A Laboratory-Based Experimental Test of Reasons for Living: Effects on Behavioral Approach Toward a Suicide-Related Stimulus

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A Laboratory-Based Experimental Test of Reasons for Living: Effects on Behavioral Approach
Toward a Suicide-Related Stimulus

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Abstract

There are few laboratory-based experiments that examine the effects of suicide-related risk or protective factors on suicide-related outcomes. Consistent with extant evidence-based theoretical models and treatments for suicidal behavior, it appears that increasing awareness of reasons for living may reduce risk for suicidal behavior. Thus, the current study represents an initial effort to experimentally examine the impact of bringing awareness to one's most important reason for living on behavioral approach towards a suicide-related stimulus. Random assignment was used to assign an unselected undergraduate sample of 78 participants to complete either a script-driven imagery procedure specific to the most important reason for living (experimental condition) or a neutral script-driven imagery procedure (control condition). All participants subsequently engaged in a behavioral approach task, designed to measure approach towards a suicide-related stimulus. It was predicted that participants in the experimental condition would exhibit less approach towards the suicide-related stimulus as compared to participants in the control condition. Contrary to predictions, participants in the experimental condition were not less likely to approach the suicide-related stimulus. Findings and future directions are considered within the context of the broader scientific literature. Strengths and challenges of the experimental paradigm are also discussed.

Keywords: Reasons for living, suicide-related stimulus, laboratory experiment, experimental psychopathology

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Dedication

This dissertation is dedicated to those who have suffered from suicidal thoughts.

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I.   Introduction

Suicidal behavior is a challenging, complex problem, with approximately 1 million individuals dying by suicide yearly (World Health Organization, 2013). In fact, suicide is the second leading cause of death among adolescents and young adults in our nation (Centers for Disease Control and Prevention, 2011). In addition to the emotional costs followed by suicide and non-fatal suicidal behavior, the economic burden alone is approximately $58.4 billion per year in lost wages, lost productivity, and direct medical care (Shepard, Gurewich, Lwin, Reed, & Silverman, 2015). Given the scope of the problem, many scholars have aimed to address the matter via conceptualization of theoretical models, identification of risk factors, and the development of treatment and prevention strategies. Despite these efforts, there has been little improvement in prediction or reduction of suicidal thoughts and behavior (e.g., Franklin et al., 2016). Therefore, research aimed at advancing our understanding of how to reduce suicidal behavior remains a public health priority.

Treatment and research efforts should be grounded in theory (David & Montgomery, 2011). To date, there is a large and diverse body of theoretical models that aims to explain the development and progression of suicidal thoughts and behavior, which in theory should inform our ability to identify intervention points. This collection of theories, dating back to the 1800s, includes biological (e.g., Oquendo et al., 2014), sociological (e.g., Durkheim, 1897), and psychological (e.g., Baechler, 1980; Baumeister, 1990; Mann et al., 1999; O'Connor, 2011; Rudd, 2006; Shneidman, 1993; Van Orden et al., 2010) approaches that vary on multiple dimensions. Most notably, suicide theories vary in that some focus on overall suicide risk (e.g., Shneidman, 1993), while some modern approaches are based on ideation-to-action frameworks (e.g., Klonsky & May, 2015; O'Connor, 2011). Suicide theories that are based on an ideation-to-

action framework consider the separate processes involved in the development of suicidal ideation and those related to the progression from suicidal ideation to lethal suicidal behavior.

A.   Overlapping Theme of Hopelessness in Suicide-Related Theoretical Models

Despite the differences among suicide theories, there are multiple overlapping themes, such as the emphasis on hopelessness throughout phases of suicide risk (Nock, 2014). Hopelessness includes two core elements, 1) negative expectations about the occurrence of highly valued outcomes (i.e., negative outcome expectancy) and (2) expectations of helplessness about changing the likelihood of occurrence of these outcomes (i.e., a helplessness expectancy; Abramson, Metalsky, & Alloy, 1989). Among the cognitive theories of suicidal behavior, Beck conceptualized suicidal ideation as a function of hopeless cognitions (Beck, Kovacs, Weissman, 1975; Beck, Steer, Kovac, & Garrison 1985). Beck's cognitive theory was later refined to include *modes* and specifically the *suicidal mode* (Wenzel, Brown, & Beck, 2009). Rudd (2004, 2006) expanded Beck's work by introducing the Fluid Vulnerability Theory of Suicide (Rudd, 2006), which highlights the interplay between baseline and acute suicide risk. Importantly, in this theory, all suicidal episodes are time limited (Rudd, 2006). Individuals are thought to have a unique baseline risk for suicide (stable properties), and the *suicidal mode* is activated in the presence of aggravating risk factors (dynamic properties). The *suicidal mode* includes four integrated components, including cognitions that make up the suicidal belief system (e.g., hopelessness), emotions (e.g., negative affect), physiology (e.g., physiological arousal), and behavior (e.g., social withdrawal). The suicidal belief system is considered the central pathway of the *suicidal* mode, thought to motivate one to engage in maladaptive behavioral responses (Rudd, 2006). Activation of the *suicidal mode* increases an individual's motivation to proceed with acting on suicidal thoughts, and repeated activation will lower the threshold for the *suicidal*

mode to be activated in the future (Rudd, 2006). The Fluid Vulnerability Theory for Suicide has been used to inform Brief Cognitive Behavioral Therapy for Suicide Prevention (BCBT; Bryan, 2015).

Another prominent theory in suicidology is Linehan's biosocial theory (Linehan, 1981). Here, suicidal behavior is conceptualized as a learned coping mechanism for emotional suffering (Brown, 2006). In the biosocial theory of suicide, multiple causal variables increase suicide risk, including cognitions, emotions, environmental factors, and overt behaviors (Brown, 2006). At the center of the biosocial theory, emotion dysregulation is a key vulnerability that augments suicidal risk. This vulnerability increases the likelihood that (1) emotions will be extremely intense, (2) there will be increased sensitivity to negative stimuli, and (3) there will be a slow return to emotional baseline when upset. According to this theory, suicide serves as the method to escape from negative internal states. Although cognitions are not considered the sole factor leading to suicidal behavior, Linehan considers hopelessness as a reason for ineffective problem solving that leads to skill deficits in resolving emotional stressors (e.g., suicide attempts; Brown, 2006).

In addition to the Fluid Vulnerability Theory of Suicide and the Biosocial Theory of Suicide, other models also incorporate aspects of Beck's theory (e.g., importance of hopelessness in the formation of active suicidal ideation) to elaborate on the suicidal process (e.g., Klonsky & May, 2015; Van Orden et al., 2010). For example, Joiner posits an individual is at greatest risk for active suicidal ideation when he or she: a) feels like a burden on others (i.e., perceived burdensomeness); b) feels as if he or she does not belong (i.e., thwarted belongingness); and 3) experiences hopelessness specific to his or her current state (Van Orden et al., 2010). The desire to act on suicidal thoughts is separate from possessing the ability to engage in suicidal behavior.

The theory explains how painful acts (e.g., suicide attempts) habituate an individual to the pain necessary to overcome during a lethal suicide attempt. Therefore, the most lethal outcomes should involve thwarted belongingness, perceived burdensomeness, hopelessness specific to both interpersonal constructs, a lower sense of fear for death, and greater physical pain tolerance. Hopelessness is also considered a primary factor that activates suicidal ideation in Klonsky's Three-Step Theory (3ST; Klonsky & May, 2015). Overall, ideation-to-action theories depict hopelessness as a necessary component for the formation of suicidal thinking that begins risk for suicidal behavior.

B. **Hopelessness, Reasons for Living, and Suicide-Related Outcomes**

Several previous studies have found an association among hopelessness, suicidal ideation and suicide attempts (e.g., Chochinov, Wilson, Enns, & Lander, 1998; Forman, Berk, Henriques, Brown, Beck, 2004). In fact, hopelessness has been shown to be predictive of suicide among a group of patients presenting with suicidal ideation (Beck, et al., 1985). Nonetheless, a recent meta-analysis by Franklin and colleagues (2017) suggests that the traditional risk factors studied in the last 50 years, such as hopelessness, are poor predictors of suicide (Franklin et al., 2017). Within this meta-analysis, however, prior suicidal ideation and hopelessness were the only risk factors that predicated suicidal ideation and exceeded a weighted odds ratio of 3.0. Taken together, hopelessness may be considered a risk factor for suicidal ideation that may also be associated with other suicide-related outcomes (e.g., suicide attempts).

Protective factors are not considered in theories of suicidal behavior. Expanding upon protective factors in our current theoretical models may, however, enrich our conceptualization of suicide risk. For example, consistent with theory indicating the importance of hopelessness in the formation of risk for suicidal behavior, improving reasons for living may serve as a

protective factor for suicidal behavior by instilling hope. Correspondingly, the ability to recall reasons for living is conceptualized as an adaptive characteristic and defined as beliefs or expectancies to mitigate risk for suicide-related outcomes (Linehan, 1983).

To bolster our understanding of life-maintaining behavior (e.g., reasons to live), Linehan and colleagues (1983) developed the Reasons for Living Inventory (RFL). The RFL contains six subscales: 1) survival and coping beliefs, 2) responsibility to family, 3) child-related concerns, 4) fear of suicide, 5) fear of social disapproval, and 6) moral objections (Linehan et al., 1983). College students who denied a history of suicidal thoughts or behaviors scored significantly higher on the RFL subscales of responsibility to family, survival and coping beliefs, and moral objections as compared to college students reporting a history of brief suicidal ideation, active suicidal ideation, and suicidal behavior (Connell & Meyer, 1991). Mann and colleagues (1999) found similar results indicating that patients reporting previous suicidal behavior evidence fewer reasons for living than patients with no suicidal behavior despite comparable psychiatric history and adverse life events. A recent systematic review by Bakhiyi and colleagues (2016) documents the association between reasons for living and suicidal thoughts and behavior, but not suicide. Moreover, Lizardi and colleagues (2007) demonstrated that among patients diagnosed with major depressive disorder or bipolar disorder, reasons for living significantly predicted suicide attempts after controlling for marital status, number of children, hopelessness, and severity of depression among female patients, but not male patients. Collectively, these findings provide preliminary evidence for the utility of implementing a true experimental design to understand the effect of reasons for living on suicide-related outcomes.

Suicide-relevant attention biases are indeed thought to impair one's ability to recall reasons for living (Barzilzay & Apter, 2014). It is, however, unclear if the association between

reasons for living and suicidal thoughts and behavior is partly explained by hopelessness that occurs before thinking about reasons for living, following a lack of reasons for living, simultaneously, or if the two constructs are unrelated. Reasons for living are distinct from reasons for dying (Jobes & Mann, 1999). Suicidal thinking has been conceptualized as an internal debate specific to comparing reasons for living and reasons for dying (Jobes & Mann, 1999). In fact, Jobes and Mann (1999) categorized feeling hopeless as a theme for reasons for dying as opposed to reasons for living. Taken together, hopelessness and reasons for living may not be a part of the same continuum, but instead, could be thought as two different processes.

There is empirical data evidencing a negative correlation between hopelessness and reasons for living (e.g., Bagge et al., 2013; Malone et al., 2000; Range & Penton, 1994). Therefore, reasons for living and hopelessness should not be conceptualized as independent risk factors for suicidal ideation or other suicide-related outcomes (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). It is also unlikely that awareness of reasons for living is a proxy for hopelessness, given work has suggested that reasons for living predict suicidal behavior after controlling for hopelessness (Lizardi et al., 2013). On the one hand, previous scholars have found that hopelessness is associated with suicidal ideation through reasons for living (e.g., Bagge et al., 2014; Harrison, Stritzke, Fay, Ellison, & Hudaib, 2014). On the other hand, previous scholars have proposed that reasons for living may serve as a buffer for suicide risk and moderate the relation between hopelessness and suicidal thoughts and behaviors (Bakhiyi, Calati, Guillaume, & Courtet, 2016). Given the association between hopelessness and reasons for living and their association with suicide-related outcomes, in the current study, reasons for living and hopelessness are conceptualized as overlapping risk factors for suicide-related outcomes (Figure 1). Although it remains unclear if reasons for living serve as a mediator or a moderator in the

relation between hopelessness and suicide-related outcomes, the primary aim of the current study is to examine the main effect of reasons for living on behavioral approach towards a suicide-related stimulus.

C.   Reasons for living and Evidence-Based Interventions for Suicidal Behavior

Thus far, it is unclear which theory of suicidal behavior, if any, is most predictive or facilitates gaining the most control over suicidal behavior. Despite the limitations in the theoretical foundation for understanding suicidal thoughts and behaviors, there have been multiple attempts to reduce suicide-related outcomes by targeting a variety of risk factors (e.g., hopelessness). A risk factor is defined as a characteristic, experience, or event that, if present, is associated with an increase in the probability (risk) of a particular outcome over the base rate of the outcome in the general (unexposed) population (Kazdin, Kraemer, Kessler, Kupfer, & Offord, 1997, p. 377). Intervention efforts also evaluate and target protective factors, which refer to conditions associated with a decrease in the likelihood of an undesirable outcome or an increase in the likelihood of a positive outcome (Kazdin et al., 1997). Importantly, temporal relation between the antecedent (i.e., risk/protective factor) and the outcome must be clear. That is, risk and protective factors must precede the outcome of interest.

True experiments involve the manipulation of independent variables (e.g., risk or protective factors), which bolsters one's ability to draw inferences and identify causal risk factors. A true experiment is characterized by three fundamental components: 1) manipulation of an independent variable and observation of the effects on the dependent variable of interest; 2) a control group that does not receive the experimental manipulation or treatment; and 3) random assignment of participants (Campbell & Stanley, 1963). Randomized controlled trials (RCT) are true experiments and considered to be the gold standard used for evaluating treatment efficacy.

To date, there are 154 RCTs of psychosocial interventions that include suicidal thoughts or behavior as an outcome of interest (Christensen et al., 2015), and there have been multiple reviews characterizing findings from these RCTs (e.g., Brown & Jager-Hyman, 2014; Mann et al., 2005; Mewton & Andrews 2016; Tarrier, Taylor, & Gooding, 2008). Broadly, findings suggest that interventions are most advantageous when suicidal thoughts or behaviors are the primary outcomes of interest as opposed to reducing suicidal thoughts or behavior as a secondary effect (Meerwijk et al., 2016; Tarrier et al., 2008).

The primary efficacious cognitive-behavioral treatments for suicidal thoughts and behaviors are BCBT (Bryan, 2015) and Dialectical Behavior Therapy (DBT; Linehan et al., 2006). These treatments are informed by different theories, which influence the distinctive structure of both therapies (e.g., treatment length). Specifically, BCBT is briefer than DBT and includes only three treatment phases as compared to DBT, which emphasizes four components and emphasizes multiple weekly treatment modalities (i.e., individual, group, and phone consultation). In addition to these cognitive-behavioral therapies, safety planning, a brief intervention (Stanley & Brown, 2012), and applying the Collaborative Assessment and Management of Suicidality therapeutic framework (CAMS; Jobes, 2016) evidenced successful reduction of suicide-related outcomes. Although these interventions have unique qualities, there are indeed overlapping strategies across these interventions, such as instilling hope by drawing attention to reasons for living (i.e., survival kit, hope box, single assessment of the most important reason for living, repeated assessment of reasons for living). However, there is no experimental work documenting that instilling hope by targeting reasons for living is an efficacious strategy for reducing suicidal thoughts or behaviors.

D. **Nomenclature for Suicide-related Outcomes**

The terminology used to describe suicide-related terms varies throughout the literature and has been a long-standing debate (e.g., O'Carroll et al., 1996; Silvermann et al., 2007). The lack of consensus on a standardized nomenclature for suicide-related outcomes makes it difficult to discern appropriate measurement approaches, hindering advancements in suicidology. Recent advances led to the development of the Self-Directed Violence Classification System (SDVCS; Crosby, Ortega, & Melanson, 2011), which prioritizes specificity in communication (e.g., suicidal thoughts and suicide attempt as opposed to suicidality). Another limitation to advancing prediction of suicidal behavior may be attributed to the over-reliance on self-report measures (Barns et al., 2016). For this reason, attention has been given to implicit measures (e.g., Cha, Najmi, Park, Finn, & Nock, 2010; Chatard, & Selimbegović, 2011; Nock et al., 2010). Nonetheless, many scholars have called into question the psychometrics and inferences that can be drawn from implicit outcomes (e.g., Blanton, Jaccard, Christie, & Gonzales, 2007; De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009). As a result, more creative measurement approaches should be considered, such as behavioral approach tasks.

E. **Overview of the Current Study**

To date, there are no published experiments that aim to understand the effects of reasons for living on suicide-related outcomes. In addition, no published studies include a behavioral approach task to measure suicide-related outcomes. Laboratory experimental designs are indeed considered the most rigorous design to ensure high internal validity and have multiple advantages, including the potential to make progress toward identifying causal risk factors (Kazdin et al., 1997). The current study, therefore, aims to evaluate a script-driven imagery procedure specific to one's most important reason for living on behavioral approach towards a

suicide-related stimulus. It was hypothesized that participants who completed a script-driven

imagery procedure specific to their most important reason for living would be less likely to

approach the suicide-related stimulus as compared to individuals who completed a neutral script-

driven imagery procedure.

II. Method

A. Participants

A total of 78 adults (M_{age} = 19.15 years; SD = 1.93; 62.8% female) were included in the

study. Thirty-eight percent of the sample reported a lifetime history of suicidal thoughts and

three participants reported a previous suicide attempt in their lifetime. Moreover, 28% of the

sample reported having some thoughts about killing oneself in the past year. Please see Table 1

for details about the sample demographics. Participants were recruited, as an unselected sample

of convenience, from introductory-level psychology courses at the University of Arkansas via

Sona Systems, a departmentally-administered web-based research management software

package. Inclusion criteria consisted of 1) being at least 18 years of age and 2) ability to provide

voluntary written consent to participate. Participants who completed the study were compensated

with two course research credits for their participation.

B. Design Overview

Several carefully considered design decisions were made to yield an optimal balance of

internal and external validity and feasibility. Importantly, human subject considerations were

prioritized throughout the decision-making process. A posttest-only control group design was

used, which allowed for a true-experimental design that would not yield an effect of testing on

the main outcome (Kazdin, 2003). A non-selected sample of participants was recruited and

randomly assigned to the experimental (reason for living imagery) or control (neutral imagery)

condition. Self-report measures were administered before the manipulation to assess for group differences. A series of mood ratings were also obtained pretest and posttest. Participants completed a script-driven imagery procedure specific to the experimental condition or the control condition, followed by the post-manipulation behavioral approach task and a series of self-report measures and manipulation checks.

C.   Baseline Assessments

All self-report inventories with well-established psychometrics were carefully selected to minimize participant burden. There were no foreseen risks or potential iatrogenic effects from completing the script-driven imagery procedure specific to one's most important reason for living or the control condition. For this reason, a diagnostic interview was not included, and participants were not screened out based on psychopathology. To compare group differences, participants completed self-report inventories via Qualtrics, except for the baseline assessment of participants' mental imagery ability.

Imagery ability. The 16-item Vividness of Visual Imagery Questionnaire (VVIQ; Marks, 1995) was used to measure differences in baseline ability to generate mental imagery, given that different levels of mental imagery ability may account for differences following the script-driven imagery procedure. The VVIQ-2 measures individuals' ability to imagine a series of objects and activities and to rate the clarity and vividness of the images using a 5 (*No image at all, you only "know" that you are thinking of the object*) to 1 (*perfectly clear image, as vivid as normal vision*) point scale, yielding a possible range of scores of 16 to 80.

Demographics. Age, sex, race, ethnicity, sexual orientation, years of education, and marital status were indexed via a demographics questionnaire.

Disgust. The Disgust Propensity and Sensitivity Scale-Revised (DPSS-R; van Overveld et al., 2006) is a 16-item questionnaire comprised of two subscales: 1) Disgust Propensity, the trait-like proclivity to experience disgust in response to a variety of stimuli and 2) Disgust Sensitivity, the degree to which the experience of disgust is perceived as emotionally aversive. Items are rated on a 5-point scale (0 = *never* to 5 = *always*). The DPSS-R evidences sound psychometric properties**,** including internal consistency as well as convergent and discriminant validity (e.g., Olatunji et al., 2007; van Overveld et al., 2006). Disgust propensity and sensitivity was measured to ensure differences in performance on the behavioral approach task were not due to differences in levels of disgust. Disgust was compared between the experimental and control groups and would be included as a covariate if necessary.

Sensation seeking. The Urgency, (Lack of) Premeditation, (Lack of) Perseverance, and Sensation Seeking Impulsive Behavior Scale – Sensation Seeking Subscale (UPPS-SS; Whiteside & Lynam, 2001) was used to measure participants' levels of sensation seeking. The UPPS-SS includes 12 items, which are scored on a five-point Likert scale (i.e., 1 = *not very true of me* to 5 = *very true of me*). Higher scores indicate greater levels of sensation seeking. The UPPS-SS evidences good psychometric properties, including convergent and discriminant validity and internal coherence (Whiteside & Lynam, 2001). It is possible that individuals who report high levels of sensation seeking may be more inclined to approach the suicide-related stimulus. As such, sensation seeking was measured at baseline to compare groups. Sensation seeking was statistically controlled for if significant group differences arose.

Depression and anxiety. The Depression Anxiety Stress Scales (DASS-21; Antony, Bieling, Cox, Enns, & Swinson, 1998) was used to measure distress along the three axes of depression, anxiety, and stress. The DASS-21 distinguishes well between features of depression,

physical arousal, and psychological tension and agitation. The internal consistency and concurrent validity of the DASS–21 are in the acceptable to excellent ranges (Antony et al., 1998). Given depression and anxiety may influence approach behavior towards the suicide-related stimulus, both were measured to compare groups and statistically control for any significant group differences if necessary.

Suicidal ideation. The 21-item Beck Scale for Suicide Ideation (BSS; Beck, Steer, & Ranieri, 1988) was employed to measure suicidal ideation in the past week. The BSS includes 21 items rated on a three-point scale (0 to 2), with higher scores representing greater suicide risk. A score of ≥ 11 indicates clinically significant suicidal ideation (Beck et al., 1988). Nonetheless, others discourage a cutoff score, and instead suggest each item endorsed indicates a level of risk (Simon & Hales 2012). The BSS is a continuous measure of current suicidal thoughts (Beck & Steer, 1991) and is sensitive to change (Rathus & Miller, 2002). Also, the BSS evidences good psychometric properties, as evidenced by adequate construct validity and reliability (e.g., Beck et al., 1997). The BSS was included in the baseline assessment to provide an adequate description of participants' current suicidal ideation that may influence approach behavior toward the suicide-related stimulus.

Risk for suicidal behavior. The Suicide Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001) was used to measure risk for suicidal behavior based on self-report of past behavior and perception of future behavior to compare group differences and statistically ensure equivalence across groups. The SBQ-R includes five items specific to the construct of past suicidal behavior, frequency in the past twelve months, threat for suicide attempt, and self-report of the likelihood of future suicidal behavior. Scores range from 3 to 18. A score of 7 or greater indicates suicide risk among college students (Osman et al., 2001). The SBQ-R demonstrates

sound psychometric properties, including excellent sensitivity (.93) and specificity (.95) within a

college population, as well as in general nonclinical and clinical populations (Osman et al.,

2001).

Acquired capability. The Acquired Capability for Suicide Scale (ACSS; Van Orden et

al., 2008) contains 20 items designed to assess the construct of acquired capability (i.e.,

fearlessness about death and physical pain; Van Orden et al., 2010). Items are rated on a scale

ranging from 0 (*not at all like me*) to 4 (*very much like me*), with higher scores indicated greater

acquired capability. The ACSS evidences sound psychometric properties, including construct

validity and internal consistency (e.g., Bender et al., 2011; Van Orden et al., 2008). Acquired

capability was included in the baseline assessment, given the behavioral approach task has been

used to measure fearlessness about death.

Thwarted belongingness and perceived belongingness. The Interpersonal Needs

Questionnaire (INQ – 15; Van Orden, Cukrowicz, Witte, & Joiner, 2012) was used to measure

the constructs of thwarted belongingness and perceived burdensomeness to compare group

differences and statistically ensure equivalence across groups. The INQ – 15 is comprised of two

subscales, including six items for perceived burdensomeness (e.g., *These days I think my death*

would be a relief to the people in my life.) and nine items for thwarted belongingness (e.g., *These*

days, I feel disconnected from other people.). Items are rated on a 7-point scale (i.e., 1 = *not at*

all true of me; 7 = *very true of me*). Higher scores suggest greater levels of thwarted

belongingness or perceived burdensomeness. The INQ – 15 evidences strong psychometric

properties, including convergent validity (Van Orden et a., 2012).

Hopelessness. The Beck Hopelessness Scale (BHS; Beck & Steer, 1988), a 20-item

true/false self-report measure, was used to measure three aspects of hopelessness in the past

week: 1) feelings about the future, 2) loss of motivation, and 3) expectations. Total hopelessness scores range from 0 to 20, with scores of 0–3 as minimal, 4–8 as mild, 9–14 as moderate, and 15–20 as severe. The BHS evidences good psychometric properties, including high internal reliability, test-retest reliability, and convergent validity (Beck & Steer, 1988; Miller and Powers, 1988). Hopelessness was measured to compare groups and statistically control for any significant differences if necessary, given hopelessness is associated with suicide risk and may also influence approach behavior toward a potentially lethal stimulus.

Trait-like affect. The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to measure trait-like positive and negative affect. The PANAS include 10 descriptors for each subscale (i.e., negative affect, positive affect), which participants rate on a 5-point scale (1 = *very slightly* to 5 = *extremely*) the degree to which it represents how they feel. The PANAS evidences adequate convergent and discriminant validity, and good internal consistency for positive affect and negative affect subscales (Crawford & Henry, 2004; Watson et al., 1988). The PANAS can be adapted to measure state affect and trait-like affect, all of which evidence sound psychometric properties (Watson et al., 1988). Trait-like affect (i.e., *you generally feel this way, that is, how you feel on the average*) was measured to compare groups at baseline and statistically control for any significant differences if necessary.

Current mood. Visual analog scales (VASs; Freyd, 1923) were used to measure participants' current levels of 1) happiness, 2) sadness, 3) hopefulness, 4) disgust, and 5) fearfulness. Each VAS was measured on the computer. Participants were asked to choose a number across the line that reflects their current mood. Numbers ranged between 0 and 100 for each emotion. Numbers farthest to the left (i.e., 0) represent no emotion (e.g., *Not happy at all*) and numbers farthest to the right (i.e., 100) represent high levels of the current emotion (e.g.,

Very happy). The VAS was proposed because it is a brief measure that has been used to measure mood in previous work, including experimental work (e.g., Godstein & Willner, 2002), and evidences adequate concurrent validity and test-retest reliability (e.g., Ahearn & Carrol, 1996). The VASs were measured at two time points: 1) at baseline and 2) after the script-driven imagery procedure is complete.

Individualism and collectivism. Two dimensions (i.e., horizontal and vertical) of collectivism and of individualism were measured using the Individualism and Collectivism Scale (INDCOL; Triandis & Gelfand, 1998). The INDCOL includes 16 items, with four different dimensions: 1) vertical collectivism (e.g., *Parents and children must stay together as much as possible*), 2) vertical individualism (e.g., *Winning is everything*), 3) horizontal collectivism (e.g., *I feel good when I cooperate with others*), and 4) horizontal individualism (e.g., *I'd rather depend on myself than others*). Each item is scored on a 9-point Likert scale (1 = *never or definitely no*; 9 = *always or definitely yes*). The INDCOL evidences good psychometric properties, including convergent and discriminate validity (Triandis & Gelfand, 1998). Collectivism and individualism were measured for a secondary analysis of the participants in the experimental condition. Specifically, within-group differences for participants in the experimental procedure were measured.

D.   Outcome Assessments

Behavioral approach task. In the current study, the behavioral approach task, originally developed by Rozin and colleagues (1986), was proposed to measure approach towards a suicide-related stimulus as the primary outcome of interest. Although the task itself was not originally developed to measure approach towards a suicide-related stimulus, it has been used to index fearlessness about death in two previous experiments (Ribeiro, 2014; Silvia, 2016).

Approach towards a suicide-related stimulus was indexed by 1) self-report VAS ratings indexing desire to drink from the cyanide cup, 2) stated cup preference (i.e., sucrose or cyanide), and 3) a behavioral index (i.e., amount of liquid consumed from the cyanide cup). Previous research indicates adequate variability between and within choice of cup (e.g., Rozin et al., 1986; Rozin, Markwith, & Ross, 1990). Previous work also indicates that VAS ratings of the cyanide cup and the percentage of water consumed from the cyanide cup significantly correlate with scores on the Beck Suicidal Ideation Scale (Ribeiro, 2014; Silvia, 2016). The percentage of water consumed from the cyanide cup was also significantly correlated with Nock's Suicide-IAT (Nock et al., 2010; Silvia, 2016).

Post-experimental task of current mood. As noted, the VASs of 1) happiness, 2) sadness, 3) hopefulness, 4) disgust and 5) fearfulness was used to measure any changes in current mood between groups following the manipulation task.

Post manipulation check. After script development, participant scripts were reviewed to determine if the script was an event that accurately described the reason for living or the neutral content indicated by the participant. A checklist was used to ensure that the script included stimulus propositions, response propositions, and meaning propositions.

Following the script-imagery procedure and the main outcome measures, participants were asked to indicate 1) how interpersonal their script was on a VAS ranging between 0 to 100, 2) how vivid their image was on a VAS ranging between 0 to 100, and 3) how positive their image was on a scale ranging between 0 to 100. Participants were also asked to indicate if their script reflected their reason for living or instructions specific to using a cleaning object or appliance. In addition, participants in the experimental condition were asked to indicate how

important their reason for living detailed in the script was on a VAS ranging between 0 to 100 (i.e., 0 = *Not at all important to me*; 100 = *Extremely important to me*).

E. Procedures

Upon arrival to the laboratory, participants were provided with an overview of the study procedures and given the opportunity to ask questions. The study overview included a false cover story detailing the experiment as an investigation aimed at examining the association between imagery ability and taste perception. A false story was used because revealing the nature of the experiment may have created bias of participants' performance on the behavioral approach task. All participants provided verbal and written informed consent. Upon providing consent, participants were randomly assigned to one of the two conditions (i.e., reasons for living, control). Next, participants completed the baseline assessment, which included administration of the VVIQ-2 and a series of self-report inventories administered through Qualtrics on a computer desktop in a private room. All researchers wore formal attire (i.e., a white laboratory coat, with a nametag labeled research assistant) to standardize uniform. Potential stress that may be influenced by experimenter characteristics (Siegwarth, Larkin, & Kemmner, 2012) was not expected to influence the script-driven imagery procedure.

Reasons for living script development. Participants in the experimental condition were provided with written instructions to write out three specific interpersonal reasons for living (e.g., an important individual in your life) and three specific non-interpersonal reasons for living (e.g., a favorite activity completed alone). Next, participants were instructed to read their six reasons and select their most important reason for living. The next set of written instructions read, "After you select your most important reason for living, please provide a detailed

description of a situation that best captures why this is your most important reason for living (e.g., an event where you are engaging in your favorite activity; a situation where the person you care about smiles at you)." Participants were allotted fifteen minutes to generate their script. To assist in the script imagery procedure, participants were provided with written instructions to include detailed information about 1) stimulus propositions: information about external context (e.g., location, time of day, an individual's facial expression) and sensory information, 2) response propositions: information about physiological, emotional, and behavioral responses elicited by the context (e.g., hair raising on one's forearm, feeling joyful, and smiling), and 3) meaning propositions: relations derived from the stimulus and response elements (e.g., I enjoy engaging in meaningful conversations with this person, I feel alive when riding my bike). Research indicates that emphasizing response propositions increases the effects of imagery procedures (e.g., Bakker, Boschker, & Chung, 1996). Training participants to focus on their active responses in the imagery scene (e.g., behavioral responses such as smiling) also increases synchrony between self-report and physiological reactions to ideographic images (e.g., Lang et al., 1980).

Participant scripts were then reviewed to ensure that the three propositions were included. If there was not a sufficient amount of detail for all propositions, participants were instructed to add more detail for the missing proposition. Participants' scripts were then modified according to established procedures (e.g., Lang, Levin, Miller, & Kozak, 1983). Specifically, scripts were condensed to a 60-sec recording in second person, present tense, which was played back to the participant. Female researchers recorded all script recordings.

Reasons for living script imagery procedure. During the recording development of the script, participants were presented with a five-minute baseline period and instructed to sit and

relax. Next, presentation of the script began with a 30-sec baseline period followed by 60-sec of script presentation, and a 30-sec imaginal rehearsal period in which participants were instructed to continue imagining the scene as vividly as possible. This image presentation sequence has been used in previous research (e.g., Lang et al., 1983).

Control script development. Participants in the control condition were provided with written instructions to list three specific objects or appliances used for cleaning in the living room and three specific objects or appliances used for cleaning in the kitchen. Next, participants were instructed to read the six objects or appliances and select the object or appliance that they believe they can provide detailed instructions on how to use. Participants were then provided with written instructions that read, "After you select your object/appliance, please provide a detailed description of a situation that best captures you demonstrating instructions on how to use this object or appliance (e.g., a demonstration of how to use a mower). Participants were allotted 15 minutes to generate their script. To assist in the script imagery procedure, participants were also be provided with written instructions to include detailed information about 1) stimulus propositions: information about external context (e.g., location, proximity to surrounding objects) and sensory information, 2) response propositions: information about physiological, emotional, and behavioral responses elicited by the context (e.g., my hand feels pressure when touching the handle, I am alert, and I turn my body 90 degrees to the left to turn the mower), and 3) meaning propositions: relations derived from the stimulus and response elements (e.g., I follow these instructions, and can use a mower). Neutral script recordings were developed similarly to the reasons for living script development.

Control script imagery procedure. The control script imagery procedure was identical to the reasons for living script procedure, with the exception of the content presented.

Primary outcome measure. After completion of the experimental or control condition, participants completed the behavioral approach task as the primary outcome. Specifically, participants were presented with two brown glass "chemical" bottles, which were identical with the exception that one had a typed label reading, "Sucrose" and the other had a typed label reading, "Cyanide" with a red "Poison" sticker below it. Two different colored plastic cups labeled 1 or 2 were placed in front of their respective bottle (i.e., cup 1 was in front of the cyanide bottle; cup 2 was in front of the sucrose bottle). The researcher then informed participants that both bottles contained sucrose (table sugar). Next, the researcher poured water from a glass pitcher into both cups until they were ¾ the way full. A spoonful of sucrose from each bottle (i.e., sucrose bottle, cyanide bottle) was then be mixed into the cups in front of the participant using different spoons for each bottle. Finally, participants were asked to 1) rate how much they would like to drink from each of the cups (i.e., VAS rating of each cup), 2) state a preference between the two cups, and 3) drink from the cyanide cup followed by the sucrose cup to obtain a percentage of liquid consumed for each cup. Participants were informed that they may elect not to drink from the cup that is not preferred; however, participants were required to drink from their preferred cup.

Secondary outcome measures. After the behavioral approach task, participants completed the measures on current mood. Following completion of the VAS mood ratings, participants completed the manipulation checks.

Debriefing. Following completion of the study, participants were provided with a thorough debriefing that included a detailed explanation of the study aims. In addition, participants were educated about suicide prevention, how to seek help if experiencing a suicidal crisis, self-care after experiencing previous suicidal behavior, and mental health disorders

broadly. Participants were also given the opportunity to have any questions pertaining to the research project addressed. Finally, all participants were provided with a list of local resources for managing mental health problems and suicidal thoughts or behaviors. The list of referral sources included, but was not limited to, the Psychological Clinic at the University of Arkansas in the Department of Psychological Science, The Counseling and Psychological Services (CAPS) of the University of Arkansas, and the Arkansas Crisis Center and hotline.

F.   Data Analytic Approach

Random assignment efficacy was tested to ensure condition equivalence. Conditions were compared in terms of demographic and other baseline characteristics (e.g., imagery ability, suicidal ideation). A series of chi-square analyses were performed to compare the two groups on all categorical demographic variables when all expected cell frequencies were greater than five. A series of independent samples t-tests or Mann–Whitney tests, a nonparametric test comparable to an independent samples t-test, was conducted to examine possible group differences on the continuous self-report measures.

A series of zero-order correlations between baseline measures and outcome measures was conducted next, followed by a series of primary hypotheses tests. The primary hypotheses tests examined the effect of the script-driven imagery procedure of the most important reason for living on behavioral approach towards a suicide stimulus, as indexed by 1) desire to drink from the cyanide cup (i.e., VAS-cyanide ratings), 2) stated cup preference, and 3) percentage of liquid consumed from the cyanide cup. In addition, groups were compared on VAS ratings of current mood. Across all primary analyses, an independent samples t-test or a Mann–Whitney test was used when the outcome variable of interest was continuous (i.e., VAS ratings, percentage of water consumed from cyanide cup). A fisher's exact test was used when the dependent variable

was a binary outcome (i.e., stated cup preference). Group differences on the manipulation checks were also examined to evaluate the effectiveness of the experimental manipulation. Finally, the association between the nature of the reason for living (i.e., interpersonal, non-interpersonal) and dimensions of collectivism and individualism was measured and analyzed as a secondary analysis for the participants in the experimental condition. All analyses assumed an alpha level of $p < .05$.

III.   Results

A.   Preliminary Data Analyses

Prior to conducting primary analyses, data were screened for missing data. Missing data were minimal. Specifically, data for race and ethnicity were missing for one case (1.3%). Data for one case were also missing for items: UPPS-P_46, DASS21_2, DASS21_4, DASS21_9, SBQR_2, INQ_3, INQ_11, INQ_12, ACSS_16, and ACSS_19. Missing data were handled by pairwise deletion.[1] Data were also screened for outliers. Identified outliers did not appear to be due to data entry error or measurement error. Thus, outliers were not removed.[2] Zero-order correlations between all baseline and outcome measures are presented in Table 2.

Random assignment check. A chi-square analysis was used to examine group differences with regards to gender. Results suggested there were no significant group differences based on gender [X^2 (1) = .05, $p > .05$]. All expected cell frequencies were not greater than 5 for race, ethnicity, or sexual orientation. For this reason, a fisher's exact test was conducted for these variables. Results suggested there were no significant group differences based on race, ethnicity, or sexual orientation.

Data for multiple variables were significantly skewed. Please see Table 3 for results from the Shapiro-Wilk tests for all continuous data. Test of homogeneity of variance was met for all

baseline measures. The normality assumption for conducting a series of independent samples t-tests was not met; however, assumptions for examining the data using equivalent non-parametric procedures (i.e., Mann-Whitney tests) were met. As such, a series of Mann-Whitney tests were used to compare group differences on measures with significantly non-normally distributed data. Analyses revealed no significant group differences on the DASS21-A [$U = 698.50$, $p > .05$], DASS21-D [$U = 649$, $p > .05$], INQ-TB [$U = 605.50$, $p > .05$], INQ-PB [$U = 710.50$, $p > .05$], UPPS-SS [$U = 738$, $p > .05$], DPSS-S [$U = 722.50$, $p > .05$], BSS [$U = 722.50$, $p > .05$], SBQ-R [$U = 708.50$, $p > .05$], BHS [$U = 653.50$, $p > .05$], PANAS-NA [$U = 595.00$, $p > .05$], Sadness-Pre [$U = 634$, $p > .05$], Happiness-Pre [$U = 650.50$, $p > .05$], Hopefulness-Pre [$U = 684$, $p > .05$], Disgust-Pre [$U = 681$, $p > .05$], Fear-Pre [$U = 655$, $p > .05$], VVIQ [$U = 613.50$, $p > .05$] or age [$U = 743.50$, $p > .05$].

Data were normal for DPSS-P, ACSS, and PANAS-PA. As such, an independent samples t-test was used to examine group differences on these measures. Results indicated that groups did not differ on the DPSS-P [$t(76) = -.96$, $p > .05$], ACSS [$t(76) = -1.85$, $p > .05$], or PANAS-PA [$t(76) = .54$, $p > .05$]. Taken together, results indicated that random assignment was effective. As a result, none of the baseline or relevant descriptive variables was entered as a covariate.

Manipulation check. All scripts included sufficient information meeting criteria for sensory propositions, response propositions, and meaning propositions. All scripts also reflected chosen neutral or experimental content as evidenced by passing a researcher check and 100% of agreement from participants post-experiment. An independent samples t-test revealed no significant group differences on the following participant VAS ratings: 1) how interpersonal was your script, 2) how vivid was the image and 3) how positive was the image. Participants in the experimental condition also described their selected reason for living as important ($M = 91.95$;

SD = 13.63). In sum, participants adhered to the script-driven imagery procedure.

B.   Primary Outcome Analyses

Behavioral approach towards the suicide-related stimulus was indexed by performance on 3 outcomes: 1) VAS ratings indexing desire to drink from the cyanide cup, 2) percentage of liquid consumed from the cyanide cup, and 3) cup preference (i.e., cyanide vs. sucrose cup). The primary hypothesis that participants who completed a script-driven imagery procedure specific to one's most important reason for living would be less likely to approach the suicide-related stimulus as compared to individuals who completed a neutral script-driven imagery procedure was planned to be analyzed using a chi-square analysis for the dichotomous variable (i.e., cup preference) and an independent samples *t*-test for the continuous variables (i.e., VAS ratings, percentage of liquid consumed).

Assumptions for using an independent samples t-test to examine group differences on the VAS ratings of the sucrose cup were met. Results from the independent samples t-test indicated participants in the experimental condition did not significantly differ in VAS ratings indexing desire to drink from the sucrose cup (*M* = 55.48; *SD* = 24.59) as compared to participants in the control condition [*M* = 52.61; *SD* = 27.83; *t*(76) = .48, *p* = .63; *d* = .12; 95% CI = (-8.97, 14.72)].

Assumptions for tests for all other outcomes were not met. Specifically, the distribution of the data for the other continuous outcome measures between the experimental and control group was notably skewed and significantly non-normally distributed. Please see Table 3 for results from the Shapiro-Wilk tests. As such, a series of Mann-Whitney tests were used to compare group differences on the VAS ratings for the cyanide cup and percentage of liquid consumed from both cups. Contrary to predictions, participants who completed the reason for living script driven imagery procedure did not significantly differ on VAS ratings for the cyanide

cup (mean rank = 39.54) as compared to those in the control condition [mean rank = 39.46; U = 759, p = .98; r = .001]. Participants in the experimental condition consumed a significantly higher percentage of liquid from the cyanide cup as compared to those in the control condition [experimental group mean rank = 45.03; control group mean rank = 33.97; U = 545.00, p = .02; r = .25]. Groups did not significantly differ in the percentage of liquid consumed from the sucrose cup [experimental group mean rank = 44.10; control group mean rank = 34.90; U = 581.00, p = .07; r = .20].

A chi-square analysis was planned to compare group differences between the experimental and control condition on cup preference. However, the expected cell count for two cells (i.e., cyanide cup preference for experimental and control condition) was less than five. As such, a Fishers exact test was employed to examine the association between the script-driven imagery condition and cup preference. One participant (2.6%) in the control condition preferred the cyanide cup, as compared to 8 participants (20.5%) in the experimental condition. Results indicated a significant association between condition and cup preference (Fisher's exact test, p = .02; OR = 9.81; 95% CI [1.16, 92.70]).

Mood outcome analyses. A series of independent samples t-tests were planned to compare group differences in post 1) happiness, 2) sadness, 3) hopefulness, 4) disgust and 5) fearfulness. However, assumptions for conducting an independent samples t-test were not met. The distribution of the data for the outcome measures between the experimental and control group was notably skewed (Please see Table 3). Test of homogeneity of variance was met for all mood outcome measures. A series of Mann-Whitney tests, the non-parametric equivalent to independent samples t-tests, was used to compare group differences in post mood ratings. Results suggested that groups did not significantly differ in happiness [experimental group mean

rank = 36.47; control group mean rank = 42.53; U = 642.50, $p > .05$; r = .13], sadness [experimental group mean rank = 39.51; control group mean rank = 39.49; U = 760.00, $p > .05$; r = .00], hopefulness [experimental group mean rank = 39.82; control group mean rank = 39.18; U = 748.00, $p > .05$; r = .01], disgust [experimental group mean rank = 42.27; control group mean rank = 36.73; U = 652.50, $p > .05$; r = .12], or fearfulness [experimental group mean rank = 41.56; control group mean rank = 37.44; U = 680.00, $p > .05$; r = .09].

C.   Secondary Outcome Analyses

An independent samples t-test was planned to examine the association between the nature of the reason for living (i.e., interpersonal, non-interpersonal) and dimensions of collectivism and individualism among participants in the experimental condition. Assumptions for using an independent samples t-test to examine differences between participants who selected an interpersonal reason for living versus a non-interpersonal reason for living on horizontal and vertical individualism were met. Results suggested participants who selected an interpersonal reason for living (n = 25) did not significantly differ on horizontal individualism [$t(37)$ = .37, p = .70] or vertical individualism [$t(37)$ = -.27, p = .78] as compared to individuals who selected a non-interpersonal reason for living (n = 14).

Assumptions were not met to run an independent samples t-test on horizontal or vertical collectivism. Results from Shapiro-Wilk tests suggested scores for the participants who selected an 1) interpersonal reason for living or 2) non-interpersonal reason for living from the vertical collectivism [W (25) = .94, p = .19; W (14) = .78, p = .003] and horizontal collectivism [W (25) = .91, p = .03; W (14) = .89, p < .01] were significantly non-normally distributed. Mann-Whitney tests were used to compare group differences in vertical collectivism or horizontal collectivism. Results suggested that participants who selected an interpersonal reason for living did not

significantly differ in vertical collectivism [$U = 173.50$, $p > .05$] or horizontal collectivism [$U = 140.00$, $p > .05$] as compared to participants who selected a non-interpersonal reason for living.

IV.   Discussion

Despite efforts to identify risk factors and prevent suicide, the use of laboratory-based experiments to evaluate psychosocial risk or protective factors is sparse. In fact, little attention is given to the influence of protective factors in theoretical models of suicidal behavior. Reasons for living is considered an important protective factor in the field of suicidology and has also been incorporated into multiple interventions for suicidal individuals. Nevertheless, there are currently no experimental studies that aim to examine the effects of thinking about reasons for living. To address this gap in the literature, the current study represents the first experimental study aimed at examining the effect of bringing awareness to one's most important reason for living, via a script-driven imagery procedure, on behavioral approach towards a suicide-stimulus. It was hypothesized that participants who completed a reason for living script-driven imagery procedure would be more likely to 1) report lower VAS ratings of desire to drink from the cyanide cup, 2) endorse a preference for the sucrose cup, and 3) evidence a lower percentage of liquid consumed from the cyanide cup, as compared to the participants who completed a neutral script-driven imagery procedure.

The behavioral task used to measure approach towards a suicide stimulus was originally developed for a study aimed at understanding the *laws of sympathetic magic*, which include the *law of contagion* and the *law of similarity* (Rozin et al., 1986, 1990). The *law of similarity,* which denotes objects that resemble one another share fundamental properties, was examined with the behavioral approach task used in the current study. In previous studies, Rozin and colleagues (1986, 1990) demonstrated that college students were more reluctant to drink from a cup of water

containing sugar from a bottle labeled *sodium cyanide*, despite knowing that the label was arbitrary, as compared to if the bottle was labeled *sucrose*. These studies confirmed similarity thought processes, such that appearance equates to reality, among a healthy college population. Consistent with these findings, the overall sample of the current study were significantly more likely to approach the sucrose cup as compared to the cyanide cup. Given there is documented variability in the cup choice representing a dangerous stimulus, scholars (Ribeiro, 2014; Silvia, 2016) later used the behavioral approach task as an index of fearlessness about death. In the current study, the behavioral approach task was conceptualized as a behavioral measure of desire to approach a suicide-related stimulus as opposed to fearlessness about death for two primary reasons. First, there is no previous work documenting an association between current self-reported fear levels and the behavioral approach task, which limits our understanding of the association between the behavioral measure and fear as state affect elicited during the task. Second, poison is considered the most common suicide attempt method (Runeson, Tidemalm, Dahlin, Lichtenstein, & Långström, 2010), and the behavioral approach task has participants approach sugar from a bottle containing a label that reads *sodium cyanide* with a poison sticker.

Participants did not explicitly choose death by preferring and drinking from the cyanide cup. In fact, participants were told that both bottles contained sugar. Moreover, there is currently no work indicating an association between the behavioral approach task used in the current study and future suicidal behavior. There is, however, evidence suggesting an association between suicidal ideation and VAS ratings of the desire to drink from the cyanide cup as well as the percentage of water consumed from the cyanide cup (Ribeiro, 2014; Silvia, 2016). Previous work also documented an association between the percentage of water consumed from the cyanide cup and Nock's Suicide-IAT (Nock et al., 2010; Silvia, 2016). However, suicidal ideation or risk for

suicidal behavior (i.e., SBQ-R scores) was not significantly correlated with any of the behavioral approach outcomes in the current study. Visual analog scale ratings of pre and post fearlessness were also not significantly correlated with any of the behavioral approach outcome measures, suggesting performance did not differ as a result of state fear levels in the current study. The percentage of water consumed from the cyanide cup was, however, significantly correlated with VAS ratings of pre-sadness. Taken together, the ecological validity of the behavioral measure in relation to approaching suicide-related stimuli in a real-world setting may be low. Future work is now needed to strengthen our understanding of how the behavioral approach measure may be used as a measurement of risk for suicidal processes and suicidal behavior.

First, the current study findings suggest that participants who completed the reasons for living script-imagery procedure did not differ in terms of VAS ratings of the desire to drink from the cyanide cup as compared to participants who completed the neutral script-driven imagery procedure. In fact, VAS ratings for the cyanide cup were almost identical for both groups. Given the nature of the unselected sample, conservative parameters for an *a priori* power analysis conducted using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) was adopted and indicated 68 participants (34 per condition) would be needed to detect the hypothesized condition effects. An additional 10 participants were included in the study for a total of 39 per condition. As such, these null findings are not likely due to insufficient power. Nonetheless, future work with larger sample sizes may allow for greater power needed to test more sophisticated models (e.g., interaction models).

Previous work has provided evidence to infer that bringing awareness to one's reasons for living may indeed help reduce risk for suicidal thoughts and behavior (e.g., Bakhiyi et al., 2016; Dogra, Basu, & Das et al., 2004). For example, in a 12-month follow-up study, Zhang and

colleagues (2011) found that reasons for living were significantly associated with incidences of suicidal ideation among a community adult sample in Hong Kong. Moreover, Galfalvy and colleagues (2009) found that reasons for living predicted suicide attempts among patients diagnosed with major depressive disorder or bipolar disorder. There are, however, mixed findings, with some studies suggesting that reasons for living do not serve as a protective factor for suicidal thoughts and behaviors (e.g., Consoli et al., 2015). Bryan and colleagues (2017) recently completed an RCT among 97 U.S. Army soldiers focused on comparing treatment effects of a no-suicide contract for safety, a standard crisis response safety plan, or an enhanced crisis response safety plan, which included a discussion of patients 'reasons for living. Findings indicated that the standard and enhanced crisis response safety plan outperformed the no-suicide contract for safety, while there were no significant differences between the standard and enhanced crisis response safety plans specific to reducing suicidal thoughts or behaviors. These findings suggest that bringing awareness to reasons for living did not have an additive effect in reducing suicidal thoughts and behaviors, although the authors noted the failure to detect differences might be due to insufficient statistical power. Consistent with previous work and the current study, it is possible that bringing awareness to reasons for living does not reduce suicide risk. Additional studies are still needed to determine if bringing awareness to one's reasons for living contributes to reducing aspects of suicide risk.

The utilization of reasons for living in BCBT has been described as a tool for cognitive emotion regulation (Rudd, 2012). It is theorized that bringing awareness to reasons for living, in order to reduce hopelessness-based suicide schemas, is used to draw attention away from fixation on suicide (Wenzel & Beck, 2008). Importantly, hopelessness is considered maladaptive suicidal cognitive content, which includes trait and state properties (Wenzel & Beck, 2008). Recent work

suggests trait hopelessness is significantly associated with suicidal thoughts and behavior, while temporary or episodic hopelessness was not (Burr, Rahm-Knigge, & Conner, 2018). If reasons for living is used to instill hope, it is possible that bringing awareness to reasons for living carries only a temporary effect on state hopelessness as opposed to trait hopelessness. Future programs of work may benefit from exploring how bringing awareness to reasons for living reduces cognitive schemas of hopelessness and its different properties.

Positive future expectations are more strongly related to hopelessness among suicidal individuals as compared to negative future expectations (Macleod et al., 2005). These findings align well with Fredrickson's (2001) broaden-and-build theory of positive emotions, suggesting that the lack of positive emotions can result in cognitive inflexibility. Moreover, the association between cognitive inflexibility and suicide risk may in part be explained by increased hopelessness (Miranda, Valderrama, Tsypes, Gado, & Gallagher, 2013). Consequently, it is understandable why one may find it advantageous to bring awareness to one's reasons for living to broaden narrow thinking during a suicidal crisis. On the other hand, it is also possible that solely focusing on reducing hopelessness via a cognitive emotion regulation strategy (i.e., reasons for living) is too narrow to address acute suicide risk. During a suicidal crisis, where emotions may be high, thinking about reasons for living in response to suicidal distress may be considered a response-focused strategy. Response-focused strategies are actions that take place after emotion has already been generated (Srivastava, Tamir, McGonigal, John, & Gross, 2009). Response-focused emotion regulation strategies that aim to inhibit emotions are not as effective at decreasing emotion as those that focus on modifying antecedents to an emotional experience (such as reappraising emotion-eliciting stimuli) and may also be associated with heightened physiological responding (Gross, 1998; Webb et al., 2012). Importantly, a suicidal mode is

thought to include cognitive, affective, behavioral, and physiological properties, which brings into question if thinking about reasons for living, as a cognitive emotion regulation strategy, is sufficient for reducing one's current suicidal thinking. It is possible that bringing awareness and building reasons for living is effective to preventatively address cognitive suicidal biases, such as hopelessness, whereas this strategy may be less effective to reduce suicidal reactivity once activated. Future research is needed to test this hypothesis.

Interestingly, in contrast to the study hypotheses, results on the other two behavioral measures of the behavioral approach task suggest participants in the experimental condition were more likely to approach the suicide-related stimulus as compared to those in the control condition. Specifically, participants who completed the reasons for living script-driven imagery procedure were significantly more likely to 1) prefer the cyanide cup and 2) drink a higher percentage of liquid from the cyanide cup as compared to participants who completed the control script-driven imagery procedure. These findings suggest that it is possible that bringing awareness to one's reasons for living may increase preference for suicide-related stimuli. It is worth noting that although reasons for living and reasons for dying are not equivalent (Jobes & Mann, 1999), an individual's primary reason for living (e.g., my child) may also be their reason for dying (e.g., I am a horrible parent). In addition to bringing awareness to reasons for living, it is possible that the design of the script-driven imagery procedure also brought awareness to participant's reasons for dying. In the current study, participants generated a script that reflected their most important reason for living, and some participants chose a hypothetical scenario set in the future. Given the nature of optimism in the future-related scripts (e.g., making parents proud at graduation), the hypothetical scripts may not have been congruent with participants' current performance. Incongruence between current experience and future desire may have led to

feelings of guilt among participants. In treatments that incorporate reasons for living, patients are first asked to generate reasons for living with their therapist. In contrast, participants in the current study generated a reason for living script alone. From a treatment perspective, it may be beneficial to explore the effects of a collaborative effort between participants and a clinical researcher in generating a reason for living script.

Although the current findings are mixed, it is unlikely that using a script-driven imagery procedure to bring awareness to reasons for living produces harmful effects. Recently, Poindexter and colleagues (2018) demonstrated there was no compelling evidence for iatrogenic effects of suicide-specific research protocols, including a mood induction of a suicidal mode. Moreover, previous work suggests positive mental imagery is effective in reducing feelings of hopelessness and sadness among individuals suffering from posttraumatic stress disorder (Panagioti, Gooding, & Tarrier, 2012). In fact, mental imagery, such as the mental imagery elicited during the script-driven imagery procedure used in the current study, increases positive mood and is a greater buffer to negative mood as opposed to positive verbal thought (Holmes, Mathews, Dalgleish, & Mackintosh, 2006; Ji, Heyes, MacLeod, & Holmes, 2016). Bryan and colleagues (2018) recently demonstrated that the enhanced crisis response safety plan, which includes bringing awareness to reasons for living, predicted significant improvements in hopelessness, calmness, and burdensomeness as compared to regular crisis response safety planning and no-suicide contracts for safety. Importantly, in the current study, state levels of hopefulness were not significantly different between participants who completed the reason for living script versus the control script. As such, it is possible that the manipulation used in the current study was ineffective in instilling hope for the current study sample, which was relatively healthy and hopeful.

A limitation of the current study is that participants were not actively suicidal individuals. Only 28% of the sample reported having suicidal thoughts in the last year, while 38% reported suicidal thoughts in their lifetime. Suicidal participants may have responded differently to the reasons for living script-driven imagery procedure. In fact, previous work by Jobes (2012) indicates that non-suicidal college students differ in their reasons for living as compared to suicidal college students. They found that suicidal individuals reported reasons for living with themes specific to family, burdening others, and enjoyable things, while non-suicidal students reported reasons for living more focused on themes of hopefulness for the future, plans, and goals, and beliefs. Nonetheless, previous work has also demonstrated non-suicidal college students have higher scores in RFL subscales reflecting similar themes (e.g., family) as compared to suicidal college students (Connell & Meyer, 1991). In the current study, 65% of participants reported an interpersonal reason to live as their most important reason. It is possible that importance given to interpersonal versus non-interpersonal reasons for living may differ between suicidal individuals as compared to non-suicidal individuals. Nonetheless, in the current study, there were no significant differences in behavioral approach towards the suicide-related stimulus between participants who selected an interpersonal reason to live versus a non-interpersonal reason to live.

The findings of the current study do not suggest that bringing awareness to reasons for living was effective for increasing hope or reducing approach behavior towards the suicide-related stimulus for the current sample. Nonetheless, reasons for living are still likely an important protective factor. The suicidal state is often thought of as an ambivalent state between the wish to live and the wish to die (Bryan, Rudd, Peterson, Young-McCaughan, & Wertenberger, 2016; Kovac & Beck, 1977; O'Connor et al., 2017), and previous scholars have

noted that even a small increase in the wish to live can reduce suicide risk (Brown, Steer, Henriques, & Beck, 2005). Bringing awareness and building reasons for living may enhance one's wish to live (Bryan et al., 2016), which would indeed be a protective factor against suicide. It is possible that only bringing awareness to reasons for living, as done in the current study, is not equivalent to modifying the risk factor. The manipulation of awareness of reasons for living in the current study may have only provided a relatively small dose to effectively help build one's reasons for living. In fact, treatments for suicidal behaviors that include a component of bringing awareness to reasons for living include weekly sessions lasting anywhere between 12-48 weeks (Bryan, 2015; Linehan et al., 2006). Future work may benefit from exploring the reduction of suicide risk at different time points as reasons for living build during treatment targeting suicidal behaviors.

An important strength of the current study is that an experimental design was used in a controlled laboratory setting. Laboratory-based experiments have multiple advantages, including the potential to make progress toward identifying causal risk factors (Kazdin et al., 1997). As such, it is essential for our field to continue experimental efforts to better understand suicidal processes and improve our treatment efforts. The current study used a unique laboratory-based experimental paradigm to study behavioral approach towards a suicide stimulus. However, future work may improve on this method. For example, behavioral approach tasks, which are used to measure fear and disgust towards a specific stimulus, include multiple steps that a participant can opt to complete or quit. Behavioral approach tasks are often used to study fear among individuals with a specific phobia or disgust among individuals with contamination concerns (e.g., Deacon & Olatunji, 2007). These tasks allow for more variability in responses and may be beneficial to adapt to a behavioral approach task used to measure behavioral approach towards suicide-related

stimuli (e.g., an unloaded gun). Advances in suicidology are needed, and different measurement methods and paradigms to better understand suicide risk may improve our efforts. Recently, Nazem and colleagues (2017) validated the Self-Directed Violence Picture System (SDVPS) to be used as a tool to measure participant reactions towards suicide-specific stimuli. The SDVPS is a valuable new tool that may be used in future behavioral and experimental designs. For example, current Approach and Avoidance Tasks (AATs; Rinck & Becker, 2007) may be modified to include pictures from the SDVPS to measure suicide approach bias. The outcomes of future research using unique measurement tools and other behavioral paradigms may help inform how best to improve our prevention efforts using reasons for living or other protective factors.

Notwithstanding the limitations noted above, the current study serves as a first step to making a meaningful experimental contribution toward understanding the effects of reasons for living on behavioral approach towards a suicide-related stimulus. As we continue to gain understanding of how to improve intervention and prevention efforts for suicidal behavior, it will also be important for our theories to adapt and improve. For example, it will be important to continue to consider how protective factors fit in our suicidal theories. In addition, future work is needed to examine the temporal precedence of hopelessness in our current theories. Future work that improves our conceptual framework of reasons for living, as it relates to hopelessness and suicide risk, will further elucidate our understanding of suicide prevention efforts.

V. References

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V1. Footnotes

1. Results specific to group differences did not differ when total scores for cases with missing items were included in the analyses.

2. Results specific to group differences did not differ when outliers were removed from the analyses.
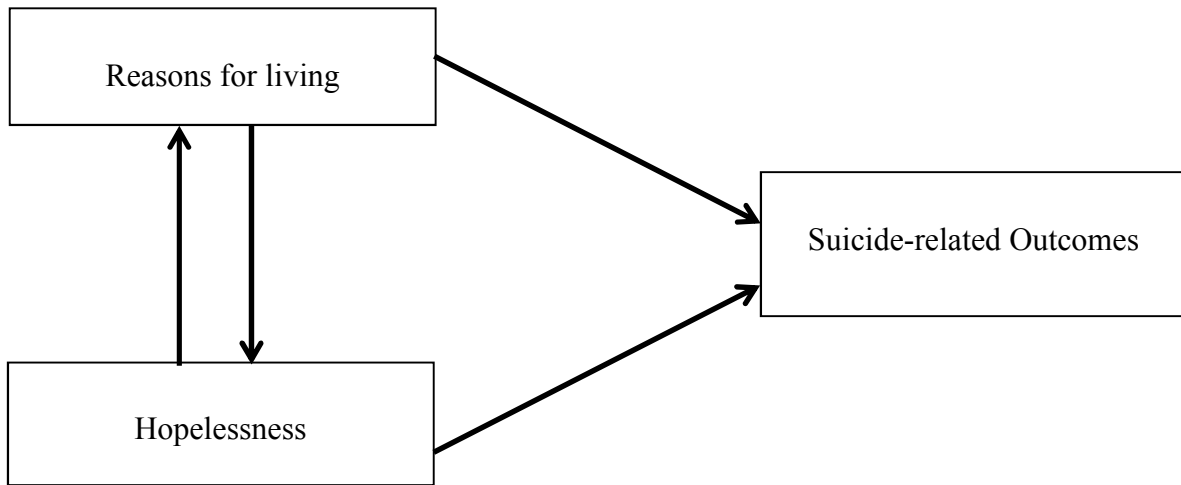
Figure 1. Representation of reasons for living and hopelessness conceptualized as overlapping risk factors for suicide-related outcomes.

Table 1.
Descriptive Data for Demographic Variables as a Function of Group

	Experimental Group *M* or *n* (*SD* or %)	Control Group *M* or *n* (*SD* or %)
Age	19.21 (2.11)	19.10 (1.75)
Gender:		
Female	24 (61.5%)	25 (64.1%)
Male	15 (38.5%)	14 (35.9%)
Ethnicity:		
Hispanic	3 (7.7%)	2 (5.1%)
Non-Hispanic	36 (92.3%)	36 (92.3%)
Race:		
Caucasian/White	33 (84.6%)	30 (76.9%)
African American	3 (7.7%)	4 (10.3%)
Native Hawaiian/other Pacific Islander	--	2 (5.1%)
Asian	2 (5.1%)	1 (2.6%)
American Indian/Alaska Native	--	1 (2.6%)
Bi-Racial or Multi-Racial	--	1 (2.6%)
Other	--	1 (2.6%)
Education:		
Graduated high school or high school equivalent	14 (35.9%)	9 (23.1%)
Some college	25 (64.1%)	26 (66.7%)
Graduated 2-year college	--	2 (5.1%)
Graduated 4-year college	--	--
Some graduate/professional school	--	2 (5.1%)
Marital Status:		
Married	--	--
Separated	--	--
Divorced	1 (2.6%)	--
Widowed	--	--
Single	37 (94.9%)	--
Cohabitating	1 (2.6%)	38 (97.4%)
Sexual Orientation:		1 (2.6%)
Heterosexual or straight	37 (94.9%)	37 (94.9%)
Gay or lesbian	1 (2.6%)	1 (2.6%)
Bisexual	1 (2.6%)	1 (2.6%)
Other	--	--

Note. *n* = 78. * *p* < .05; ** *p* < .01.

Table 2.

Mean, Standard-Deviation, and Zero-Order Relations between Baseline and Outcome Variables

	Mean (SD) Or %	1	2	3	4	5	6	7	8	9	10	11
1. Condition	1.50 (0.50)	--										
2. VVIQ	35.73 (11.84)	-.17	--									
3. DPSS-R-S	10.46 (6.33)	.05	.05	--								
4. DPSS-R-P	15.12 (5.65)	.11	.14	.68**	--							
5. UPPS-SS	3.03 (0.63)	02	-.20	-.14	-.09	--						
6. DASS21-D	6.79 (7.12)	.17	.02	.27*	.18	-.20	--					
7. DASS21-A	8.55 (7.86)	.06	-.10	.26*	.21	-.13	.56**	--				
8. BSS	0.69 (2.01)	.01	-.00	-.09	.02	.07	.47**	.19	--			
9. SBQ-R	5.41 (1.80)	-.04	-.02	.21	.11	-.16	.48**	.46**	.45**	--		
10. ACSS-FAD	15.07 (6.62)	.20	-.07	-.27**	-.36**	.13	-.34**	-.30**	-.09	-.11	--	
11. INQ-TB	24.25 (7.59)	.13	.07	.15	.11	-.13	.43**	.44**	.39**	.43**	-.08	--
12. INQ- PB	7.65 (3.92)	.02	.00	.23*	.19	-.14	.53**	.37**	.67**	.46**	-.33**	.59**
13. BHS	3.10 (2.59)	.14	.06	.37**	.34**	-.15	.49**	.34**	.40**	.32**	-.22*	.48**
14. VC	30.21 (3.81)	.11	-.16	.00	.03	-.06	.01	-.10	-.01	-.15	-.05	-.24*
15. VI	22.33 (6.86)	.18	-.14	-.06	-.07	.08	.12	.11	.13	.04	-.11	.02
16. HC	28.89 (4.90)	.00	-.12	-.06	-.02	.02	-.13	-.02	-.08	.10	-.09	-.34**
17. HI	28.23 (4.29)	.18	-.30**	-.02	-.07	-.08	-.02	.01	.02	.05	.11	.09
18. PA	36.70 (7.59)	-.06	-.25*	-.24*	-.31**	.13	-.41**	-.19	-.14	-.16	.15	-.38**
19. NA	21.67 (6.02)	.20	.01	.48**	.31**	-.04	.43**	.59**	.20	.31**	-.31**	.45**
20. Sad-Pre	26.08 (23.63)	.12	-.01	.38**	.25	-.00	.58**	.36**	.36**	.44**	-.21	.40**
21. Happy-Pre	75.23 (19.06)	-.15	-.17	-.27*	-.27	.05	-.68**	-.35**	-.40**	-.31**	.24*	-.49**
22. Hope-Pre	79.07 (19.25)	-.03	-.13	-.23*	-.23	.07	-.44**	-.21	-.29**	-.21	.22	-.27*
23. Disgust-Pre	12.34 (19.07)	-.01	-.04	.29**	.18	-.00	.05	.07	-.09	.00	-.08	.22
24. Fear-Pre	25.16 (24.61)	.11	.00	.24*	.11	-.23*	.14	.36**	-.02	.20	-.06	.20
25. Sad-Post	12.82 (15.05)	-.00	.13	.44**	.25*	-.24*	.46**	.40**	.09	.25*	-.34**	.26*
26. Happy-Post	72.16 (19.07)	.14	-.11	-.32**	-.30	.21	-.31**	-.11	-.21	-.11	.28*	-.33**
27. Hope-Post	69.46 (23.38)	-.00	-.08	-.04	-.07	.09	-.16	-.03	-.13	-.04	-.04	-.28*
28. Disgust-Post	18.91 (22.36)	-.05	.10	-.01	-.07	-.18	.08	.04	.11	.11	-.13	-.06
29. Fear-Post	18.82 (21.93)	-.08	.17	.18	-.03	-.40**	.14	.27*	-.15	.14	-.05	.01
30. Cup-P	1.88 (0.32)	.28*	-.13	-.00	.00	.01	-.02	.11	-.01	.01	.01	.08
31. VAS-C	25.02 (23.94)	.01	.00	.08	-.05	-.05	.04	-.09	.14	.04	.11	.19
32. VAS-S	54.05 (26.13)	-.05	.11	-.14	-.09	-.03	-17	-.16	-.08	-.03	.10	-.08
33. C Drink (%)	9.68 (20.76)	-.18	.16	-.16*	-.27*	.11	-.09	-.11	.11	-.00	.18	.04
34. S Drink (%)	18.33 (24.44)	-.11	.19	-.26*	-.24*	.00	-.17	-.19	.01	-.11	.06	-.14

Table 2.
Mean, Standard-Deviation, and Zero-Order Relations between Baseline and Outcome Variables (Cont.)

	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
12. INQ- PB	--														
13. BHS	.39**	--													
14. VC	-.01	-.16	--												
15. VI	.20	.06	-.04	--											
16. HC	-.07	-.23*	.52**	-.11	--										
17. HI	-.02	.00	.13	.12	.16	--									
18. PA	-.15	-.45**	.28*	.07	.47**	.19	--								
19. NA	.41**	.38**	-.06	.18	-.13	.00	-.08	--							
20. Sad-Pre	.42**	.53**	-.16	.06	-.19	-.04	-.37**	.42**	--						
21. Happy-Pre	-.40**	-.64**	.15	-.07	.36**	.13	.56**	-.44**	-.67**	--					
22. Hope-Pre	-.24*	-.53**	.26*	.04	.29*	.17	.55**	-.15	-.46**	.61**	--				
23. Disgust-Pre	.13	.28*	-.29**	.12	-.28*	.05	-.03	.40**	.17	-.06	.04	--			
24. Fear-Pre	.15	.31**	-.02	.09	.12	.10	-.12	.39**	.31**	-.12	-.17	.33**	--		
25. Sad-Post	.32**	.45**	-.05	.02	-.12	-.11	-.31**	.44**	.67**	-.50**	-.38**	.16	.35**	--	
26. Happy-Post	-.28*	-.42**	.03	.07	.22	.20	.47**	-.25*	-.40**	.45**	.33**	-.24*	-.20	-.44**	--
27. Hope-Post	-.12	-.27*	.08	.22*	.21	.20	.45**	.02	-.23*	.23*	.40**	-.15	-.19	-.07	.55**
28. Disgust-Post	.12	.17	-.11	.17	.01	.02	-.05	.16	.03	-.03	-.10	.03	.17	.19	-.19
29. Fear-Post	.00	.01	-.07	.12	.00	-.02	-.08	.24*	.13	-.06	-.05	.15	.43**	.30**	-.25*
30. Cup-P	.14	-.04	-.06	.35**	.09	-.03	.16	.16	-.03	.06	.08	.08	.19	.02	.01
31. VAS-C	.13	.12	.01	-.10	-.12	-.09	-.13	.04	.26*	-.13	-.08	.09	.09	.13	-.11
32. VAS-S	-.04	-.19	.01	-.06	.13	-.10	.11	-.14	-.00	.13	.05	-.06	.15	-.00	.10
33. C Drink (%)	-.05	-.06	-.05	.01	-.07	-.05	-.01	-.19	-.02	-.07	-.02	-.08	-.18	-.06	.05
34. S Drink (%)	-.08	-.19	.10	.09	.08	-.10	.23*	-.27*	-.07	.08	.16	-.16	-.18	-.08	.21

Table 2.

Mean, Standard-Deviation, and Zero-Order Relations between Baseline and Outcome Variables (Cont.)

	27	28	29	30	31	32	33	34
27. Hope-Post	--							
28. Disgust-Post	.00	--						
29. Fear-Post	-.09	.35**	--					
30. Cup-P	.11	.19	.16	--				
31. VAS-C	-.14	-.11	-.16	-.04	--			
32. VAS-S	.12	-.06	.12	.19	.14	--		
33. C Drink (%)	.04	-.21	-.22	-.25*	.24*	.12	--	
34. S Drink (%)	.24*	-.19	-.16	-.01	.10	.19	.61**	--

Note. n = 78. VVIQ = Vividness of Visual Imagery Questionnaire; DPSS-R_S = Disgust Propensity and Sensitivity Scale-Revised, Sensitivity Subscale; DPSS-R_P = Disgust Propensity and Sensitivity Scale-Revised, Propensity Subscale; UPPS-SS = The Urgency, (Lack of) Premeditation, (Lack of) Perseverance, and Sensation Seeking Impulsive Behavior Scale, Sensation Seeking Subscale; DASS-21-D = Depression Anxiety Stress Scales, Depression Subscale; DASS-21-A = Depression Anxiety Stress Scales, Anxiety Subscale; BSS = Beck Scale for Suicide Ideation; SBQ-R = Suicide Behaviors Questionnaire-Revised; ACSS = Acquired Capability for Suicide Scale, Fearlessness about Death; INQ-TB = The Interpersonal Needs Questionnaire, Thwarted Belongingness; INQ-PB = The Interpersonal Needs Questionnaire, Perceived Burdensomeness; BHS = Beck Hopelessness Scale; VC = Individualism and Collectivism Scale, Vertical Collectivism; VI = Individualism and Collectivism Scale, Vertical Individualism; HC = Individualism and Collectivism Scale, Horizontal Collectivism; HI = Individualism and Collectivism Scale, Horizontal Individualism; PA = Positive and Negative Affect Schedule, Positive Affect; NA = Positive and Negative Affect Schedule, Negative Affect; Cup-P = Cup Preference; VAS-C = Visual Analog Scale- Cyanide; VAS-S = Visual Analog Scale- Sucrose; C Drink (%) = Percentage drank from Cyanide Cup; S Drink (%) = Percentage drank from Sucrose Cup. * *p* < .05; ** *p* < .01.

Table 3.
Results of Shapiro-Wilk Test for Evaluation of Normality of Continuous Data

	Group	W	df	p
Baseline Measures				
Age	Experimental	.58	38	.03
	Control	.66	38	.01
VVIQ	Experimental	.93	39	.03
	Control	.92	39	.01
DPSS-R-S	Experimental	.97	39	.54
	Control	.92	39	.01
DPSS-R-P	Experimental	.97	39	.52
	Control	.97	39	.63
UPPS-SS	Experimental	.94	39	.04
	Control	.94	38	.04
DASS21-D	Experimental	.86	39	.00
	Control	.81	39	.00
DASS21-A	Experimental	.87	38	.00
	Control	.87	38	.00
BSS	Experimental	.48	39	.00
	Control	.33	39	.00
SBQ-R	Experimental	.81	39	.00
	Control	.78	39	.00
ACSS-FAD	Experimental	.97	39	.36
	Control	.97	39	.44
INQ-TB	Experimental	.59	39	.00
	Control	.44	39	.00
INQ-PB	Experimental	.88	39	.00
	Control	.87	39	.00
BHS	Experimental	.90	39	.00
	Control	.84	39	.00
VC	Experimental	.93	39	.02
	Control	.96	39	.25
VI	Experimental	.98	39	.90
	Control	.96	39	.17
HC	Experimental	.90	39	.00
	Control	.95	39	.10
HI	Experimental	.97	39	.66
	Control	.96	39	.25
PA	Experimental	.95	39	.13
	Control	.96	39	.25
NA	Experimental	.96	39	.21
	Control	.93	39	.02
Sad-Pre	Experimental	.87	39	.00
	Control	.90	39	.00
Happy-Pre	Experimental	.88	39	.00
	Control	.93	39	.02
Hope-Pre	Experimental	.79	39	.00
	Control	.92	39	.01
Disgust-Pre	Experimental	.65	39	.00
	Control	.68	39	.00

Table 3.

Results of Shapiro-Wilk Test for Evaluation of Normality of Continuous Data (Cont.)

	Group	W	df	p
Baseline Measures				
24. Fear-Pre	Experimental	.83	39	.00
	Control	.90	39	.00
Outcome Measures				
Sad-Post	Experimental	.82	39	.00
	Control	.81	39	.00
Happy-Post	Experimental	.96	39	.27
	Control	.92	39	.01
Hope-Post	Experimental	.91	39	.00
	Control	.91	39	.00
Disgust-Post	Experimental	.88	39	.00
	Control	.74	39	.00
Fear-Post	Experimental	.84	39	.00
	Control	.78	39	.00
VAS-C	Experimental	.87	39	.00
	Control	.88	39	.00
VAS-S	Experimental	.96	39	.28
	Control	.96	39	.33
C Drink (%)	Experimental	.56	39	.00
	Control	.47	39	.00
S Drink (%)	Experimental	.66	39	.00
	Control	.65	39	.00

Note. n = 78. VVIQ = Vividness of Visual Imagery Questionnaire; DPSS-R_S = Disgust Propensity and Sensitivity Scale-Revised, Sensitivity Subscale; DPSS-R_P = Disgust Propensity and Sensitivity Scale-Revised, Propensity Subscale; UPPS-SS = The Urgency, (Lack of) Premeditation, (Lack of) Perseverance, and Sensation Seeking Impulsive Behavior Scale, Sensation Seeking Subscale; DASS-21-D = Depression Anxiety Stress Scales, Depression Subscale; DASS-21-A = Depression Anxiety Stress Scales, Anxiety Subscale; BSS = Beck Scale for Suicide Ideation; SBQ-R = Suicide Behaviors Questionnaire-Revised; ACSS = Acquired Capability for Suicide Scale, Fearlessness about Death; INQ-TB = The Interpersonal Needs Questionnaire, Thwarted Belongingness; INQ-PB = The Interpersonal Needs Questionnaire, Perceived Burdensomeness; BHS = Beck Hopelessness Scale; VC = Individualism and Collectivism Scale, Vertical Collectivism; VI = Individualism and Collectivism Scale, Vertical Individualism; HC = Individualism and Collectivism Scale, Horizontal Collectivism; HI = Individualism and Collectivism Scale, Horizontal Individualism; PA = Positive and Negative Affect Schedule, Positive Affect; NA = Positive and Negative Affect Schedule, Negative Affect; VAS-C = Visual Analog Scale- Cyanide; VAS-S = Visual Analog Scale- Sucrose; C Drink (%) = Percentage drank from Cyanide Cup; S Drink (%) = Percentage drank from Sucrose Cup.