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## Identifying Protective Factors to Early Suicide Markers: The Buffering Effects of Savoring and Resilience

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# IDENTIFYING PROTECTIVE FACTORS TO EARLY SUICIDE MARKERS: THE BUFFERING EFFECTS OF SAVORING AND RESILIENCE

by

MATT MICELI

(Under the Direction of Jeff Klibert)

## ABSTRACT

Suicide continues to be one of the leading causes of death in the United States, which highlights the need for researchers to identify protective models through longitudinal designs (Centers for Disease Control and Prevention [CDC], 2019). Importantly, suicide prevention strategies are more efficacious when they target early indicators of suicide and consider risk and protective factors. Desire for death, the combination of thwarted belongingness and perceived burdensomeness proposed by the interpersonal-psychological theory of suicidal behavior (Van Orden et al., 2008), is one such early marker of suicidal behavior. A protect factor is methodologically defined as one that demonstrates an inverse relationship and temporal precedence in predicting an outcome variable, as well as reduces the effect of stress on an outcome (Vagi et al., 2013; Steca et al., 2014). Two potential positive psychological resources may serve as protective factors for desire for death are savoring the moment and resilience. The purpose of the current study is to evaluate whether savoring the moment and resilience serve as protective factors for desire for death in a sample of community adults. The study employed a three-wave longitudinal design, where participants completed an online survey once every 2 months. Data were collected from an initial sample of 812 community adults, with a final sample of 248 participants who completed all phases of data collection. Stress exhibited fluctuating effects on desire for death cross-sectionally, but demonstrated a significant positive relationship with desire for death in longitudinal models. Savoring the moment was inversely related to desire for death scores cross-sectionally and over time, but did not buffer the relationship between stress and desire for death cross-sectionally or over time. Resilience was negatively associated with desire for death at Time 1 and Time 2, but not Time 3. Additionally, there were no significant interaction effects between stress and resilience on desire for death at any time point or across time. These findings highlight the importance of savoring the moment and resilience in reducing risk to early markers of suicide; however, other factors may better explain the conditional effects of stress on desire for death.

INDEX WORDS: Desire for death, Suicide, Stress, Savoring, Resilience

IDENTIFYING PROTECTIVE FACTORS TO EARLY SUICIDE MARKERS: THE  
BUFFERING EFFECTS OF SAVORING AND RESILIENCE

by

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## CHAPTER 1: INTRODUCTION

Suicide is a serious public health issue that accounts for over 800,000 deaths worldwide each year, equating to one death every 40 seconds (World Health Organization [WHO], 2014). Although suicidal behaviors are prevalent throughout the lifespan, some groups are more vulnerable than others. For instance, in 2017, suicide was the second leading cause of death among individuals aged 10-34 in the United States (Centers for Disease Control and Prevention [CDC], 2019). American adults aged 18-29 report higher rates of suicidal thoughts, suicide planning, and attempts to die by suicide compared to adults over the age of 30 (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). Moreover, full-time college students aged 18-22 years report similar rates of serious thoughts of suicide (8.0%) and suicide plans (2.4%) compared to non-college attending adults in this age group (8.7 and 3.1%; SAMHSA, 2014).

Given these disturbing rates, investigating early suicide markers is an important area of study. Although the current state of suicide prevention is useful, a major shortcoming is the conceptualization of suicide as a decisive act, rather than a trajectory of emerging threat and danger (Langhinrichsen-Rohling, Klibert, & Williams, 2011). Suicide entails a complex, linear process of thoughts, feelings, and behaviors that interact over time to increase the likelihood of death by suicide (Joiner et al., 2009). Suicide markers, such as feelings of disconnection from others and lack of self-worth, are often neglected because they occur in the earlier stages of the suicide trajectory. Previous suicide attempts, typically occurring later in the trajectory, are the strongest risk factors for both future suicide attempts and deaths by suicide (Fowler, 2012). A single attempt increases the risk of future attempts by up to 30% and the risk of death by 10% five years later (Haukka, Suominen, Partonen, & Lönnqvist, 2008). Therefore, if prevention

plans are suited to identify at-risk individuals earlier in the suicide trajectory, clinicians may be able to reduce the overall prevalence and incidence for suicide as a whole. As such, the investigation and identification of early indicators of suicidal behavior are crucial in guiding appropriate and effective suicide prevention strategies.

The literature on suicidal behavior is largely focused on identifying risk factors, while devoting minimal attention to factors that protect individuals against the development and exacerbation of suicidality. Protective factors are those that exhibit inverse relationships as well as temporal precedence in predicting an identified outcome (Vagi et al., 2013). Additionally, a variable is considered to be protective when its presence reduces the effect of stress on a clinically related outcome (Steca et al., 2014). Identifying protective factors is as equally important as detecting risk factors in order to increase the holistic effects of suicide prevention and intervention programs (Muehlenkamp & Gutierrez, 2004). One understudied platform to identifying protective factors is positive psychology. Broadly, positive psychology is the study of happiness and well-being (Lambert, Passmore, & Holder, 2015). The focus is on enhancing pleasure and promoting overall satisfaction with life through the development and reinforcement of positive psychological resources (Fredrickson, 2001).

Two important factors within positive psychology are savoring and resilience, both of which are scarcely considered in suicide literature. Research suggests savoring and resilience work together to produce desirable life outcomes (Cohn et al., 2009). Specifically, greater capacities for savoring and higher levels of resilience are predictive of greater psychological well-being (Smith & Hollinger-Smith, 2015). Hence, positive psychological resources may offer individuals protection from suicidality in the face of stressors. This is especially true for those who endure numerous hassles in day-to-day life. Examining the benefits of positive

psychological resources among people who frequently encounter stressful circumstances may offer new methods of managing stressors and reducing the occurrence of early suicide markers.

### **Purpose**

Given these emerging areas of research, the current study aimed to answer the following questions: (a) how does the relationship between self-reported stress and desire for death vary across time?; (b) do significant inverse relationships exist between positive psychological resources (i.e., savoring the moment and resilience) and desire for death?; (c) do reports of savoring the moment and resilience predict desire for death across time?; and (d) do savoring the moment and resilience buffer the effects of stress on desire for death over time?

### **Significance**

Observing a direct longitudinal relationship between stress and desire for death will offer additional support for the established link between stress and suicidality. Furthermore, finding evidence for such a relationship will emphasize the need to have early intervention strategies in place for community members experiencing significant stressors. Savoring and resilience promote positive outcomes in the face of stressful events (Hurley & Kwon, 2012; Tugade & Fredrickson, 2004). However, in the context of early markers of suicide, little is known about the role of resilience, and even less is known about the role of savoring in terms of how they buffer against negative psychological outcomes. In actuality, this study is the first to examine the role of savoring strategies in relation to early markers of suicide. Finding an inverse relationship between positive psychological resources and desire for death has the potential to expand our understanding of protective mechanisms to early suicide markers which, in turn, should facilitate more robust and holistic prevention programs.

The protective capacity and temporal stability of positive psychological resources is an underdeveloped line of study in terms of preventing desire for death in the context of stress. If savoring and resilience are found to buffer the impact of stress on desire for death, such resources can be bolstered in a therapeutic environment and may serve to protect individuals from engaging in future suicide behaviors. Moreover, insight into the long-term effects of savoring and resilience could provide clinicians with justification to preemptively employ interventions that may help mitigate the effects of stress on suicidal behavior. Therefore, if savoring and resilience are found to moderate the relationship between stress and desire for death, it will offer unique pathways through which clinicians can increase protective factors to suicidal behavior.

### **Definition of Terms**

**Psychological Stress.** Psychological stress is defined as the subjective feeling of stress. It represents internal affective, cognitive, behavioral, and somatic responses to external events (Lemyre & Lalande-Markon, 2009). Lemyre & Tessier (2003) conceptualize psychological stress as “a state of psychological tension” that waxes and wanes depending on the demands of one’s psychosocial environment. In the current study, psychological stress served as the predictor variable

**Desire for Death.** The desire to die by suicide is an operationalized form of early suicide risk proposed by the interpersonal-psychological theory of suicidal behavior (Van Orden et al., 2008). According to the theory, the desire for death is provoked when two fundamental human needs are unmet: the need to belong (i.e., thwarted belongingness) and the need to contribute to the welfare of others (i.e., perceived burdensomeness; Van Orden et al., 2010). Thwarted belongingness is defined as a feeling of disconnection from others. Perceived burdensomeness is

defined as feeling as if one is a burden on society. In the current study, desire for death served as the outcome variable.

**Savoring.** Savoring is defined as a process by which individuals create, reinforce, or prolong positive emotions (Bryant, 2003). Savoring can occur through a number of strategies, including non-verbal behaviors, enjoying the present moment, sharing positive events with others, and reminiscing on or anticipating a positive event (Bryant, Chadwick, & Kluwe, 2011). In the current study, savoring capacity served as a moderator variable.

**Resilience.** The construct of resilience used in the current study is defined as the ability to bounce back or recover from stressful experiences (Smith et al., 2008). While the term resilience describes a collection of stress coping abilities, systematic reviews of the resilience literature suggest that the multiple expressions of resilience fall under two overarching domains: cognitive abilities and processes (e.g., attributional style, personality, emotional intelligence), and beliefs and attitudes (e.g., self-, other-, or future-related beliefs; Johnson, et al., 2011; Windle, Bennett, & Noyes, 2011; Connor & Davidson, 2003). In the current study, resilience served as a moderator variable.

## CHAPTER 2: LITERATURE REVIEW

Within the literature, stress is one of the most salient risk factors for suicidal behavior (Linda, Marroquin, & Miranda, 2012; Konick & Gutierrez, 2005). However, only a small portion of individuals who experience stress go on to engage in suicidal behavior, suggesting the presence of a third variable is important in elucidating the strength and direction of the stress-suicide link (Rowe et al., 2012). Identifying factors that amplify the effects of stress on suicide is an on-going line of inquiry. Specifically, research highlights depressogenic thinking (Monroe, Slavich, Torres, & Gotlib, 2007), ruminative tendencies (Smith, Alloy, & Abramson, 2006), and hopelessness (Ingram, Miranda, & Segal, 1998) as important moderators in this relationship. Despite these findings, research is scarce regarding the identification of positive and adaptive individual-level processes that reduce the impact of stress on suicidal outcomes. Two potential constructs, savoring and resilience, contribute to more positive outcomes in the face of stress (Hurley & Kwon, 2012; Tugade & Fredrickson, 2004) and may be important in reducing risk to suicide. However, research has yet to establish these constructs as protective factors for different indices of suicide.

### **Savoring as a Protective Factor**

An important aspiration of positive psychology lies within boosting subjective well-being. This is often achieved through the use of emotion regulation strategies that aim to maintain or increase positive emotions (Ng, 2015). Savoring is one such strategy, defined as cognitive or behavioral processes by which individuals mindfully focus on positive experiences as a means to generate, enhance, or prolong positive affect (Bryant et al., 2011). A number of savoring methods exist, including mindfully attending to positive feelings present in the here and now (i.e., savoring the moment), recalling positive memories (i.e., reminiscence), planning pleasurable activities (i.e., anticipation), congratulating oneself, and celebrating positive events



with others (Quoidbach, Berry, Hansenne, & Mikolajczak, 2010). All savoring strategies serve to generate positive emotions and center one's focus, despite the time period from which they are derived (e.g., past, present, or future; Bryant, 2003). For instance, when individuals savor through reminiscing, they bring forth positive emotions from positive memory recall and mindfully attend to associated feelings in the here and now. Similarly, when individuals savor through anticipation, they focus on the positive emotions they hope to experience in the future.

Research on savoring points toward the benefits of mindfully attending to positive memories, emotions, and events, as opposed to focusing on negative stimuli. Broadly, savoring is associated with self-reported happiness, optimism, self-esteem, positive affect, and life satisfaction (Bryant, 2003). Additionally, savoring is linked to greater satisfaction with life and reductions in depressive symptoms and negative affect (Hurley & Kwon, 2012). Furthermore, savoring through remembering positive events and sharing positive experiences with others fosters positive affect and life satisfaction (Quoidbach et al., 2010). More complex models reveal savoring to mediate and moderate the relationship between positive events and happiness (Jose, Lim, & Bryant, 2012). Alternatively, savoring is inversely related to depressive symptoms, hopelessness, and frequency of unhappy and neutral affect (Ramsey & Gentzler, 2014; Bryant, 2003).

*Inverse Relationship.* Savoring plays a unique role in enhancing the quality of interpersonal relationships. Through “interpersonal savoring” (Bryant & Veroff, 2007), individuals become fully immersed in the pleasure gained through their positive experiences with companions. By laughing with friends, acknowledging love that exists between oneself and his or her romantic partner, or celebrating one's birthday with family, individuals create a sense of shared meaning and enjoyment. Interpersonal savoring can take various forms depending on the

function of savoring. For example, celebrating positive events is a viable method of deepening the connection between friends and partners (Quoidbach et al., 2010). In addition, one can recall and appreciate pleasurable experiences underlying the development of a relationship as a means to strengthen a sense of belongingness and interpersonal connectivity. Thus, savoring strategies appear to be a mechanism to facilitate healthy interpersonal relationships marked by high levels of acceptance, belongingness, and psychological well-being (Bryant & Veroff, 2007; Baumeister & Leary, 1995).

Overall, research supports this position. Specifically, savoring through sharing positive life events with a partner (i.e., capitalization) increases daily feelings of intimacy and positive affect among women with breast cancer and their intimate partners (Otto, Laurenceau, Siegel, & Belcher, 2015). Additionally, savoring positive emotional connections with other people (i.e., relational savoring) promotes positive emotion, decreases negative emotion, and buffers relationship satisfaction against relationship stress (Borelli, Rasmussen, Burkhart, & Sbarraet, 2015). Among stressed parents, relational and personal savoring perform equally well in terms of enhancing positive emotions and parent-child relationship satisfaction, especially in parents who report high levels of attachment avoidance (Burkhart, Borelli, Rasmussen, & Sbarra, 2015). In combination, these findings highlight savoring as an important resource in stabilizing and enhancing a sense of relational belongingness and minimizing threats to thwarted belongingness (one component of a desire for death).

Alternatively, savoring can also foster positive impressions of self via a number of cognitive and behavioral methods. For example, congratulating oneself for personal feats or accomplishments (i.e., basking) can lead to an increased sense of pride and self-worth (Bryant & Veroff, 2007). Through the process of basking, individuals recognize the ways in which they

make meaningful contributions to others and the world. The capacity to recognize and celebrate one's positive contributions is a useful self-regulation strategy in the maintenance of healthy perceptions of self, self-esteem, optimism, and happiness (Bryant, 2003). Although research examining the effects of savoring on self-perceptions of worth is scant, there are a handful of studies that highlight some meaningful correlations between the two constructs. For instance, savoring processes are positively associated with positive self-image constructs including self-esteem, optimism, happiness, life satisfaction, gratitude, and pride (Bryant, 2003; Quoidbach et al., 2010; Bryant, Chadwick, & Kluwe, 2011; Hurley & Kwon, 2012). Taken together, these findings suggest savoring promotes a number of intrapersonal strengths and suppresses cognitions associated with burdensomeness.

According to the interpersonal theory of suicide (Joiner, 2005; Van Orden et al., 2010), desire for death is rooted in interpersonal dysfunction. Specifically, individuals are more attracted to suicide when they experience difficulties finding meaningful ways of connecting to others and contributing to the betterment of humanity. Emotional dysregulation may play a significant role in perpetuating a desire for death. Specifically, individuals high in desire for death often have a tendency to emphasize negative emotions over positive emotions. According to Fredrickson's (2001) broaden-and-build theory, the experience of positive emotion extends the scope of one's thought-action repertoire, allowing for greater variation in thoughts, skills, and behaviors that can be used in bolstering social resources and reinforcing positive self-impressions. Furthermore, positive emotions can be maintained or increased through the use of cognitive and behavioral emotion up-regulation mechanisms (i.e., savoring; Ng, 2015). Hence, deficits in the capacity to cultivate and extend positive emotion allow negative emotions to

persist and often become readily apparent in individuals who have a desire for death (Joiner et al., 2009).

Once again, research supports this position. First, individuals high in their desire for death report greater difficulties in regulating their emotions (Anestis, Bagge, Tull, & Joiner, 2011). The suppression of emotion (i.e., expressive suppression) predicts increases in suicide risk (Forkmann et al., 2014). Ineffective emotion regulation strategies are associated with increased risk for suicide, while adaptive emotion regulation tactics lower one's risk (Pisani et al., 2013; Tamás et al., 2007). Individuals with increased risk for suicide who are able to experience positive emotion show better improvement in suicidal symptoms through gains in problem-solving attitudes than those with lower levels of positive emotion, suggesting that the ability to generate positive emotion in the face of distress is important in dampening suicide risk (Joiner et al., 2001). Moreover, positive psychological exercises focusing on bringing forth and strengthening positive emotions are associated with short-term gains among suicidal inpatients (Huffman et al., 2013). Overall, research indicates a strong link between difficulties regulating positive emotions and suicidal behaviors.

Based on the current literature, it appears individuals who can regulate positive emotions are less likely to experience different features of suicide, including desire for death. Since savoring is an emotional regulation strategy designed to strengthen interpersonal connections and positive self-impressions, it is expected that a greater ability to savor is associated with less desire for death.

*Moderating Effects.* As previously noted, the experience of stress is an antecedent to suicidal behavior. Given the parameters of this relationship, it is possible that positive psychological resources, such as savoring, may buffer the impact of psychological stress on the

desire to die. The experience and regulation of positive emotions appears to serve an important role in the stress-coping process that is distinct from methods that involve coping with distress (Bryant, Chadwick, & Kluwe, 2011; Folkman, 2008). According to Bryant and Veroff (2007), the experience of stress creates opportunities to savor positive experiences. When individuals are able to enhance and prolong positive emotions, they are more likely to employ effective coping mechanisms in the face of stressors (Tugade, Fredrickson, & Feldman Barrett, 2004). As a result, it is important that the mitigating effects of savoring are examined, as it may be therapeutically useful in preventing different suicidal outcomes for individuals who frequently experience stress.

Research supports the role of savoring strategies in reducing the effects of stress on negative outcomes. Emotion regulation strategies, like savoring, that enhance positive emotional experiences help to effectively cope with and recover from negative experiences (Tugade & Fredrickson, 2004; 2007). For instance, savoring through meaning making is associated with positive affect during stressful events (Folkman & Moskowitz, 2000). Moreover, reflecting and reminiscing on daily positive events reduces stress and buffers the effect of family-to-work conflict on physical and mental health complaints (Bono et al., 2013). In general, daily increases in positive events and how individuals manage resulting emotions reduces the impact of negative events on different negative outcomes (Longua, DeHart, Tennen, & Armeli, 2009). Some specific savoring strategies, such as gratitude (e.g., counting one's blessings), appear important in mitigating the effects of stressful events on suicidal outcomes. Specifically, greater tendencies to experience gratitude are associated with lower levels of stress and less suicidal behavior (Li et al., 2012).

Overall, the beneficial effects of savoring strategies in relation to managing stress are well documented throughout the literature. Specifically, savoring appears to be an important

process by which individuals find positive meaning and maintain positive affect in the face of stress. However, research has yet to determine if these beneficial effects buffer against the experience of different suicidal outcomes, including a desire for death.

### **Resilience as a Protective Factor**

Resilience is a positive psychological resource theoretically constructed around the ability to cope with internal and external stressors. Various definitions of resilience exist within the literature, including the ability to recover from stress to one's baseline homeostasis (Carver, 1998), adapt to stressful circumstances (Connor & Davidson, 2003), maintain healthy levels of functioning in the face of highly aversive events (Bonanno, 2004), and bounce back or recover from stress (Smith et al., 2008). Despite the absence of one comprehensive operational definition, the literature indicates that resilience is comprised of a set of coping capacities that allow one to return to a baseline level of functioning following the experience of stress. That is, individuals who are resilient are equipped with a collection of positive coping assets that facilitate successful navigation of challenging circumstances. In contrast, individuals who lack resilience are less flexible in their coping responses to stress, and are thus more vulnerable to negative outcomes when met with major or even minor negative experiences (Izadinia, Amiri, Jahromi, & Hamidi, 2010; Roy, Sarchiapone, & Carli, 2007).

Research indicates resilience is associated with a number of positive outcomes. For example, higher levels of resilience predict greater satisfaction with life (Smith & Hollinger-Smith, 2015), optimism, emotional well-being (Lamond et al., 2009), and positive posttraumatic growth (Bensimon, 2012). Individuals with high trait resilience demonstrate faster physiological recovery following repeated stress compared to those with low trait resilience (Lü, Wang, & You, 2016). Additionally, higher levels of resilience predict the experience of positive

emotionality (i.e., positive mood, happiness) during times of stress (Tugade & Fredrickson, 2004). Individuals who receive resilience-building training show improvements in perceived stress, coping skills, and positive cognitive style compared to a control group (Shatkin et al., 2016).

Resilience is also inversely related with a host of negative outcomes. Specifically, resilience is negatively associated with perceived stressfulness of events, depressive symptoms, self-reported health issues, pessimism, anxiety, and negative affect (Hardy, Concato, & Gill, 2004; Leontjevas, Beek, Lataster, & Jacobs, 2014). Furthermore, these inverse relationships exist across diverse samples including undergraduate students, community adults, and older individuals (Smith et al., 2008). As for the moderating effects of resilience, high levels protect against the effect of childhood neglect on psychiatric symptoms later in life (Campbell-Sills, Cohan, & Stein, 2006). Furthermore, higher levels of resilience buffer the effect of stress on depressive symptoms (Anyan & Hjemdal, 2016). Overall, the importance of resilience in the prediction of short- and long-term positive outcomes is demonstrated across multiple studies.

*Inverse Relationship.* The presence of resilience is related to interpersonal connectivity. Indeed, perceived social support is a benefit to resilience (Smith et al., 2008). Research examining the developmental trajectory of resilience indicates the emergence of resilient resources is dependent on quality and enduring social supports (Ong, Bergeman, & Boker, 2009). Resilient individuals are better able to generate positive psychological resources in themselves and others which, in turn, creates a healthy support system on which they rely during stressful circumstances (Tugade et al., 2004). Thus, relational belongingness is not only promoted by resilience, but it also serves as a resource used by resilient individuals in the coping process. Moreover, people who are resilient are also better equipped to manage interpersonal

conflict when it arises, thus promoting interpersonal growth and relationship satisfaction (Zautra, 2009). Therefore, in addition to helping people regain physiological and psychological equilibrium, resilience aids in the recovery of interpersonal relations following stressful events.

Literature consistently demonstrates a strong, positive association between resilience and social connectedness (Sabouripour & Roslan, 2015; Yu et al., 2014; Peng et al., 2012). Among student populations, resilience is promoted by a sense of belonging (Phinney & Hass, 2003; Gonzalez & Padilla, 1997). Individuals with high levels of social support are more likely to be resilient after facing a traumatic event compared to those with lower levels of support (Bonanno, Galea, Bucciarelli, & Vlahov, 2007). Studies also show support for a long-term reciprocal relationship between resilience and social support, such that initial resilience predicts social connectedness, which in turn results in greater levels of resilience over time (Kok & Fredrickson, 2010). Overall, research highlights the importance of resilience in stabilizing and enhancing a sense of relational belongingness.

Research also reveals links between resilience and constructs related to positive self-impressions. Resilient individuals are better able to manage stressful circumstances, which enhances their perceived capacity to exert control over stressful events when they arise (Hamill, 2003). Another strong, positive correlate of resilience is self-worth, which captures how individuals feel about themselves, their interpersonal relationships, and their ability to handle challenging circumstances (Davey, Eaker, & Walters, 2003). Furthermore, resilience is associated with higher self-esteem by promoting increased positive affect (Benetti & Kambouropoulos, 2006). Overall, resilience is linked to a number of factors known to instill a sense of confidence, self-worth, and contribution.



Established findings also offer a direct estimate of the relationship between resilience and a desire for death. Specifically, resilience is inversely related to perceived burdensomeness and thwarted belongingness (Gautam & Nagle, 2016). Overall, resilience appears to be related to a range of positive interpersonal resources associated with perceptions of belongingness and effectiveness. Moreover, feelings of belongingness and a sense of contribution to one's community directly contrast the proximal causes of desire for death proposed by the interpersonal-psychological theory of suicidal behavior (i.e., perceived burdensomeness and thwarted belongingness; Van Orden et al., 2008). Therefore, it is likely that individuals with higher levels of resilience will report lower levels of desire for death indices.

*Moderating Effects.* When individuals with high resilience are faced with adverse events, they are less likely to experience mental health difficulties (Peng et al., 2012). As such, resilience may have the potential to protect against the impact of stress on desire for death. Resilient individuals benefit from a breadth of positive intrapersonal and interpersonal resources that can be used in the successful adaptation to stress. For example, resilient individuals demonstrate greater purpose in life (Nygren et al., 2005; Smith et al., 2008) as well as greater perceived social support (Kok & Fredrickson, 2010), both of which are negative correlates of desire for death. Given the range of benefits in the face of stress afforded by resilience, the extent to which it can buffer the negative impact of stress on desire for death deserves further inquiry.

No known studies have specifically examined the protective capacity of resilience with regard to the relationship between stress and desire for death. However, research examining the resilience-stress relationship supports the importance of resilience in promoting adaptive responses to stressful events. For instance, the effect of stress on individuals' emotional states is weaker for those with high resilience compared to those with low resilience (Ong et al., 2006).

Additionally, resilience mitigates the impact of daily hassles and adverse events on psychological distress (Beasley, Thompson, & Davidson, 2003; Pinquart, 2009). Despite the absence of research directly supporting resilience as a buffering factor in the stress-desire for death link, literature supports the protective capacity of other cited facets of resilience. Specifically, self-esteem and perceived social support promote better social adjustment in the face of stress (Friedlander, Reid, Shupak, & Cribbie, 2007). Furthermore, some specific sources of interpersonal resilience, such as parental support, seem to mitigate the effect of life stress on suicide outcomes (Mackin et al., 2017).

Taken together, resilient individuals appear to have a number of resources available that facilitate successful navigation of stressful circumstances. Such resources may be especially advantageous in the protection against desire for death. Specifically, by instilling a sense of meaning and belongingness, resilience has the potential to buffer the negative impact of stress on desire for death. However, research has yet to examine this moderating effect.

### **Current Study**

The overarching purpose of the current study was to identify protective factors to early markers of suicide. The protective capacity of positive psychological resources to suicide is an underdeveloped line of study. Consistent with the methodological process of identifying protective factors, I sought to examine the longitudinal relations, temporal stability, and buffering effects of savoring the moment and resilience on desire for death. The frequent experience of stress is a risk factor for suicide markers (e.g., desire for death; Rowe et al., 2012; Liu & Miller, 2014) and should be considered in any attempt to identify protective factors (Steca et al., 2014). Therefore, I examined the protective effects of savoring the moment and resilience in the context of stress. Demonstrating the protective qualities of different positive

psychological resources on suicide markers is important in terms of informing the development of holistic suicide prevention efforts. Specifically, if expectations hold, mental health professionals will be able to employ savoring and resilience strategies as a means to mitigate the effects of stress on early markers of suicide.

**Hypotheses.** Based on prior research, it is expected that savoring the moment and resilience will be negatively associated with reports of desire for death. Specifically, I expect to find that savoring and resilience will predict unique variation in desire for death cross-sectionally and longitudinally. In addition, I expect to find a positive relationship between stress and desire, and that this relationship changes as a function of savoring the moment and resilience. Specifically, in the first longitudinal model, I hypothesize the relationship between stress and desire for death will be weaker for individuals with higher levels of savoring, and that this buffering effect will exist over time. Similarly, in the second longitudinal model, I hypothesize the relationship between stress and desire for death will be weaker for individuals with higher levels of resilience, and that this buffering effect will exist over time.

## CHAPTER 3: METHODOLOGY

### **Participants**

Participants aged 18 to 75 were recruited from a national community sample associated with an online data collection system. Initial data collection was planned to continue until approximately 800 participants completed the Time 1 (T1) survey to ensure sufficient power and accommodate for relatively high rates of attrition. A total of 812 participants were initially recruited (see Table 1 for sample characteristics); however, only 800 were kept in the initial sample due to validity concerns. Data were collected at three separate times, each three months apart. A total of 347 participants (see Table 2 for sample characteristics) returned to complete the Time 2 (T2) survey administration, yielding an attrition rate of 42.73% from T1 to T2. Finally, 248 participants (see Table 3 for sample characteristics) returned to complete the third and final survey administration (T3), yielding an attrition rate of 28.53% from T2 to T3 and an overall attrition rate of 69.46% over a six-month period.

### **Research Design**

The current study employed a three-wave longitudinal design to examine the temporal associations among the study's variables. The current longitudinal design used a short measurement interval, approximately three months apart. Short measurement intervals are advantageous for observing patterns of effects on different outcomes at different times (Collins & Graham, 2002). The benefits in using a longitudinal design include the identification of unique pathways by which the temporal ordering effects of theoretical meaningful relationships can be established. Thus, this design helps facilitate the goals of the current study by allowing for inferences to be made regarding the protective capacity of positive psychological variables on desire for death (Vagi et al., 2013). Taken as a whole, a short-term longitudinal design is an

appropriate fit for the aspirations of the current study and, as such, allows for a more rigorous test of the specified model (Collins, 2006).

## **Procedures**

Georgia Southern University's Institutional Review Board approved the study in advance of data collection. Participants were recruited through an online collection system. A survey was developed using Qualtrics and was distributed to participants via the online survey system. Upon entering the website, individuals were asked to carefully read the informed consent and provide their electronic consent if they wished to participate in the study. When introduced to the study, participants were informed that their participation would involve completing a series of surveys at three separate times over the course of six months. Written signatures are not possible for online surveys, so participants were instead asked to select the "I consent" option, which indicated their consent to take part in the study.

After providing electronic consent, participants were asked to provide their survey ID code which was used to link their responses throughout the three phases of data collection. Participants then responded to a series of questionnaires, including the Psychological Stress Measure, the Interpersonal Needs Questionnaire, the Savoring Beliefs Inventory, the Brief Resilience Scale, and a demographic questionnaire. Participants reserved the right to discontinue participation at any time without penalty. After completing the survey, participants were directed to a debriefing page that described the purpose of the study. Participants were also informed about mental health services and referral sources available to them if they felt any distress resulting from their participation.

The longitudinal nature of this study required a second and third round of data collection. Those who volunteered for the first survey were invited to participate in the second and third

surveys via the online survey system. Specifically, all participants were sent a reminder e-mail and a web-link to participate in subsequent waves of data collection. In total, the duration of the study lasted six months. The second and third survey administrations followed the same procedures as the first round of data collection.

**Data Storage.** Initially, the data were stored on qualtrics.com. After the data collection process was complete, I transferred the data from qualtrics.com to SAS. Once all data were transferred to a secure SAS file, I deleted all survey responses from qualtrics.com. The SAS dataset file will remain stored on a secure, password-protected hard drive for seven years.

## Measures

**Psychological Stress Measure (PSM-9; Lemyre & Lalande-Markon, 2009).** The PSM-9 is a nine-item self-report tool designed to measure the frequency with which one experiences various indicators of psychological stress. Items are composed of statements that reflect affective, cognitive, somatic, and behavioral manifestations of stress. Using an eight-point Likert scale (1 = *not at all*, 8 = *extremely*), respondents are asked to rate how often they experienced each indicator of stress (e.g., “I feel rushed; I do not seem to have enough time.”) High scores on the PSM-9 reflect more stress. The PSM-9 demonstrates good test-retest stability (.68-.80; Lemyre & Lalande-Markon, 2009), as well as good internal consistency over five-week administration intervals, with alpha coefficients ranging from .86 to .92 across measurement times (Grégoire & Lachance, 2015). Additionally, the scale possesses good convergent and divergent validity with measures of depressive and anxious symptoms (Lemyre & Tessier, 2003). In the current study, internal consistency for the PSM-9 was .91 during each time point, indicating excellent internal consistency. In addition, the test-retest estimates across three months ( $r = .79$ ) and six months ( $r = .82$ ) were acceptable.

**Interpersonal Needs Questionnaire-15 (INQ-15; Van Orden, et al., 2012).** The INQ-15 is a self-report measure of desire for death, a psychosocial marker of early suicide behaviors characterized by feelings of disconnection from others as well as perceptions of burdensomeness on society (Van Orden et al., 2010). Participants rate the degree to which they agree with each statement on a 7-point scale (1 = *not at all true for me*; 7 = *very true for me*). INQ total scores range from 0 to 84, with higher scores indicating greater desire for death. The current study combined the two subscales to calculate an overall INQ total score, as the simultaneous presence of thwarted belongingness and perceived burdensomeness reflects more dangerous levels of suicidality (Van Orden et al., 2012). The INQ total score demonstrates good internal consistency ( $\alpha = .92$ ) with college student samples (Klibert et al., 2014). With regard to construct validity, the INQ total score reveals strong associations with measures of perceived stress and suicide proneness (Klibert et al., 2014). In the current study, the coefficient alpha for desire for death was .94 during each time interval, indicating excellent internal consistency. Moreover, the test-retest estimates across three months ( $r = .77$ ) and six months ( $r = .80$ ) were acceptable.

**Savoring Beliefs Inventory (SBI; Bryant, 2003).** The SBI is a 24-item self-report measure of one's cognitive ability to generate positive feelings and enhance the impact of positive experiences. The original instrument consists of the three dimensions of savoring capacity: anticipating, savoring the moment, and reminiscing. However, the current study only assessed for moment savoring. In the literature, moment savoring appears more advantageous in eliciting positive outcomes and protecting against negative outcomes compared to the other two savoring dimensions (Bryant, 2003). Items are rated on a 7-point scale (1 = *strongly disagree*; 7 = *strongly agree*). Savoring the moment scale scores range from 8 to 56, with higher scores indicating a greater capacity to generate, enhance, or extend positive affect in the present

moment. The SBI demonstrates strong internal consistency for the measure as a whole ( $\alpha = .88-.94$ ; Bryant, 2003) and for the savoring the moment subscale ( $\alpha = .79$ ; Hurley & Kwon, 2012). The measure also demonstrates excellent convergent validity with measures of subjective adjustment including Fordyce's Happiness Measures (Bryant, 2003). In the current study, the coefficient alpha for the savoring the moment scale ranged from .91 to .94, indicating excellent internal consistency. Furthermore, the test-retest estimates across three months ( $r = .91$ ) and six months ( $r = .86$ ) were good.

**Brief Resilience Scale (BRS; Smith et al., 2008).** The BRS is a 6-item self-report measure designed to assess one's ability to bounce back or recover from stress. Participants rate the degree to which they agree with each statement on a 5-point rating scale (1 = *strongly disagree*; 5 = *strongly agree*). Total scores range from 6-30, with higher scores indicating greater ability to recover from stress. In a review of nineteen resilience measures, the BRS is rated as one of the top three in terms of psychometric properties (Windle, Bennett, & Noyes, 2011). The BRS demonstrates good internal consistency, with alpha coefficients ranging from .80-.91. In addition, the BRS possesses strong convergent and divergent validity with measures of positive affect and active coping, as well as with measures of health-related outcomes (Smith et al., 2008). In the current study, the coefficient alpha for the resilience score ranged from .93 to .96, indicating excellent internal consistency. In addition, the test-retest estimates across three months ( $r = .81$ ) and six months ( $r = .85$ ) were good.

### **Statistical Analyses**

A number of statistical procedures were conducted within this study. First, descriptive statistics as well as frequencies were calculated for all study variables. A series of two-tailed Pearson chi-square tests and independent sample t-tests were conducted to assess whether



differences existed in demographic characteristics between responders and non-responders at Time 2 and Time 3. Since desire for death was the primary outcome variable of the current study, responders and non-responders were coded as such based on whether they had scores for desire for death at each respective time. Next, a spaghetti plot was analyzed to evaluate the average trend over time for the primary outcome variable, desire for death. Furthermore, a total of six linear regression models were initially conducted to assess main and interaction fixed effects at the univariate level for each time point. For the purpose of clarity, it is important to note that, in these regression models,  $b$  quantifies the change in the outcome variable, given a one-unit increase or decrease in the respective predictor variable.

The focus of the current study was to evaluate the interaction between stress and positive resources (i.e., savoring the moment and resilience) in the prediction of desire for death over time. By collecting data from the same person across time, we are able to model how desire for death varies as a function of stress. In turn, by collecting data about savoring and resilience at different points in time, we are able to model how stress and positive resources interact over time in the prediction of desire to die. As such, the present data contained a multivariate data structure in that repeated observations for each measure were nested within participants, and participants were nested within time (within-person observations nested within three time points).

Therefore, the data were analyzed with linear mixed models, which allow for random effects at one level and fixed effects at another level. Specifically, intercepts and slopes can vary randomly among participants (within-person), and the mean values of the intercept and slope can differ between the three time points (between-person). A random intercept model was used to evaluate the longitudinal main and interactive effects. The decision to use a random intercept model was supported by (1) the observation that reports of desire for death at Time 1 were

different across participants, and (2) the assumption that changes in desire for death and the predictor variables were constant. Two random intercept models were conducted to investigate the longitudinal interaction effects of savoring the moment and resilience on the relation between stress and desire for death. To test the buffering effect of savoring the moment over time, the level 1 and level 2 equations for the random intercept model were as follows:

$$\text{Level 1: } \beta_{0i} = \beta_0 + b_{0i}$$

$$\text{Level 2: } Y_{ij} = \beta_{0i} + \beta_1(\text{Stress}) + \beta_2(\text{Sav}) + \beta_3(\text{StressSav}) + \beta_4(\text{Time}) + e_{ij} + b_{0i}$$

In this model, level 1 models the overall intercept for each individual ( $\beta_{0i}$ ), in which  $\beta_0$  is the average intercept of all participants, and  $b_{0i}$  is the error of  $\beta_{0i}$  individual's intercept. In level 2,  $Y_{ij}$  is desire for death for person  $i$  at time  $j$ ,  $\beta_{0i}$  is a random coefficient representing the intercept for person  $i$ ,  $\beta_1$  is the change over time for stress,  $\beta_2$  is the change over time for savoring the moment, and  $\beta_3$  is the change over time for the interaction between stress and savoring the moment. Likewise, to test the buffering effect of resilience over time, the level 1 and level 2 equations for the random intercept model were as follows:

$$\text{Level 1: } \beta_{0i} = \beta_0 + b_{0i}$$

$$\text{Level 2: } Y_{ij} = \beta_0 + \beta_1(\text{Stress}) + \beta_2(\text{Resil}) + \beta_3(\text{StressResil}) + \beta_4(\text{Time}) + e_{ij} + b_{0i}$$

In this level 2 model,  $\beta_2$  is the change over time for resilience, and  $\beta_3$  is the change over time for the interaction between stress and resilience. Regarding missing data, the maximum likelihood model (MLM) assumed that participants with incomplete data had the same distribution for desire for death as those with complete data.

## CHAPTER 4: RESULTS

### **Descriptive statistics**

Descriptive statistics in Table 4 summarize the means, standard deviations, and Cronbach's alpha statistics for psychological stress (PSM-9), desire for death (INQ-15), savoring the moment (SBI), and resilience (BRS) during each survey administration. Demographic differences between responders and non-responders at T2 and T3 are depicted in Table 2 and Table 3, respectively. Participants who responded to the first two survey administrations tended to be older in age, but did not differ in any other demographic characteristic. Similar results were found among T3 responders compared with T3 non-responders, in that those who responded to all three survey administrations tended to be older in age, but were similar on all other demographic characteristics.

Based on the data observed in the spaghetti plot (Figure 1), desire for death raw scores remained roughly the same across each time point, depicting a minor downward trend (Time 1  $M = 37.63$ ,  $SD = 18.73$ ; Time 2  $M = 36.69$ ,  $SD = 18.48$ ; Time 3  $M = 35.57$ ,  $SD = 18.52$ ). With the exception of two participants, there did not appear to be any outliers in desire for death raw scores across time.

### **Relationships between Desire for Death and Predictor Variables**

Preliminary univariate analyses were conducted to examine interaction effects at each time point. Results of these fixed effects models are summarized in Tables 5-10. The models reveal the main and interactive effects for stress and savoring the moment on desire for death, as well as stress and resilience on desire for death. In the models including savoring the moment, desire for death was regressed onto stress, savoring the moment, as well as the interaction between stress and savoring the moment at each time point. In these three models (Tables 5-7), stress only had a significant main effect at T1 ( $b = .307$ ,  $p < .05$ ), while savoring the moment

displayed significant main effects on desire for death at all time points (T1  $b = -8.054, p < .001$ ; T2  $b = -9.503, p < .001$ ; T3  $b = -7.811, p < .001$ ). In other words, at T1, a one-unit increase in stress resulted in a .307 increase in desire for death at, while a one-unit increase in savoring the moment was associated with a -8.054 decrease in desire for death at T1. There were no significant interaction effects observed for stress x savoring the moment at any time point (T1  $b = -.008, p > .05$ ; T2  $b = .028, p > .05$ ; T3  $b = .032, p > .05$ ).

As for the models including resilience (Tables 8-10), stress had significant main effects on desire for death at all three time points (T1  $b = .548, p < .001$ ; T2  $b = .470, p < .05$ ; T3  $b = .639, p < .01$ ), and resilience exhibited significant main effects at T1 and T2 (T1  $b = -.874, p < .001$ ; T2  $b = -1.023, p < .01$ , but not T3 ( $b = -.744, p > .05$ )). Additionally, there were no significant interaction effects between stress and resilience on desire for death at any time point (T1  $b = -.001, p > .05$ ; T2  $b = .006, p > .05$ ; T3  $b = -.007, p > .05$ ).

The second series of analyses involved two random intercept models to assess the longitudinal moderating effects of savoring the moment and resilience on the relation between stress and desire for death. In the first model including savoring the moment (Table 11), stress ( $b = .373, p < .001$ ) and savoring the moment ( $b = -6.934, p < .001$ ) were significantly related to desire for death; however, the stress x savoring the moment interaction was not significant ( $b = -.015, p > .05$ ). Similar results were found in the second model including resilience (Table 12), in that stress ( $b = .616, p < .001$ ) and resilience ( $b = -6.11, p < .01$ ) were significantly related to desire for death, but the interaction effect on desire for death was not significant ( $b = -.005, p > .05$ ). Taken together, these results suggest that, on average, stress, savoring the moment, and resilience contribute unique variance in changes in desire for death over time. However, on average, the interaction between stress and positive psychological resources (i.e., savoring the

moment and resilience) was non-significant over time. Overall, my findings indicate that the effects of savoring the moment and resilience on desire for death appear stable over time, but their effects are independent of stress.

## CHAPTER 5: DISCUSSION

### **Review of Purpose**

The primary purpose of the current study was to identify workable models that account for changes in self-reported desire for death scores over time. Specifically, I evaluated the cross-sectional and longitudinal main effects of stress, savoring the moment, and resilience on desire for death. Consistent with methodological recommendations, I also examined the cross-sectional and longitudinal buffering effects of positive psychological resources (i.e., savoring the moment and resilience) on the relationship between psychological stress and desire for death. In total, this process of evaluation can inform whether savoring the moment and resilience serve as a protective factor to early markers of suicide, which in turn, can be used to establish more robust preventative strategies. In light of this goal, the present study sought to answer the following questions: (a) how does the relationship between self-reported stress and desire for death vary across time?; (b) do significant inverse relationships exist between positive psychological resources (i.e., savoring the moment and resilience) and desire for death?; (c) do reports of savoring the moment and resilience predict desire for death across time?; and (d) do savoring the moment and resilience buffer the effects of stress on desire for death over time?

### **Main Effect Stress**

In line with one of my hypotheses, I examined the cross sectional and longitudinal effects of stress on desire for death. The cross-sectional effects were examined during the three waves of data collection. At a cross-sectional level, stress demonstrated fluctuating associations with desire for death scores. Notably, in the models including savoring the moment, stress was only associated with desire for death at T1. However, in the models including resilience, stress demonstrated significant associations with desire for death at each time point. The fluctuating

effects of stress indicated by these findings are inconsistent with the literature, which highlights stress as a prominent risk factor for suicidal behavior (Liu & Miller, 2014; Foster, 2011). A possible explanation for the non-significant associations between stress and desire for death observed in the savoring models may be due to suppression effects. Specifically, there is high covariance between stress and savoring the moment, which minimizes the likelihood that both would emerge as significant predictors in the final models. It is quite possible that stress would have emerged as a significant predictor for desire for death if savoring the moment was removed from the model.

Additionally, the longitudinal models revealed that, on average, stress was positively related to desire for death over time. These findings confirm the persistent effects of stress on different suicidal behaviors within the literature (Linda, Marroquin, & Miranda, 2012; Konick & Gutierrez, 2005). Future studies may want to extend these results experimentally by identifying how stress exerts its effect on desire for death. For instance, researchers could measure changes in desire for death following a stress-induction task. Such investigations will likely provide more insight into the differential the effects of immediate stress versus accumulated stress over time on desire for death.

### **Main Effect Savoring**

In line with one of my hypotheses, results revealed savoring the moment was consistently related to desire for death in the expected direction at each administration of the survey. That is, higher levels of savoring the moment were associated with lower levels of desire for death. Additionally, the longitudinal model revealed that this effect was stable over time. Over a six-month period, savoring the moment accounted for variation in desire for death scores. Taken together, these results are consistent with the literature suggesting savoring the moment plays an

important role combatting feelings of burdensomeness and disconnection inherent within the desire for death construct (Quoidbach et al., 2010).

In addition, these results confirm certain methodological criteria for savoring the moment as a protective factor to early suicide markers. Specifically, savoring the moment is inversely related with an identified outcome variable (i.e., desire for death), consistent with the first criterion of identifying a protective factor (Vagi et al., 2013). In addition, my study provides some evidence to suggest savoring the moment exhibits temporal precedence in its association with desire for death, the second criterion for identifying a protective factor (Vagi et al., 2013). Identifying savoring the moment as a protective factor is important, especially considering research meshing positive psychology constructs and early markers for suicidal behavior is scarce. Given these trends, it is important to expand on these findings to gain further insight into the complex relationship between savoring the moment and desire for death. In particular, future studies should carry out experimental designs to evaluate the causal nature of savoring the moment in reducing desire for death. For example, mild feelings of thwarted belongingness and perceived burdensomeness can experimentally induced through rejection reliving tasks (Pickett, Gardner, & Knowles, 2004). Researchers can then employ a brief savoring the moment intervention, which may help determine how participants cope with social threats to desire for death and strengthen their access to interpersonal resources in the moment. Studies like these may provide an extended understanding into the causal pathways by which savoring the moment protects individuals from engaging in early markers to suicide.

### **Main Effect Resilience**

Consistent with the goals of the study, I also examined the cross-sectional and longitudinal main effects of resilience on desire for death. At a cross-sectional level, results were



mostly consistent with expectations, in that resilience demonstrated strong, negative relationships with desire for death during two (T1 and T2) of the three data administrations. It is unclear why the association between resilience and desire for death at Time 3 was not significant. One explanation may lie with the smaller sample size used in the analysis at Time 3. Smaller sample sizes reduce power, which in turn restricts the ability of models to detect moderate and small effects (Biau, Kernéis, & Porcher, 2008). In addition, it is possible that the effects of resilience were suppressed based on a high correlation with stress, especially in lower powered models. Nevertheless, this one non-significant result requires further exploration. In the future, studies attempting to replicate these findings should attempt to increase participant retention by perhaps offering greater incentives for returning for future survey administrations. Greater retention of participants may help to ensure adequate power is reached through all phases of data collection.

Additionally, similar to savoring the moment, the longitudinal model indicated a significant inverse relationship between resilience and desire for death. Specifically, on average, higher levels of resilience were associated with lower levels of desire for death over a six-month period. Overall, these findings are consistent with the predominant literature, which suggests resilience is an important component in minimizing perceived burdensomeness and thwarted belongingness (Gautam & Nagle, 2016). Moreover, these results provide preliminary support for resilience as a protective factor to early markers of suicide. Specifically, resilience demonstrates an inverse relationship with and temporal precedence in accounting for desire for death scores, consistent with the first two criteria in identifying protective factors (Vagi et al., 2013). To strengthen our understanding of this relationship, future studies may want to deconstruct resilience into its multiple dimensions to better differentiate what elements of resilience contribute to lower desire for death scores. Other theorists have further deconstructed resilience

into the varied underlying factors involved in the stress-coping process, including hope, self-forgiveness, and positive self-appraisals, all of which have demonstrated inverse relationships with desire for death and other suicidal behaviors (Cheavens, Cukrowicz, Hansen, & Mitchell, 2016; Johnson, Gooding, Wood, & Tarrier, 2009). However, the measure of resilience used in the current study does not distinguish between the various facets of resilience. Therefore, as we move toward a better understanding of this relationship and seek to inform more robust suicide preventative efforts, it is important that future studies determine which particular dimensions of resilience drive the negative association with desire for death.

### **Moderating Effects**

**Savoring.** In line with the overarching purpose of the present study, I examined the interaction between stress and savoring the moment to account for variation in desire for death scores at three time points and across time. In each analysis, results indicated a nonsignificant interaction effect on desire for death scores. That is, savoring the moment did not mitigate the relationship between stress and desire for death cross-sectionally or over time. These findings were inconsistent with literature suggesting that emotion regulation strategies, such as savoring, help individuals cultivate positive emotional resources in the face of stress and mitigate the effects of stress on negative outcomes (Longua, DeHart, Tennen, & Armeli, 2009; Tugade & Fredrickson, 2004; 2007). There may be two reasons why a significant interaction effect was not observed. First, at a theoretical level, Bryant and Veroff (2007) assert that people will likely have difficulty savoring in the face of stress if they experience “social and esteem concerns” (p. 63). The authors reason that such concerns may impede on the ability to attend to and connect with pleasurable experiences in the moment. This may pose as a problem for my hypothesized model because thwarted belongingness and perceived burdensomeness are, by definition, social and

esteem issues. Therefore, if researchers aim to investigate this model in the future, they may wish to substitute the SBI with a savoring tactic, such as daily journaling about positive experiences. This way, participants will be actively involved in a savoring process, as opposed to purely reporting on their perceived tendencies to savor. Active savoring may provide some important psychological advantages to mitigate the effects of stress and reduce overall levels of desire for death.

At a methodological level, studies suggest that savoring the moment is more effective for individuals who are in distress compared with individuals who report milder and more manageable forms of distress (Hurley & Kwon, 2013). Considering that I sampled data from community adults, it is possible that few, if any, would be considered high distress participants, consistent with a community outpatient or inpatient sample. This suggests that it is possible that a majority of the individuals from my sample experience an abundance of resources to help them navigate stressful circumstances and thwart a desire for death. Because of this trend, any psychological benefits offered via savoring the moment may be watered down. Essentially, the proposed effects of savoring the moment as a moderating factor may have been diminished due to the non-clinical nature and high abundance of resources associated with the sample. In the future, it is important for researchers to re-investigate the current study with clinical outpatient and inpatients samples to better evaluate the moderating effects of savoring.

**Resilience.** I also examined the interaction between stress and resilience on desire for death scores cross-sectionally and across time. Again, contrary to expectations, each analysis yielded non-significant effects. These results were surprising, especially given research highlighting the positive impact of resilience in reducing the effects of stress on different negative emotional states and psychological distress outcomes (Pinquart, 2009; Ong et al., 2006).

One potential explanation for the non-significant findings may be related to the delineation between stressors (e.g., negative life events, hassles) and psychological stress (i.e., subjective feeling of stress in response to external stressors). In the present study, stress was assessed using the PSM-9, which measures for discrete components of coping, involving the manner in which an individual perceives his or her environment (Lemyre & Tessier, 2003). The perception of stress may be a more complex variable that involves underlying, lingering, and detrimental mechanisms harmful to the coping process. Specifically, individuals with high levels of stress perceptions may approach adversity by focusing on the emotional impact of stress (i.e., emotion-focused coping), or by attempting to reduce or eliminate the source of stress (i.e., problem-focused coping; Folkman & Lazarus, 1988). Overall, perceptions of stress appear to be a more complex component when compared to rates by which individuals report the frequency and intensity of specific stressors. Thus, resilience may mitigate the effects of stress as defined by frequency and intensity measures, whereas resilience may not effectively mitigate the effects of stress perception measures. Therefore, it is possible that future studies will benefit from exploring the hypothesized model using measures that indicate a pure frequency of events or intensity of events.

### **Clinical Implications**

From a clinical perspective, these findings highlight the benefits of evaluating positive psychological resources as protective factors to suicide. Specifically, the results provide practical implications for assessing and enhancing savoring and resilience to help minimize desire for death among community members. Regarding savoring the moment, there are many ways in which clinicians can help clients cultivate positive emotions in the moment and combat feelings of disconnection from others and perceived burdensomeness. For instance, clinicians can

encourage clients to journal daily about one meaningful interaction he or she had during the day, or discuss times in which they felt especially connected to others (Bryant & Veroff, 2007).

Regular engagement in activities that help clients shift attention away from negative self-perceptions in social contexts and instead bring positive social experiences into focus may be a useful way to harness interpersonal resources that can be readily available in times of stress.

Resilience-based interventions may also be valuable clinical tools for reducing desire for death.

Resilience building programs, such as Transforming Lives Through Resilience Education, assist clients with harnessing coping resources and strengthening positive interpersonal relationships with others (TLRE; Steinhardt & Dolbier, 2008). Programs such as TLRE, which focus on the cultivation of both internal and external coping resources, may be more successful in reducing risk for desire for death and other suicidal behaviors.

My findings also point to the importance of continued investigation into the stress-suicidal behavior link. Stress is one of the leading risk factors to suicide; yet, research is clear that there is a conditional relationship between the two (Rowe et al., 2012). Although my findings did not reveal cross-sectional or longitudinal interaction effects for savoring the moment or resilience, it is important that future research continue to identify protective factors to better elucidate how stress affects early markers of suicide. A better understanding of this relationship will inform more robust preventative models that include both risk and protective factors.

### **Study Design Advantages**

The longitudinal design of the present study offered several advantages over a cross-sectional design. First, obtaining repeated observations on individuals allowed me to evaluate change in the study variables over time and clarify how time affected the relationships between variables (Caruana, Roman, Hernández-Sánchez, & Solli, 2015). Second, in longitudinal studies,

each participant serves as his or her own control, which minimizes unexplained variability in responses. This is particularly important in longitudinal studies, because collecting data over time leads to greater between-person variability than within-person variability. As such, longitudinal designs also have more statistical power over cross-sectional studies because they are not as sensitive to between-person variability (Hedeker & Gibbons, 2006). Moreover, as a result of the increased power, a final advantage of longitudinal designs is that fewer participants are needed compared to a cross-sectional study (Hedeker & Gibbons, 2006).

### **Limitations**

The present study has several limitations that should be noted. One limitation was the lack of diversity within the sample. The majority of participants identified as Caucasian, female, heterosexual, and having “some financial resources.” Overall, our sample did not represent the general population. Thus, future studies must re-evaluate the current study’s hypotheses with a more diverse sample of individuals from varied ethnicities, gender and sexual identities, and socioeconomic backgrounds to examine the generalizability of my findings. A second limitation pertains to the management of missing data in the analyses. The missing data mechanism was assumed to be ignorable, and, therefore, the predictive models used the maximum likelihood method (MLM) which assumed that those with incomplete data had the same distribution for desire for death scores as those with complete data. However, the true distribution of those with incomplete data cannot be known, making the MLM susceptible to a loss of statistical power and a bias in standard errors (Tsikriktsis, 2005). A third limitation of this study was that the data was collected using self-report surveys, which are susceptible to the effects of biased responses, social desirability concerns, and demand characteristics. In the future, it may be important to incorporate more behavioral or observational measures of the study variables. The use of

behavioral and observable measures may prevent social desirability concerns by hiding what researchers are asking about, and may result in more valid measurements of the study variables. Another limitation involved the use of online data collection. Specifically, participants were unable to be monitored while responding to the survey items, which may increase the likelihood of “yea-saying” response styles and inattention to the content of questions. Although data were screened using a diverse range of validity checks (e.g., attention-check questions), the effects of inattention and yea-saying may have negatively impacted my ability to detect meaningful findings. An additional limitation involves the number of analyses conducted. The buffering effects of savoring the moment and resilience were evaluated independently, which increased the total number of analyses conducted compared to if both variables were included in the same models. As such, the increased number of tests conducted increased the likelihood of Type I error. Finally, although the study employed a longitudinal design, it was relatively short-term (i.e., six months), which hinders the temporal inferences that can be made from the data. Therefore, the study procedures could be improved in the future by increasing the data collection intervals and assessing the stability of the relationship between positive psychological resources and desire for death across longer periods of time.

### **General Conclusions**

The purpose of the current study was to identify protective factors for early markers of suicide. This study employed a longitudinal design to evaluate the relations, temporal stability, and buffering effects of savoring the moment and resilience on desire for death. The findings advance the current body of literature in several significant ways. First, savoring the moment and resilience were inversely related to desire for death overtime, which highlights their potential to reduce risk to early markers of suicide, pending confirmatory evidence from experimental

studies. This is important, as positive psychological resources such as savoring the moment and resilience have received little attention in the literature with regard to their benefits in the context of suicidal behaviors. Second, and contrary to expectations, neither savoring the moment nor resilience buffered the effect of stress on desire for death. These findings suggest that other factors may better explaining the conditional effects of stress on desire for death. Overall, savoring the moment and resilience exhibit inverse relationships and temporal precedence in predicting desire for death scores, which suggests these factors may be suitable protective factors for early markers to suicide (Vagi et al., 2013). However, more experimental research is needed to determine the mechanisms by which these factors reduce overall suicide risk.



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**TABLE 1***Table 1. Sample Demographics and Characteristics Reported at Time 1*

Characteristics	<i>N</i> (%)	Missing <i>n</i> , %
Gender		14, 1.7%
Female	468 (58.6%)	
Male	327 (41%)	
Transgender	1 (.1%)	
Other	2 (.3%)	
Ethnicity		13, 1.6%
White/Caucasian	607 (76%)	
African American/Black	68 (8.5%)	
Asian/Asian American	58 (7.3%)	
Mexican American/Latino/a	33 (4.1%)	
American Indian/Native		
American	3 (.4%)	
Multiracial	24 (3%)	
Other	6 (.8%)	
Marital Status		14, 1.7%
Single	274 (34.3%)	
Married/partnered/common law	439 (55%)	
Separated	7 (.9%)	
Divorced	64 (8%)	
Widowed	14 (1.8%)	
Sexual Orientation		14, 1.7%
Heterosexual	709 (88.8%)	
Gay	13 (1.6%)	
Lesbian	21 (2.6%)	
Bisexual	48 (6%)	
Other	7 (.9%)	
Hometown		17, 2.1%
Rural	341 (42.9%)	
Urban	454 (57.1%)	
Financial Resources		13, 1.6%
Poor/Impoverished	97 (12.1%)	
Some financial resources	532 (66.6%)	
Substantial financial resources	161 (20.2%)	
Affluent/Rich	9 (1.1%)	
Age Mean ( <i>SD</i> ) [ <i>Range</i> ]	37.73 (13.43) [18-75]	30, 3.7%

**TABLE 2***Table 2. Sample Demographics of the Participants and Non-responders for Time 2 (T2)*

Characteristics	T2 Responders N (%)	T2 Non-responders N (%)	T2 responders vs. non-responders <i>p</i> value*
Gender			.504
Female	200 (59.7)	268 (57.9)	
Male	135 (40.3)	192 (41.5)	
Transgender	0 (0)	1 (0.2)	
Other	0 (0)	2 (0.4)	
Ethnicity			.352
White/Caucasian	263 (78.3)	344 (74.3)	
African American/Black	28 (8.3)	40 (8.6)	
Asian/Asian American	25 (7.4)	33 (7.1)	
Mexican American/Latino/a	11 (3.3)	22 (4.8)	
American Indian/Native American	0 (0)	3 (0.6)	
Multiracial	6 (1.8)	18 (3.9)	
Other	3 (0.9)	3 (0.6)	
Marital Status			.100
Single	113 (33.7)	161 (34.8)	
Married/Partnered/Common Law	181 (54)	258 (55.7)	
Separated	6 (1.8)	1 (0.2)	
Divorced	31 (9.3)	33 (7.1)	
Widowed	4 (1.2)	10 (2.2)	
Sexual Orientation			.489
Heterosexual	299 (89.3)	410 (88.6)	
Gay	8 (2.4)	5 (1.1)	
Lesbian	9 (2.7)	12 (2.6)	
Bisexual	17 (5.1)	31 (6.7)	
Other	2 (0.6)	5 (1.1)	
Hometown			.328
Rural	150 (44.9)	191 (41.4)	
Urban	184 (55.1)	270 (58.6)	
Financial Resources			.237
Poor/Impoverished	47 (14)	50 (10.8)	
Some financial resources	225 (67.2)	307 (66.2)	
Substantial financial resources	61 (18.2)	100 (21.6)	
Affluent/Rich	2 (0.6)	7 (1.5)	
Age ( <i>SD</i> )	39.46 (12.49)	36.45 (13.96)	.002**

*Note:* \*Based on a Pearson chi-square test, 2 sided. \*\*Based on an independent sample t-test.

**TABLE 3***Table 3. Sample Demographics of the Participants and Non-responders for Time 3 (T3)*

Characteristics	T3 Responders N (%)	T3 Non-responders N (%)	T3 responders vs. non-responders <i>p</i> value*
Gender			.719
Female	145 (58.9)	323 (58.5)	
Male	101 (41.1)	226 (40.9)	
Transgender	0 (0)	1 (0.2)	
Other	0 (0)	2 (0.4)	
Ethnicity			.214
White/Caucasian	199 (80.6)	408 (73.9)	
African American/Black	17 (6.9)	51 (9.2)	
Asian/Asian American	19 (7.7)	39 (7.1)	
Mexican American/Latino/a	6 (2.4)	27 (4.9)	
American Indian/Native American	0 (0)	3 (0.5)	
Multiracial	4 (1.6)	20 (3.6)	
Other	2 (0.8)	4 (0.7)	
Marital Status			.088
Single	83 (33.7)	191 (34.6)	
Married/Partnered/Common Law	133 (54.1)	306 (55.4)	
Separated	5 (2.0)	2 (0.4)	
Divorced	23 (9.3)	41 (7.4)	
Widowed	2 (0.8)	12 (2.2)	
Sexual Orientation			.313
Heterosexual	223 (90.7)	486 (88.0)	
Gay	6 (2.4)	7 (1.3)	
Lesbian	6 (2.4)	15 (2.7)	
Bisexual	10 (4.1)	38 (6.9)	
Other	1 (0.4)	6 (1.1)	
Hometown			.651
Rural	108 (44.1)	233 (42.4)	
Urban	137 (55.9)	317 (57.6)	
Financial Resources			.580
Poor/Impoverished	35 (14.2)	62 (11.2)	
Some financial resources	163 (66.3)	369 (66.7)	
Substantial financial resources	46 (18.7)	115 (20.8)	
Affluent/Rich	2 (0.8)	7 (1.3)	
Age ( <i>SD</i> )	40.50 (12.88)	36.47 (13.50)	<.001**

*Note:* \*Based on a Pearson chi-square test, 2 sided. \*\*Based on an independent sample t-test.



**TABLE 4***Table 4. Descriptive statistics for all measures by time*

Scale	Time 1 ( <i>n</i> = 800)		Time 2 ( <i>n</i> = 347)		Time 3 ( <i>n</i> = 248)	
	Mean ( <i>SD</i> )	$\alpha$	Mean ( <i>SD</i> )	$\alpha$	Mean ( <i>SD</i> )	$\alpha$
PSM-9	34.70(13.86)	.91	31.95 (13.24)	.91	31.73 (13.50)	.91
INQ-15	37.63 (18.73)	.94	36.69 (18.49)	.94	35.57 (18.52)	.94
SBI	4.80 (0.52)	.91	4.92 (0.53)	.93	4.88 (0.56)	.94
BRS	20.29 (6.30)	.93	20.73 (6.35)	.93	20.31 (7.09)	.96

*Note:* Data are means with standard deviations in parentheses. Reliability was measured using Cronbach's alpha statistic.

**TABLE 5**

*Table 5. Univariate Regression Values for the Moderating Effect of Savoring the Moment on the Relationship between Stress and Desire for Death at Time 1*

Variables	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	66.711	5.72	11.66	<.001
Stress T1	.307	.121	2.54	.011
Savoring the Moment T1	-8.054	1.003	-8.03	<.001
Stress T1 x Savoring the Moment T1	-.008	.023	-.32	.748

*Note: b = unstandardized regression coefficient; SE = standard error; N = 789*

**TABLE 6**

*Table 6. Univariate Regression Values for the Moderating Effect of Savoring the Moment on the Relationship between Stress and Desire for Death at Time 2*

Variables	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	76.516	8.562	8.94	<.001
Stress T2	.090	.186	.48	.628
Savoring the Moment T2	-9.503	1.444	-6.58	<.001
Stress T2 x Savoring the Moment T2	.028	.035	.79	.428

*Note: b = unstandardized regression coefficient; SE = standard error; N = 331*

**TABLE 7**

*Table 7. Univariate Regression Values for the Moderating Effect of Savoring the Moment on the Relationship between Stress and Desire for Death at Time 3*

Variables	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	62.123	10.088	6.16	<.001
Stress T3	.217	.218	1.00	.321
Savoring the Moment T3	-7.811	1.702	-4.59	<.001
Stress T3 x Savoring the Moment T3	.032	.040	.80	.422

*Note: b = unstandardized regression coefficient; SE = standard error; N = 241*

**TABLE 8**

*Table 8. Univariate Regression Values for the Moderating Effect of Resilience on the Relationship between Stress and Desire for Death at Time 1*

Variables	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	36.988	5.847	6.33	<.001
Stress T1	.548	.125	4.40	<.001
Resilience T1	-.874	.237	-3.68	<.001
Stress T1 x Resilience T1	-.001	.006	-.19	.846

*Note: b = unstandardized regression coefficient; SE = standard error; N = 789*

**TABLE 9**

*Table 9. Univariate Regression Values for the Moderating Effect of Resilience on the Relationship between Stress and Desire for Death at Time 2*

Variables	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	39.34	8.790	4.48	<.001
Stress T2	.470	.192	2.44	.015
Resilience T2	-1.023	.347	-2.94	.004
Stress T2 x Resilience T2	.006	.009	.66	.509

Note: *b* = unstandardized regression coefficient; *SE* = standard error; *N* = 331

**TABLE 10**

*Table 10. Univariate Regression Values for the Moderating Effect of Resilience on the Relationship between Stress and Desire for Death at Time 3*

Variables	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	34.281	9.806	3.50	.001
Stress T3	.639	.220	2.90	.004
Resilience T3	-.744	.388	-1.92	.056
Stress T3 x Resilience T3	-.007	.010	-.69	.490

*Note: b = unstandardized regression coefficient; SE = standard error; N = 241*

**TABLE 11**

*Table 11. Overall Random Intercept Model for the Longitudinal Effect of Savoring the Moment on the Relationship between Stress and Desire for Death*

Variables	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	60.734	4.313	14.08	<.001
Time	-.420	.312	-1.35	.179
Stress	.373	.093	4.01	<.001
Savoring the Moment	-6.934	.752	-9.23	<.001
Stress x Savoring the Moment	-.015	.018	-.84	.403

*Note: b = unstandardized regression coefficient; SE = standard error*



**TABLE 12**

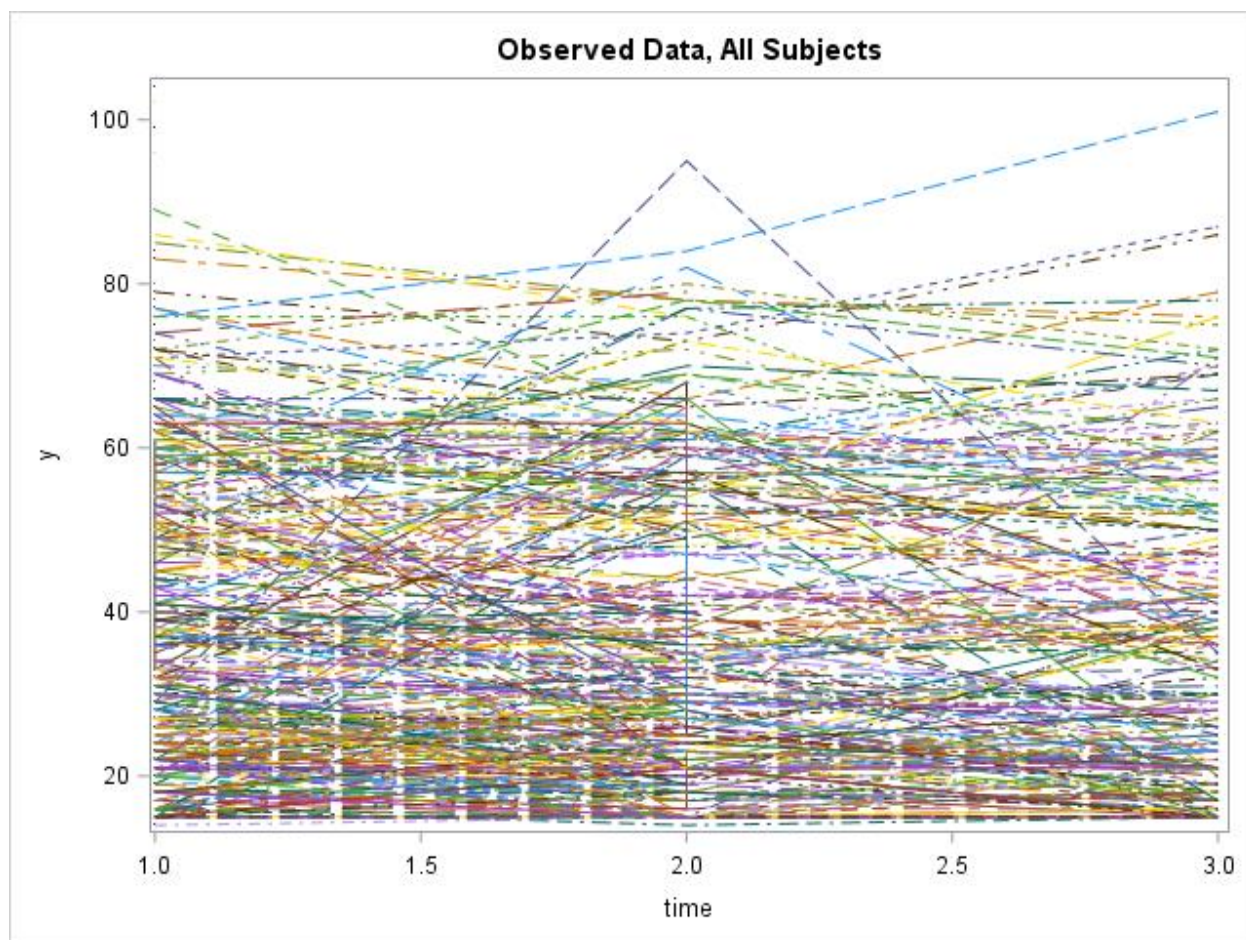
*Table 12. Overall Random Intercept Model for the Longitudinal Effect of Resilience on the Relationship between Stress and Desire for Death*

Variables	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	32.222	4.361	7.39	<.001
Time	-.546	.333	-1.64	.102
Stress	.616	.095	6.47	<.001
Resilience	-.611	.177	-3.46	.001
Stress x Resilience	-.005	.004	-1.07	.284

Note: *b* = unstandardized regression coefficient; *SE* = standard error

**FIGURE 1**

Figure 1. *The average trend over time for desire for death (y-axis) raw scores*



*Note:* y = Desire for death raw scores.