose of this survey, sexual intercourse is defined as vaginal intercourse, anal intercourse, or oral/genital sex.

32. How old were you when you first had sexual intercourse?
    A. I have never had sexual intercourse.
    B. 12 years old or younger
    C. 13 or 14 years old
    D. 15 or 16 years old
    E. 17 or 18 years old
    F. 19 or 20 years old
    G. 21 to 24 years old
    H. 25 or older

33. With how many females have you had sexual intercourse?
    A. I have never had sexual intercourse.
    B. I have never had sexual intercourse with a female.
    C. 1 female
    D. 2 females
    E. 3 females
    F. 4 females
    G. 5 females
    H. 6 or more females

34. With how many males have you had sexual intercourse?
    A. I have never had sexual intercourse.
    B. I have never had sexual intercourse with a male.
    C. 1 male
    D. 2 males
    E. 3 males
    F. 4 males
    G. 5 males
    H. 6 or more males

(Please continue, see next page)

Appendix K (Continued).

35. During the past 30 days, how many times did you have sexual intercourse?
    A. 0 times
    B. 1 time
    C. 2 or 3 times
    D. 4 to 9 times
    E. 10 to 19 times
    F. 20 or more times

36. During the past 30 days, how often did you or your partner use a condom?
    A. I have never had sexual intercourse.
    B. I have not had sexual intercourse during the past 30 days.
    C. Never
    D. Rarely
    E. Sometimes
    F. Most of the time
    G. Always

37. How many times in your life have you been pregnant or gotten someone pregnant?
    A. I have never had sexual intercourse.
    B. 0 times
    C. 1 time
    D. 2 or more times
    E. Not sure

38. Have you ever been forced to have sexual intercourse against your will?
    A. Yes
    B. No

Body weight

39. How do you describe your weight?
    A. Very underweight
    B. Slightly underweight
    C. About the right weight
    D. Slightly overweight
    E. Very overweight

40. Which of the following are you trying to do about your weight?
    A. Lose weight
    B. Gain weight
    C. Stay the same weight
    D. I am not trying to do anything about my weight

(Please continue, see next page)

Appendix K (Continued).

41. Have you dieted to lose weight or keep from gaining weight?
    A. Yes
    B. No

42. Have you exercised to lose weight or keep from gaining weight?
    A. Yes
    B. No

43. Have you vomited or taken laxatives to lose weight or keep from gaining weight?
    A. Yes
    B. No

44. Have you taken diet pills to lose weight or keep from gaining weight?
    A. Yes
    B. No

45. What is your height range?
    A. 4 feet or under
    B. 4 feet, 1 inch to 4 feet, 5 inches
    C. 4 feet, 6 inches to 5 feet
    D. 5 feet, 1 inch to 5 feet, 5 inches
    E. 5 feet, 6 inches to 6 feet
    F. 6 feet, 1 inch to 6 feet, 5 inches
    G. 6 feet, 6 inches to 7 feet
    H. 7 feet, 1 inch or over

46. What is your weight range?
    A. 90 pounds or under
    B. 91 to 120 pounds
    C. 121 to 150 pounds
    D. 151 to 180 pounds
    E. 181 to 210 pounds
    F. 211 to 240 pounds
    G. 241 to 270 pounds
    H. 271 to 300 pounds
    I. 301 pounds or over

(Please continue, see next page)

Appendix K (Continued).

Physical activity

47. On how many of the past seven days did you participate in exercise or sports activities for at least 20 minutes that made you sweat or breathe hard, such as basketball, jogging, swimming laps, fast bicycling, or similar aerobic exercise?
    A. 0 days
    B. 1 day
    C. 2 days
    D. 3 days
    E. 4 days
    F. 5 days
    G. 6 days
    H. 7 days

48. On how many of the past seven days did you do stretching exercises, such as toe touching, knee bending, or leg stretching?
    A. 0 days
    B. 1 day
    C. 2 days
    D. 3 days
    E. 4 days
    F. 5 days
    G. 6 days
    H. 7 days

49. On how many of the past seven days did you do exercises to tone or strengthen your muscles, such as push-ups, sit-ups, or weight-lifting?
    A. 0 days
    B. 1 day
    C. 2 days
    D. 3 days
    E. 4 days
    F. 5 days
    G. 6 days
    H. 7 days

Appendix L.

ASSESSMENT OF SUICIDALITY & SELF-HARM PROTOCOL

Say to the subject:
I want to talk to you a bit more about what you said here on the questionnaire about <u>trying to kill/harm yourself.</u> Just to be sure, let me ask…

1. **Have you ever tried to kill or harm yourself?**

☐ YES *Record response and proceed to Question 2a.*

☐ NO *Record response and skip to Question 3.*

Student Response:

_____
_____
_____
_____
_____
_____
_____

2a. **What happened?** *(i.e., method of suicide or self-injury)*

Student Response:

_____
_____
_____
_____
_____
_____
_____

2b. **Where did this take place?**

Student Response:

_____
_____
_____
_____
_____
_____

Appendix L (Continued).

2c. **What led up to this?** *(i.e., why did the subject attempt suicide or self-harm)*

Student Response:

_____
_____
_____
_____
_____
_____
_____

2d. **When did this occur?**

☐ WITHIN LAST 2 WEEKS - *Proceed to Question 5.*

☐ NOT WITHIN THE LAST 2 WEEKS - *Proceed to question 3.*

Student Response:

_____
_____
_____
_____
_____
_____
_____

3. **I really appreciate your sharing this information with me. Have you thought about killing or harming yourself in the past two weeks?**

☐ YES *Record response and proceed to Question 4a.*

☐ NO ***END PROTOCOL.***
Proceed to script for when suicidality / self-harm is NOT IMMINENT.

Student Response:

_____
_____
_____
_____
_____
_____
_____

Appendix L (Continued).

4a. **When you were considering killing or harming yourself within the past two weeks, did you have a plan of how to do it?**

☐ YES *Record response and proceed to Question 4b.*

☐ NO *Record response and skip to item 5.*

Student Response:

_____
_____
_____
_____
_____
_____
_____

4b. **What was your plan?** *(i.e., how, when, and where the youth planned to kill or harm themselves).*

Student Response:

_____
_____
_____
_____
_____
_____
_____

5. **Are you currently considering killing or harming yourself?**

☐ YES *Record response and proceed to Question 6a.*

☐ NO ***END PROTOCOL.***
Proceed to script for when suicidality / self-harm is <u>IMMINENT</u>.

Student Response:

_____
_____
_____
_____
_____
_____
_____
_____

Appendix L (Continued).

6a. **Do you have a plan for killing or harming yourself?**

☐ YES *Record response and continue to Question 6b.*

☐ NO ***END PROTOCOL.***
Proceed to script for when suicidality / self-harm is IMMINENT.

Student Response:

_____
_____
_____
_____
_____
_____
_____

6b. **What is your plan?** *(i.e., how, when, and where the youth planned to kill or harm themselves).*

NOTE: If the youth already described a plan to you, say: **Is your plan the same as the one you just described?**

Student Response:

_____
_____
_____
_____
_____
_____
_____

7. ***END PROTOCOL. Proceed to script for when suicidality / self-harm is IMMINENT.***

Note: If you are not able to determine, based on the information provided, whether or not the student has thought of or engaged in self-harm behavior within the last two weeks or whether or not the student plans to engage in self-harm behavior in the future: ***FOLLOW THE SCRIPT TO EXPLAIN THE CONSULTATION PROCEDURE AND CALL THE CONSULTANT.***

Appendix L (Continued).

Suicide & Self-Harm: Script for explaining consultation procedure when suicidality or self-harm is <u>NOT IMMINENT</u>

Say to student:

From what you've told me, it seems like you have been feeling _____ *(e.g., sad a lot lately)***. Many people feel this way when they are going through tough times. Letting other people know how you're feeling, rather than keeping it to yourself, is important. Other people have these feelings, too, and there are trained people who understand and can help you deal with these feelings. I would like to give you some information. This should help you decide if you'd like to see a trained person who'll help you feel better.**

Offer the student contact information of mental health professionals:

1. **USF Counseling Center**, 4202 E. Fowler Avenue SVC 2124, Tampa, FL 33620, (813) 974-2831

2. **USF Psychological Services Center**, 4202 E. Fowler Avenue PCD 1100A, Tampa FL 33620, (813) 974-2496

3. **National Hotlines:** 1-800-273-TALK or 1-800-SUICIDE

4. **Local Hotlines:** 211 for Pinellas County or (813) 234-1234 for Hillsborough County

I hope you will consider talking with a mental health professional about how you're feeling. Talking to a professional can be very helpful. Thank you for talking with me today.

Appendix L (Continued).

Suicide & Self-Harm: Script for explaining consultation procedure when suicidality or self-harm is <u>IMMINENT</u>

Say to student:
From what you've told me, it seems like you have been feeling _____ *(e.g., sad a lot lately)***. Many people feel this way when they are going through tough times. Letting other people know how you're feeling, rather than keeping it to yourself, is important. Other people have these feelings, too, and there are trained people who understand and can help you deal with these feelings. I would like to give you some information. This should help you decide if you'd like to see a trained person who'll help you feel better.**

Offer the student contact information of mental health professionals:

1. **USF Counseling Center**, 4202 E. Fowler Avenue SVC 2124, Tampa, FL 33620, (813) 974-2831

2. **USF Psychological Services Center**, 4202 E. Fowler Avenue PCD 1100A, Tampa FL 33620, (813) 974-2496

3. **National Hotlines:** 1-800-273-TALK or 1-800-SUICIDE

4. **Local Hotlines:** 211 for Pinellas County or (813) 234-1234 for Hillsborough County

After giving referral information:
What you said about _____*(use the student's own words)* **concerns me. It sounds like something to take seriously. I need to let one of the doctors that I work with know that _____***(use the student's own words)* **because I am legally responsible for watching out for your safety. I am going to call the doctor now so that s/he can ask you some more questions. I have to ask that you wait and please talk to him/her. This will only take a few minutes. Is that ok with you?**

Encourage student to wait and speak with the consultant. If they refuse:
Even if you do not stay, I will still have to call one of the doctors that I work with and they <u>may</u> be required to call 911 and have a law enforcement officer come to your house to ensure your safety. Will you please reconsider talking to the doctor?

Thank you. I really appreciate it. Do you have any questions for me before I call?
(Answer any questions.)

Okay. Thank you for talking with me.
(Call consultant while remaining in the room with participant. DO NOT leave participant alone.)

Appendix M.

PROTOCOL FOR SUICIDE CONSULTANTS

Step 1: Consult with the RA

The research assistant will contact a suicide consultant after every interview with an student in which the RA had suspicions of imminent risk for suicidality or self-harm. Complete the following Case Information form as you gather information from the RA about the situation.

Case Information

Consultant Name: _____

Research Assistant Name: _____

Participant Name & Number: _____

Date & Time of Consultant Contact: _____

Document what the RA said to the student and the RA's report of the student's reactions in the space provided below.

Appendix M (Continued).

Step 2: Consultant Assessment

1) After gathering preliminary information from the RA, speak with the participant to evaluate the situation further.

2) Determine the intensity of risk, using the Suicide Risk Interview on next page.

3) Determine appropriate follow-up actions.

If law enforcement needs to be contacted:
USF Police Department (813) 974-2628

If the student needs a referral, provide the following information:
1. **Hillsborough County Psychiatric Emergency & Admission**, (813) 238-8411
2. **Tampa General Hospital Psychiatric Services**, inpatient unit.
3. **USF Psychological Services Center**, 4202 E. Fowler Avenue PCD 1100A, Tampa FL 33620, (813) 974-2496
4. **USF Counseling Center**, 4202 E. Fowler Avenue SVC 2124, Tampa, FL 33620, (813) 974-2831
5. **National Hotlines:** 1-800-273-TALK or 1-800-SUICIDE
6. **Local Hotlines:** 211 for Pinellas County or (813) 234-1234 for Hillsborough County

4) Document steps taken and recommendations.

_____
_____
_____
_____
_____

Appendix M (Continued).

SUICIDE RISK

Clarify the nature/extent of risk by saying: **"In talking with the research assistant, you had mentioned… please tell me more about that."** Obtain information regarding specific thoughts, duration of thoughts, and recency of thoughts. Record the student's response in the space below.

Planning (e.g. having a specific plan, notes, giving away belongings)

Previous attempt(s)

Appendix M (Continued).

Recent exposure to death/suicide

Current stressors (family, peer, school)

Current mood state

Availability of means to follow through with act

Social supports

Appendix M (Continued).

Assess overall mental status (oriented – who, when, where, not confused, coherent, adequate judgment)

_____
_____
_____
_____
_____
_____

Problem-solve alternatives to hurting self. Help participant to generate coping strategies to deal with suicide-provoking situations in the interim. For example:

- distracting activities
- doing something for others
- avoiding stressful situations
- distract with pleasant sensations (any of 5 senses)
- positive imagery
- prayer
- any relaxation strategies known

Indicate strategies discussed and student's attitude toward each below.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Appendix M (Continued).

Ask student to **contract for safety** over next 24 hours if there is more than minimal risk. Place a check mark in the appropriate box and, if possible, record any details about each task in the spaces below.

<u>If they **can agree** to contract for safety:</u>

- Help them develop a concrete plan in case of crisis (e.g., identify social supports to contact, keep emergency telephone numbers by phone).

  _____
  _____
  _____
  _____
  _____
  _____

- If they are in treatment: Contract with them to talk with the therapist directly as soon as possible (i.e. the next morning).

  _____
  _____
  _____
  _____

- If they are not in treatment: Encourage them to set up an emergency appointment by the following day.

  _____
  _____
  _____
  _____
  _____
  _____

- Review limiting access to means (e.g., pills, firearms).

  _____
  _____
  _____
  _____
  _____
  _____

Appendix M (Continued).

- Review treatment plan (i.e., contacting therapist or scheduling and going to an emergency appointment).

_____
_____
_____
_____
_____
_____

If at any point during the interview, the student seems disoriented, agitated, or otherwise at enhanced risk, begin Baker Act proceedings following clinic protocol.

☐ Applicable ☐ Not Applicable

_____
_____
_____
_____
_____