Examining the Relations between Hopelessness, Thwarted Interpersonal Needs, and Death Ideation among Older Adults: Does Meaning in Life Matter?

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Abstract

Older adults are at an elevated risk of death ideation. The interpersonal theory of suicide and the 3-step theory may provide a framework to better understand factors that contribute to death ideation in this population. The purpose of this study was to integrate suicide theories and examine the role of meaning in life in the associations between theory-based risk factors (i.e., hopelessness, thwarted belongingness, perceived burdensomeness) and death ideation among older adults. Participants were 243 adults aged 60 and older recruited from primary care settings in West Texas. PROCESS Model 1 was used to test the statistical moderation effects for the hypotheses. As hypothesized, meaning in life was a significant moderator of the associations between hopelessness and death ideation, thwarted belongingness and death ideation, and perceived burdensomeness and death ideation. These findings suggest that low meaning in life strengthens the associations between theory-based risk factors (i.e., hopelessness, thwarted belongingness, perceived burdensomeness) and death ideation in older adults. Implications, limitations, and future directions are discussed.

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CHAPTER 1

INTRODUCTION

Older adults are at an increased risk of suicide compared to younger age groups (Centers for Disease Control, 2017). The ratio of attempted suicide to deaths by suicide is 4:1 in older adults, whereas it is 25:1 in youth (American Foundation for Suicide Prevention, 2016). This is especially concerning considering the United States is facing a rapidly growing older adult population. The population aged 65 and older was 51.05 million in 2017, and this is projected to increase to 98.1 million by 2060 (CDC, 2017). This drastic increase is in large part due to the baby boom generation, which began turning 65 in 2011 (Ortman, Velkoff, & Hogan, 2014). Previously, this generation had higher suicide rates at any given age compared to previous or subsequent generations (Conwell, Van Orden, & Caine, 2011). However, adults aged 50-54 have recently become the age group with the highest suicide rate, with a crude rate of 20.92 suicides per 100,000 people, whereas adults aged 80-84 have a crude rate of 19.44 suicides per 100,000 people (CDC, 2017). When categorized by sex, males aged 85+ have the highest suicide rate with 47.96 suicides per 100,000 people (CDC, 2017). For the purposes of this study, older adults will be defined as 60 years and older. Suicide rates are likely to increase substantially in the baby boom generation as they enter older adulthood, as it is a period of substantial suicide risk (Conwell, Van Orden, & Caine, 2011). Given the high rate of suicide ideation and death ideation in older adults, it is critical to understand theoretical risk factors that contribute to suicide desire and death ideation in this population.

Death ideation, often characterized as passive suicide ideation, is defined as a passive death wish, where an individual feels that they would be better off dead and that life is not worth living (Szanto et al., 1996; Van Orden et al., 2015). Death ideation differs from suicide ideation, such that those with death ideation are not actively planning a suicide attempt; furthermore, older adults experiencing suicide ideation report more feelings of self-disgust and self-hatred compared to older adults experiencing death ideation (Szanto et al., 1996). However, older adults who report death ideation are similar to adults who report suicide ideation, such that both groups have the same rates of suicidal behaviors, same history of suicide attempts, and same degrees of hopelessness (Szanto et al., 1996).

Despite limited reports of death ideation rates in the general population, two studies have found that 5% to 11.3% of the general population endorse death ideation (Baca-Garcia et al., 2011; Renberg, 2001), whereas 3.4% to 27.5% of older adults endorse death ideation (Choi, Marti, & Conwell, 2016; O'Reilly, Van Orden, He, Richardson, Podgorski, & Conwell, 2014; Scocco, Fantoni, Rapattoni, De Girolamo, & Pavan, 2009; Scocco, Meneghel, Caon, Dello Buono, & De Leo, 2001). Death ideation has been correlated with depression, anxiety, and hostility, and one study found that 43% of older adults with comorbid major depression and anxiety reported death ideation (Bartels, Coakley, Oxman, Constantino, Oslin, Chen, & Sanchez, 2002). Older adults who endorse death ideation are at a greater risk of suicide compared to older adults who do not endorse death ideation (Baca-Garcia et al., 2011; Szanto et al., 1996; Van Orden, Simning, Conwell, Marlow, Skoog, & Waern, 2013). Since death becomes more imminent in older age, one study investigated whether

death ideation represents a normal acceptance of death in older adults or whether it is indicative of distress (Van Orden et al., 2013). They found that older adults who report death ideation are a heterogeneous population, and all older adults reporting recent death ideation also reported either elevated depression/anxiety or past histories of serious suicide ideation. Therefore, death ideation is not considered a normative experience for older adults, and it rarely manifests itself in the absence of significant risk factors for suicide (Barnow, Linden, & Freyberger, 2004; Van Orden et al., 2013; Van Orden et al., 2015).

Hopelessness has been shown to be an important risk factor for suicide among older adults (Beck, Brown, & Steer, 1989; Beck, Kovacs, & Weissman, 1975; Beck, Steer, Kovacs, & Garrison, 1985; Choi et al., 2016). Previous research suggests hopelessness is significantly associated with death ideation in older adults and is a stronger indicator of suicide risk than depression (Choi et al., 2016; Cukrowicz et al., 2013). In a study of 207 patients hospitalized for suicide ideation, a score of 10 or more on the Beck Hopelessness Scale correctly identified 91% of suicides at a 5-10 year follow up (Beck et al., 1985). Further, older adults with death ideation had similar hopelessness scores to older adults with active suicide ideation, which further elucidates the similarities between older adults experiencing death ideation and suicide ideation, and highlights the importance of addressing death ideation in older adults (Szanto et al., 1996). Additionally, hopelessness plays a key role in current suicide theories, such as the interpersonal-psychological theory of suicide (IPTS; Joiner, 2005; Van Orden et al., 2010) and the 3-step theory (3ST; Klonsky & May, 2015).

The IPTS (Joiner, 2005; Van Orden et al., 2010) provides a framework to better understand factors that contribute to death ideation in older adults. The IPTS posits that two related, but distinct, interpersonal constructs—thwarted belongingness and perceived burdensomeness—lead to suicidal desire and are both individually associated with death ideation. Thwarted belongingness is conceptualized as a perceived disconnection from others and a lack of reciprocal caring relationships (Van Orden et al., 2010). When thwarted belongingness is experienced at high levels, and apart from perceived burdensomeness, the individual may experience death ideation (Van Orden et al., 2010). Perceived burdensomeness is conceptualized as self-hatred and the belief that one's death is worth more to others than one's life (Van Orden et al., 2010). As with thwarted belongingness, if an individual experiences elevated perceived burdensomeness, apart from thwarted belongingness, the individual may experience death ideation (Van Orden et al., 2010). When thwarted belongingness and perceived burdensomeness co-occur, and there is hopelessness about these states changing, an individual will develop active suicide ideation (Van Orden et al., 2010). A third construct, acquired capability for suicide, is proposed to be necessary for an individual to engage in lethal or near-lethal self-harm (Van Orden et al., 2010). Acquired capability is conceptualized as a lowered fear of death and an elevated tolerance to pain that are acquired through painful life experiences, such as childhood abuse and combat exposure (Van Orden et al., 2010). According to the IPTS, the simultaneous occurrence of thwarted belongingness, perceived burdensomeness, and hopelessness about these states changing, in the context of acquired capability, is necessary for suicide to occur.

Older adults may be particularly vulnerable to experiencing thwarted belongingness and perceived burdensomeness. Older adults experience higher rates of physical illness, health problems, and impaired functioning (Conwell et al., 2011; Cukrowicz, Cheavens, Van Orden, Ragain, & Cook, 2011). For many, this requires a transition from the role of caregiver to the role of care receiver, and this care often comes from family members (Conwell et al., 2011; Van Orden, Talbot, & King, 2012). This may cause the individual to feel that they are a burden on their loved ones. Additionally, depressed and hopeless older adults may perceive themselves to be burdens on their families, which may lead to death ideation (Britton et al., 2008; Cukrowicz et al., 2011). In fact, perceived burdensomeness has been associated with death ideation in an older adult sample (Cukrowicz et al., 2013). Further, a loss of social and familial relationships, often through death, distance, or retirement, can result in a lack of social connectedness for older adults, contributing to feelings of thwarted belongingness (Conwell et al., 2011; Cukrowicz et al., 2011). Although the IPTS suggests an association between thwarted belongingness and death ideation, one study found no association between thwarted belongingness and death ideation in older adults (Cukrowicz et al., 2013). However, other research has found meaning in life mediated the relationship between thwarted belongingness and suicide ideation (Kleiman & Beaver, 2013). There is a paucity of research on thwarted belongingness in older adults, and the association between death ideation, perceived burdensomeness, and thwarted belongingness in this population; therefore, further investigation is warranted.

To date, no research has examined death ideation in older adults through the lens of the 3ST. However, it provides an additional framework to better understand the development of suicide ideation in older adults, which may, in turn, provide a better understanding of death ideation (Klonsky & May, 2015; Szanto et al., 1996). The theory states that the progression from suicide ideation to a suicide attempt evolves through three steps: 1) the development of suicide ideation, 2) the moderating role of connectedness on the strength of ideation, and 3) progression from suicide ideation to attempts (Klonsky & May, 2015). In the first step, the development of suicide ideation occurs through a combination of pain and hopelessness. In this sense, pain is broadly defined, such that pain can come from physical suffering, thwarted belongingness, perceived burdensomeness, and various other aversive sources. (Joiner, 2005; Klonsky & May, 2015). Ideation will not develop if one's life is characterized by pain, but there is hope that conditions will improve (Klonsky & May, 2015). Therefore, as in the IPTS, hopelessness is a key factor in the development of suicide ideation. In the second step, connectedness, or the perceived meaning or purpose in life, moderates whether one experiences strong or moderate suicide ideation (Klonsky & May, 2015). Connectedness is also defined broadly. It refers to any perceived meaning or purpose in life that keeps one invested in living, which can include a variety of things, such as a job, hobby, or role (Klonsky & May, 2015).

If one's connectedness outweighs one's pain and hopelessness, then only moderate suicide ideation will develop; however, if one's pain and hopelessness outweigh one's connectedness, then strong suicide ideation will develop (Klonsky & May, 2015). Disrupted connectedness is similar to the constructs of thwarted

belongingness and perceived burdensomeness in the IPTS, however, disrupted connectedness is not necessary for suicide ideation to manifest (Klonsky & May, 2015). In fact, connectedness is viewed as a protective factor against suicide (Klonsky & May, 2015). In the third step, suicide capacity is the catalyst that takes an individual from suicide ideation to suicide attempts. Suicide capacity involves dispositional and practical factors, as well as the acquired capability construct of the IPTS (Joiner, 2005; Klonsky & May, 2015). Dispositional factors are genetic features that influence one's ability to carry out a suicide attempt, such as pain sensitivity. Practical factors, such as access to firearms, make one's ability to attempt suicide easier (Klonsky & May, 2015). Acquired capability, as discussed in the IPTS, is the gradual accrual of painful life experiences that reduce one's fear of pain (Joiner, 2005; Klonsky & May, 2015). The 3ST posits that connectedness, or the perceived meaning or purpose in life, motivates an individual to keep living; therefore, meaning in life may influence the development of death ideation in older adults.

Meaning in life has been associated with a higher level of psychological well-being and physical health, as it enhances motivation to take care of oneself and to achieve personal goals (Park, 2012). Low meaning in life has been associated with various adverse outcomes, such as depression, hopelessness, and the loss of the will to live (Hedberg, Gustafson, Alèx, & Brulin, 2010; Pinquart, 2002). Research has shown that meaning in life peaks in older age, as older adults may have achieved their life goals, lived a full life, and can find meaning through new roles and interests (Pinquart, 2002; Steger, Oishi, Kashdan, 2009; Van Ranst & Marcoen, 1997). However, it may be challenging to sustain meaning in life for older adults, as they often experience

personal and social loss, such as the death of loved ones or retirement from a job (Pinquart, 2002). Additionally, there are negative stereotypes associated with age, and a lack of meaningful roles for older adults to fulfill when they are no longer able to fulfill the roles they had previously maintained (Pinquart, 2002).

Meaning in life has been associated with decreased suicide ideation and is a strong resilience factor against suicide (Heisel & Flett, 2008; Kleiman, Adams, Kashdan, & Riskind, 2013; Kleiman & Beaver, 2013). Given that death ideation and suicide ideation manifest similarly in older adults, these findings may be consistent when examining death ideation (Szanto et al., 1996). In one study of older adults, they found that higher perceived burdensomeness predicted lower levels of meaning in life two months later (Van Orden, Bamonti, King, & Duberstein, 2012). Another study found that meaning in life mediated the association between thwarted belongingness and suicide ideation, as well as perceived burdensomeness and suicide ideation (Kleiman & Beaver, 2013). Further, it was the only variable that predicted a lower lifetime odds of a suicide attempt (Kleiman & Beaver, 2013). However, Marco and colleagues (2016) found that meaning in life significantly moderated the association between distal suicide risk factors (e.g. impulsivity, depression, history of suicide attempts) and hopelessness in a clinical sample. They found that meaning in life served as a buffer between suicide risk factors and hopelessness. Death ideation is considered a risk factor for suicide; therefore, meaning in life may similarly moderate the association between theoretical risk factors and death ideation in older adults.

In the current study, the association between theoretical risk factors (i.e. hopelessness, thwarted belongingness, perceived burdensomeness) and death ideation

is examined with meaning in life as a moderating variable. Thwarted belongingness and perceived burdensomeness are posited to be the most proximal risk factors for suicide ideation; therefore, moderation would be more theoretically consistent with the IPTS (Van Orden, Cukrowicz, Witte, & Joiner, 2012). It would also be more theoretically consistent through the lens of the 3ST, which posits that meaning in life plays a moderating role on the strength of ideation (i.e. death ideation or suicide ideation). When considering these variables within a mediation model, thwarted belongingness and perceived burdensomeness would serve as mediators between distal risk factors and death ideation; however, meaning in life would still moderate the association between the interpersonal constructs (i.e. thwarted belongingness and perceived burdensomeness) and death ideation. Therefore, this study aims to examine the potential moderating role of meaning in life as a first step.

The current study seeks to improve upon weaknesses in the current literature. There is a lack of research on thwarted belongingness in older adults, and few studies have examined the association between the IPTS constructs and death ideation in this population. Additionally, the current study will explore how meaning in life moderates the association between theoretical risk factors and death ideation, whereas previous research has only explored meaning in life and suicide ideation. Given the high rates of death ideation and suicide ideation in the older adult population, the current study is critical to understanding contributing risk factors. The purpose of this study is to integrate suicide theories and examine the role of meaning in life in the associations between theory-based risk factors (i.e., thwarted belongingness, perceived burdensomeness, and hopelessness) and death ideation among older adults.

CHAPTER 2

STUDY RATIONALE AND HYPOTHESES

Rationale for Research Question 1

Older adults are at the greatest risk for suicide, and those who experience death ideation are very similar to those who experience suicide ideation (Baca-Garcia et al., 2011; Centers for Disease Control, 2017; Van Orden et al., 2013). Hopelessness is significantly associated with death ideation in older adults and has been a strong indicator and predictor of suicide attempts (Beck et al., 1985; Choi et al., 2016; Cukrowicz et al., 2013). In fact, older adults experiencing death ideation had similar hopelessness scores to older adults experiencing active suicide ideation (Szanto et al., 1996). Hopelessness plays an important role in current suicide theories, particularly the IPTS (Joiner, 2005; Van Orden et al., 2010) and the 3ST (Klonsky & May, 2015). According to these theories, it is hopelessness about negative states (i.e., perceived burdensomeness, thwarted belongingness, pain) improving that results in suicide ideation, not just the negative states alone. Further, high meaning in life has been identified as a strong resilience factor against suicide, whereas low meaning in life has been associated with hopelessness and the loss of the will to live (Hedberg et al., 2010; Heisel & Flett, 2008; Kleiman et al., 2013; Kleiman & Beaver, 2013; Pinquart, 2002). Given these findings, research is needed to examine the role of meaning in life in the association between theoretical risk factors of perceived burdensomeness, thwarted belongingness, hopelessness, and death ideation.

Research Question and Hypothesis

Research Question 1. Does meaning in life moderate the association between hopelessness and death ideation in older adults?

Hypothesis 1. It was hypothesized that meaning in life would moderate the association between hopelessness and death ideation, such that when meaning in life was low, the association between hopelessness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between hopelessness and death ideation (Figure 1). Depressive symptoms and previous suicide attempt were entered as covariates.

Rationale for Research Question 2.

Up to 27.5% of older adults experience death ideation, and it is a significant risk factor for suicide (Choi, Marti, & Conwell, 2016; O'Reilly et al., 2014; Scocco et al., 2009; Scocco et al., 2001; Van Orden et al., 2013). The IPTS posits that thwarted belongingness results in death ideation when it is experienced apart from other constructs of the IPTS (Van Orden et al., 2010). Loss of social relationships through death, distance, or retirement becomes more prevalent in older age, which could result in thwarted belongingness (Conwell et al., 2011; Cukrowicz et al., 2011). Although the IPTS would suggest that thwarted belongingness is associated with death ideation, previous research has not found evidence for the association between thwarted belongingness and death ideation in older adults (Cukrowicz et al., 2013). Other research has found meaning in life mediates the association between thwarted belongingness and suicide ideation (Kleiman & Beaver, 2013). However, the literature on thwarted belongingness in older adults is limited. The 3ST posits that

connectedness, or meaning in life, is what motivates one to keep living (Klonsky & May, 2015); therefore, meaning in life may influence the development of death ideation in older adults.

Research Question and Hypothesis 2

Research Question 2. Does meaning in life moderate the association between thwarted belongingness and death ideation in older adults?

Hypothesis 2. It was hypothesized that meaning in life would moderate the association between thwarted belongingness and death ideation, such that when meaning in life was low, the association between thwarted belongingness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between thwarted belongingness and death ideation (Figure 2). Depressive symptoms and previous suicide attempt were entered as covariates.

Rationale for Research Question 3

Older adults with death ideation have the same rates of suicidal behaviors and history of suicide attempts as those with active suicide ideation (Szanto et al., 1996). The IPTS posits that perceived burdensomeness results in death ideation when it is experienced apart from other constructs of the IPTS (Van Orden et al., 2010). Physical ill health and impaired functioning are more prevalent in older age, and this may require a shift from the role of caregiver to care receiver, resulting in feelings of burden (Conwell et al., 2011; Van Orden, Talbot, & King, 2012). Additionally, perceived burdensomeness has been found to be associated with death ideation in older adults (Cukrowicz et al., 2013). Meaning in life has also been found to mediate the association between perceived burdensomeness and suicide ideation (Kleiman &

Beaver, 2013). Further, high levels of meaning in life are associated with psychological and physical well-being, whereas low levels of meaning have been associated with depression, hopelessness, and suicide ideation (Hedberg et al., 2010; Park, 2012; Pinquart, 2002). Considering these findings, it may be especially important to examine the role of meaning in life in the association between perceived burdensomeness and death ideation.

Research Question and Hypothesis 3

Research Question 3. Does meaning in life moderate the association between perceived burdensomeness and death ideation among older adults?

Hypothesis 3. It was hypothesized that meaning in life would moderate the association between perceived burdensomeness and death ideation, such that when meaning in life was low, the association between perceived burdensomeness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between perceived burdensomeness and death ideation (Figure 3). Depressive symptoms and previous suicide attempt were entered as covariates.

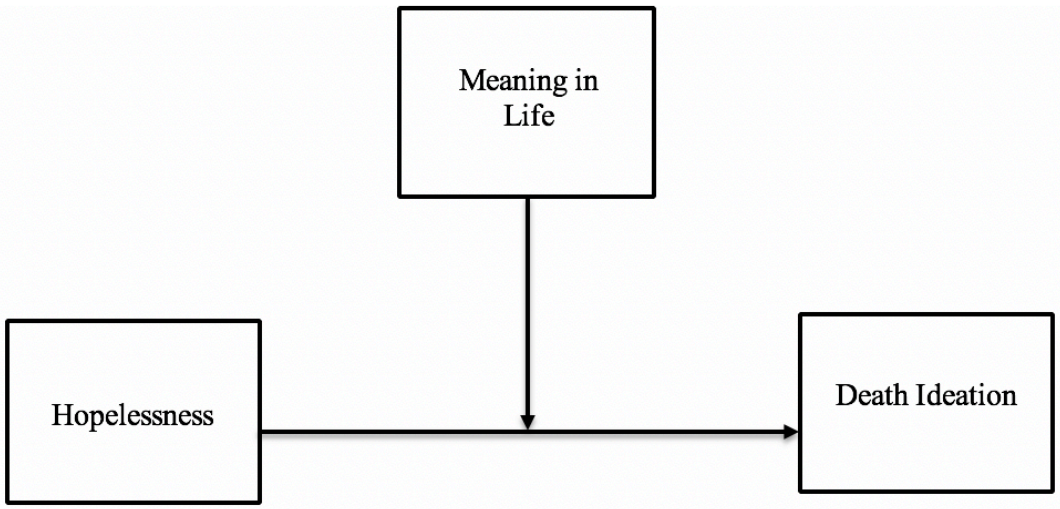

Figure 1. Moderation model for the association between hopelessness and death ideation moderated by meaning in life

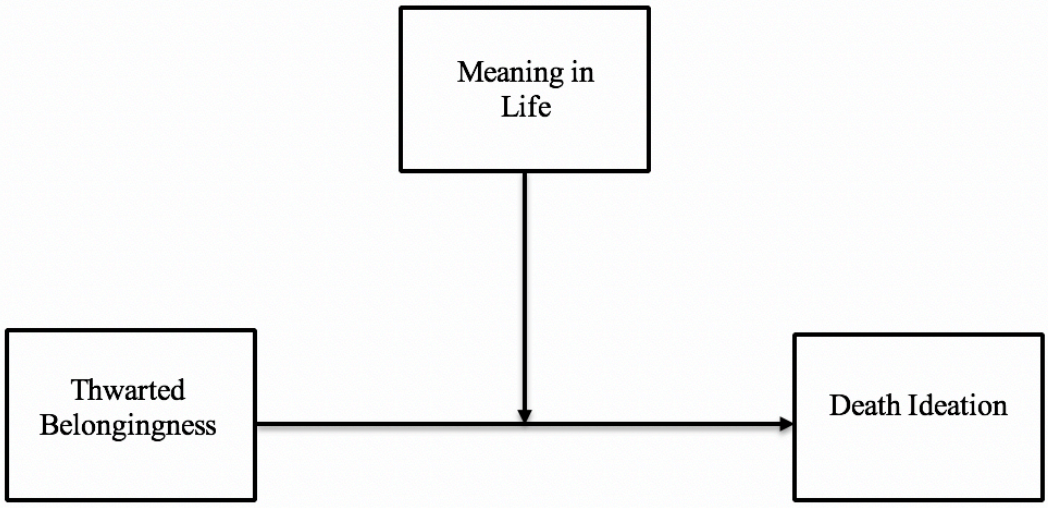

Figure 2. Moderation model for the association between thwarted belongingness and death ideation moderated by meaning in life

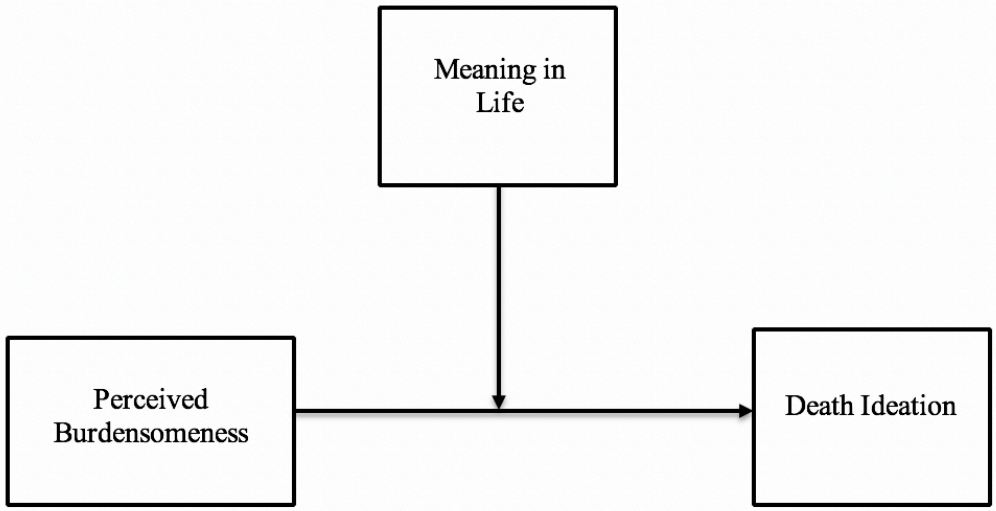

Figure 3. Moderation model for the association between perceived burdensomeness and death ideation moderated by meaning in life

CHAPTER III

METHOD

Participants

The data used for this study was part of a larger dataset from a study of suicide in older adults funded by the American Foundation for Suicide Prevention. Participants were 243 adults aged 60 and older recruited from primary care settings at Texas Tech University Health Sciences Center. The sample consisted of 144 females (59.3%) and 99 males (40.7%) ranging in age from 60 to 93, with a mean age of 72.22 years. Participants were 90.5% Caucasian, 6.6% Hispanic, 1.6% African American, 0.8% Native American, and 0.4% Asian/Pacific Islander. Marital status for this sample was: 64.5% married, 19% widowed, 8.7% divorced, 4.1% living together, 2.1% never married, 0.8% separated, and 0.8% in an intimate relationship but not living together. The average years of education for this sample was 14.43 (SD = 6.8). Endorsement of experiencing a mental condition or psychological disorder in the past was positive for 25.1% of the sample, while 9.5% had been diagnosed in the past 12 months. Eight participants (3.3%) reported at least one previous suicide attempt. Participants were excluded from the study if they displayed current manic symptoms, substance abuse, cognitive/memory impairment, or psychotic symptoms. Participants (n = 23) were excluded due to scores lower than 25 on the Mini Mental Status Exam (MMSE), and five participants were excluded due to a significant amount of information important to the study missing.

Power analysis. G*power was used to conduct a power analysis to estimate the sample size needed and ensure the sample was sufficiently large to test the

hypothesized effects (Faul, Erdfelder, Lang, & Buchner, 2007). There were a total of five predictors in each analysis (H1: depressive symptoms as a covariate, previous suicide attempt as a covariate, main effect of hopelessness, main effect of meaning in life, and the interaction between hopelessness and meaning in life; H2: depressive symptoms as a covariate, previous suicide attempt as a covariate, main effect of thwarted belongingness, main effect of meaning in life, and the interaction between thwarted belongingness and meaning in life; H3: depressive symptoms as a covariate, previous suicide attempt as a covariate, main effect of perceived burdensomeness, main effect of meaning in life, and the interaction between perceived burdensomeness and meaning in life. To determine a small effect, alpha was set to .05, the power was set to .80, and the effect size was Cohen's $f^2 = .02$ (Cohen, 1988; Faul, Erdfelder, Lang, & Buchner, 2007). The power analysis indicated that a sample size of 647 participants would be necessary to detect a small effect. To determine a medium effect, alpha was set to .05, the power was set to .80, and the effect size was Cohen's $f^2 = .15$ (Cohen, 1988; Faul, Erdfelder, Lang, & Buchner, 2007). The power analysis indicated that a sample size of 92 participants would be necessary to detect a medium effect. The current study includes 243 participants, which exceeds the minimum number of participants needed to detect a medium effect; however, the sample size in this study lacks the power to detect a small effect (Cohen, 1988).

Post hoc power analyses were run to determine the actual power of each main effect and interaction. The power for the main effect of hopelessness was .572, and the power of the interaction between hopelessness and meaning in life was .922. The power for the main effect of thwarted belongingness was .057, and the power for the

interaction between thwarted belongingness and meaning in life was .922. The power for the main effect of perceived burdensomeness was .941, and the power for the interaction of perceived burdensomeness and meaning in life was .999.

Measures

Interpersonal Needs Questionnaire (INQ). The INQ is a 15-item self-report scale that measures thwarted belongingness (e.g. "These days I feel like I belong) and perceived burdensomeness (e.g. "These days the people in my life would be better off if I were gone") (Van Orden et al., 2012). The thwarted belongingness subscale consists of six items, and the perceived burdensomeness subscale consists of nine items. The participant rated each item on a 7-point Likert scale ranging from 1 (not at all true for me) to 7 (very true for me). The Cronbach's alpha was .84 for the thwarted belonging subscale and the Cronbach's alpha for the perceived burdensomeness subscale was .77, which is in line with a previous study that used this sample (Cukrowicz et al., 2013). Previous research provides support for the construct validity of the INQ, such that thwarted belongingness and perceived burdensomeness are distinct constructs that can be reliably measured (Van Orden et al., 2012).

Geriatric Scale for Suicide Ideation (GSIS). The GSIS is a 31-item self-report scale that assesses suicide ideation in older adults (Heisel & Flett, 2006). It consists of four subscales: death ideation, suicide ideation, perceived meaning in life, and loss of personal and social worth. In the current study, only the death ideation and the perceived meaning in life subscales will be used; death ideation will be the outcome variable and perceived meaning in life will be the moderating variable. The participant rated each item (e.g. "I welcome the thought of drifting into sleep and

never waking up," "I am certain that I have something to live for") on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Perceived meaning in life was recoded so that high scores indicate high meaning in life and low scores indicate low meaning in life, rather than high scores indicating high meaninglessness in life and low scores indicating low meaninglessness in life. The Cronbach's alpha for the suicide ideation subscale was .85 and the Cronbach's alpha for the loss of personal and social worth subscale was .81. The Cronbach's alpha for the meaning in life subscale was .79 and the Cronbach's alpha for the death ideation subscale was .68, which is in line with previous research (Cukrowicz et al., 2013; Heisel & Flett, 2008). Previous research has shown construct and criterion validity for the GSIS and its subscales (Heisel & Flett, 2006).

Beck Hopelessness Scale (BHS). The BHS is a 20-item true/false self-report scale that measures hopelessness and feelings about the future (Beck & Steer, 1988). The respondent indicates whether each statement (e.g. I never get what I want, so it's foolish to want anything) applies to them by scoring it either as a 0 or 1 (Beck & Steer, 1988). The Cronbach's alpha was .85, which is in line with a previous study that used this sample (Cukrowicz et al., 2013). Research has shown support for the construct validity of the BHS (Maruish, 1999).

Center for Epidemiologic Studies Depression Scale (CES-D). The CES-D (Radloff, 1977) is a 20-item self-report questionnaire that assesses severity of depression. The Cronbach's alpha was .91, which is in line with a previous study that used this sample (Cukrowicz, 2013). Research has shown support for the construct

validity of the CES-D in older adults (Beekman et al., 1997; Lewinsohn, Seeleley, Roberts, & Allen, 1997).

Procedures

The university institutional review board approved all procedures and protocol for this study and it adheres to guidelines set forth by the American Psychological Association *Publication Manual* (6th edition). Participants aged 60 and older were recruited from the Texas Tech University Health Sciences Center. Potential patients were provided information about the study either in person at a scheduled appointment or by mail. All interested individuals were scheduled to participate at a separate visit. A graduate student trained in the research protocol completed a 2-hour research session with each participant, including consent to participate in the study. Participants completed the protocol either at the Suicide and Depression Research Clinic or in their homes if they were unable to travel. Researchers were trained in suicide-risk assessment and examined all responses about suicide risk. If a participant reported suicide risk, follow-up procedures and interventions outlined in the approved protocol were completed. After completion of the study, all participants were compensated $25 and received a referral sheet that listed local mental health resources.

Data Analytic Strategy and Preparation

Hypothesis 1. Model 1 (Hayes, 2013) was used to test the statistical moderation effects for hypothesis 1. Hopelessness was entered as the predictor variable. Death ideation was entered as the dependent variable. Meaning in life was entered as the moderating variable. This model was run with and without depressive symptoms entered as a covariate. Previous suicide attempt was entered as a covariate

in all analyses. Simple slopes were examined at different levels of the moderator when the interaction between hopelessness and death ideation was significant. Hypothesis 1 was supported if meaning in life significantly moderated the association between hopelessness and death ideation, such that when meaning in life was low, the association between hopelessness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between hopelessness and death ideation.

Hypothesis 2. Model 1 (Hayes, 2013) was used to test the statistical moderation effects for hypothesis 2. Thwarted belongingness was entered as the predictor variable. Death ideation was entered as the dependent variable. Meaning in life was entered as the moderating variable. This model was run with and without depressive symptoms entered as a covariate. Previous suicide attempt was entered as a covariate in all analyses. Simple slopes were examined at different levels of the moderator when the interaction between thwarted belongingness and meaning in life was significant. Hypothesis 2 was supported if meaning in life significantly moderated the association between thwarted belongingness and death ideation, such that when meaning in life was low, the association between thwarted belongingness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between thwarted belongingness and death ideation.

Hypothesis 3. Model 1 (Hayes, 2013) was used to test the statistical moderation effects for hypothesis 3. Perceived burdensomeness was entered as the predictor variable. Death ideation was entered as the dependent variable. Meaning in life was entered as the moderating variable. This model was run with and without

depressive symptoms entered as a covariate. Previous suicide attempt was entered as a covariate in all analyses. Simple slopes were examined at different levels of the moderator when the interaction between perceived burdensomeness and meaning in life was significant. Hypothesis 3 was supported if meaning in life significantly moderated the association between perceived burdensomeness and death ideation, such that when meaning in life was low, the association between perceived burdensomeness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between perceived burdensomeness and death ideation.

Missing data. All data was analyzed with SPSS Version 24. A Missing Values Analysis was conducted to determine if less than 5% of the data was missing and if any data was missing in a random pattern (Tabachnick & Fidell, 2007). Any missing data was calculated and imputed using Expectation Maximization (EM) procedures, which assumes the shape of a normal distribution for partially missing data and calculates the missing value under the shape of that distribution (Tabachnick & Fidell, 2007). Missing Values Analysis determined that 0.22% of data was missing. Data was missing completely at random for the INQ, CESD, BHS, and GSIS (X^2 [1556, $N = 243$] = 2007.722, $p < .001$).

Outliers. Univariate outliers were analyzed by calculating the z-score for each value, and any case with a z-score of 3.29 or greater was considered a univariate outlier (Tabachnick & Fidell, 2007). Using this guideline, it was determined that there were seven univariate outliers for hopelessness, five for perceived burdensomeness, two for thwarted belongingness, three for death ideation, one for meaning in life, and

four for depression. In order to maintain representativeness and power, these outliers were retained and the scores on these variables were reduced to one number larger than the next most extreme score in the distribution (Tabachnick & Fidell, 2007). Multivariate outliers were examined by calculating a Mahalanobis Distance for each case and any value with a z-score that was equal to or greater than 3.29 was considered a multivariate outlier (Tabachnick & Fidell, 2007). No multivariate outliers were found.

Assumptions. Assumptions of regression were assessed, which includes normality, normality of errors, linearity, homoscedasticity, and lack of multicollinearity (Tabachnick & Fidell, 2007). None of the variables in the following analyses met the assumption of normality. The cut-off value for skew and kurtosis was calculated by dividing the skew or kurtosis value by the standard error value (Tabachnick & Fidell, 2007). Extreme skew or kurtosis was indicated by a value greater than 3.29 (Tabachnick & Fidell, 2007). Normality, skewness, and kurtosis were also assessed using histograms (Tabachnick & Fidell, 2007). Log and square root transformations were performed for the dependent variable. Prior to transformation, death ideation was positively skewed (skewness = 1.298, SE = .156) and the kurtosis value was 2.004 (SE = .311). After a square root transformation, the skew value for death ideation was .816 (SE = .156) and the kurtosis value was .456 (SE = .311). After a log 10 transformation, the skew value for death ideation was .420 (SE = .156) and the kurtosis value was -.487 (SE = .311). Analyses were performed with and without the transformed variables; however, there were minimal differences between the

results of the original and the transformed data. Therefore, analyses were performed and interpreted with the original data.

Assumptions for each analysis were examined using original data for all variables. Linearity was assessed by an equal distribution of residuals above and below zero on a residual plot, and it was determined that the assumption of linearity was met for all variables (Tabachnick & Fidell, 2007). Multicollinearity was assessed by running bivariate correlations and ensuring the correlations did not exceed .90 (Tabachnick & Fidell, 2007). None of the bivariate correlations exceeded .90, indicating that multicollinearity was not violated (Table 1). Homoscedasticity was assessed by a visual inspection of a plot of standardized residuals versus standardized predicted values. The model with hopelessness as the independent variable and the model with thwarted belongingness as the independent variable met the assumption of homoscedasticity. It was determined that there was some heteroscedasticity in the model with perceived burdensomeness as the independent variable. To ensure homoscedasticity, this model was run with heteroscedastistic consistent standard errors. The PP plot showed points falling close to the diagonal line, indicating normality of errors.

Table 1
Bivariate Correlations and Means and Standard Deviations of Measures

	1	2	3	4	5	6	7
1. Hopelessness	-						
2. TB	.542**	-					
3. PB	.536**	.530**	-				
4. Death Ideation	.419**	.356**	.456**	-			
5. Meaning in Life	-0.493	-.586**	-.456**	-.478**	-		
6. Depression	0.586	.609**	.546**	.436**	.514**	-	
7. Suicide Attempt	.197**	.205**	.167**	.174**	-.138*	.184**	-
Mean	2.41	18.08	7.72	8.18	35.13	7.35	
Standard Deviation	2.78	8.59	3.34	3.14	4.36	8.33	

Note: ** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

CHAPTER IV

RESULTS

Control variables. Depression has been found to be highly correlated with both death and suicide ideation (O'Reilly et al., 2014; Scocco et al., 2001; Van Orden et al., 2015). Given this, many studies control for depressive symptoms to ensure that their findings are significant above and beyond the effects of depressive symptoms (e.g. Bartels et al., 2002; Cukrowicz et al., 2011). However, one study argues against controlling for depressive symptoms, as it may result in losing a core component of death and suicide ideation (Rogers et al., 2016); therefore, in the current study, it is possible that we are losing a critical component of death ideation when we control for depressive symptoms. Given these findings, we examined our results with and without depressive symptoms as a covariate. In the current study, depression was significantly correlated with death ideation ($r = .44$, $p < .01$).

One study found that individuals without death ideation had an extremely low prevalence of previous suicide attempts when compared to individuals with death ideation (Baca-Garcia et al., 2011). Given this finding, previous suicide attempt was entered as a covariate in all analyses. In the current study, previous suicide attempt history was significantly correlated with death ideation ($r = .18$, $p < .01$).

Hypothesis 1. It was hypothesized that meaning in life would moderate the association between hopelessness and death ideation, such that when meaning in life was low, the association between hopelessness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between hopelessness and death ideation. It was hypothesized that this outcome would occur

when controlling for depressive symptoms and previous suicide attempt, as well as when only controlling for previous suicide attempt.

When controlling for depressive symptoms and previous suicide attempt, the hypothesis was supported, such that meaning in life was a significant moderator of the association between hopelessness and death ideation ($p < .05$; Table 2). Hopelessness was significantly associated with death ideation when meaning in life was low (-1 SD; $b = .16$, $p < .05$), but not when meaning in life was average ($b = .03$, $p = .74$), or high (+1 SD; $b = -.10$, $p = .45$; Figure 4A and Figure 4B).

When controlling for previous suicide attempt (but not depressive symptoms), the hypothesis was supported, such that meaning in life was a significant moderator of the association between hopelessness and death ideation ($p < .05$; Table 3). Hopelessness was significantly associated with death ideation when meaning in life was low (-1 SD; $b = .25$, $p < .001$), but not when meaning in life was average ($b = .13$, $p = .13$) or high (+1 SD); $b = .01$, $p = .91$; Figure 5A and 5B).

Hypothesis 2. It was hypothesized that meaning in life would moderate the association between thwarted belongingness and death ideation, such that when meaning in life was low, the association between thwarted belongingness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between thwarted belongingness and death ideation. It was hypothesized that this outcome would occur when controlling for depressive symptoms and previous suicide attempt, as well as when only controlling for previous suicide attempt.

When controlling for depressive symptoms and previous suicide attempt, the hypothesis was partially supported, such that meaning in life was a significant moderator of the association between thwarted belongingness and death ideation ($p < .01$; Table 4). Thwarted belongingness was significantly associated with death ideation when meaning in life was high (+1 SD; $b = -.10$, $p < .05$), but not when meaning in life was low (-1 SD; $b = .02$, $p = .48$) or average ($b = -.04$, $p = .17$; Figure 6A and 6B).

When controlling for previous suicide attempt (but not depressive symptoms), the hypothesis was supported, such that meaning in life was a significant moderator of the association between thwarted belongingness and death ideation ($p < .01$; Table 5). Thwarted belongingness was significantly associated with death ideation when meaning in life was low (-1 SD; $b = .06$, $p < .05$), but not when meaning in life was average ($b = .00$, $p = .89$) or high (+1 SD; $b = -.05$, $p = .16$; Figure 7A and 7B).

Hypothesis 3. It was hypothesized that meaning in life would moderate the association between perceived burdensomeness and death ideation, such that when meaning in life was low, the association between perceived burdensomeness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between perceived burdensomeness and death ideation. It was hypothesized that this outcome would occur when controlling for depressive symptoms and previous suicide attempt, as well as when only controlling for previous suicide attempt.

When controlling for depressive symptoms and previous suicide attempt, the hypothesis was supported, such that meaning in life was a significant moderator of the association between perceived burdensomeness and death ideation ($p < .001$; Table 6).

Perceived burdensomeness was significantly associated with death ideation when meaning in life was low (-1 SD; $b = .24$, $p < .001$), but not when meaning in life was average ($b = .09$, $p = .14$) or high (+1 SD; $b = -.05$, $p = .55$; Figure 8A and 8B).

When controlling for previous suicide attempt (but not depressive symptoms), the hypothesis was supported, such that meaning in life was a significant moderator of the association between perceived burdensomeness and death ideation ($p < .001$; Table 7). Perceived burdensomeness was significantly associated with death ideation when meaning in life was low (-1 SD; $b = .29$, $p < .001$) and average ($b = .15$, $p < .05$), but not when meaning in life was high (+1 SD; $b = .01$, $p = .87$; Figure 9A and 9B).

Table 2

Results from Moderation Linear Regression Procedure for Hypothesis One Examining the Main Effects and Interaction of Hopelessness and Meaning in Life Predicting Death Ideation After Controlling for Depressive Symptoms and Previous Suicide Attempt

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.199	.199
Depression	.158***	.022	.418		
Suicide Attempt	1.70	1.03	.097		
Step 2:				.298	.099
Hopelessness	.170*	.079	.151		
Meaning in Life	-.217***	.047	-.301		
Step 3:					
Hopelessness*Meaning in Life	-.029*	.011	-.197	.317	.020

Note. *B* = unstandardized regression coefficient. *SE B* = standard error of *B*. β = standardized regression coefficient. R^2 = squared multiple correlation coefficient. ΔR^2 = change in the squared multiple correlation coefficient.
*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$.

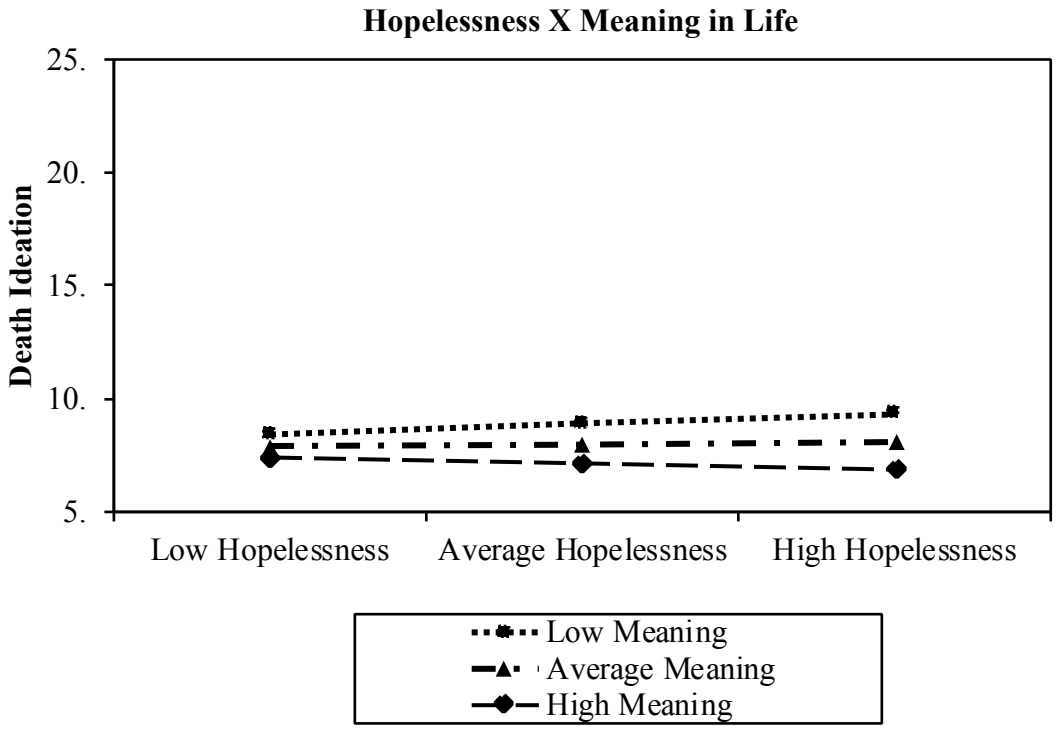

Figure 4A. Plot of Hopelessness X Meaning in Life Controlling for Depressive Symptoms and Previous Suicide Attempt

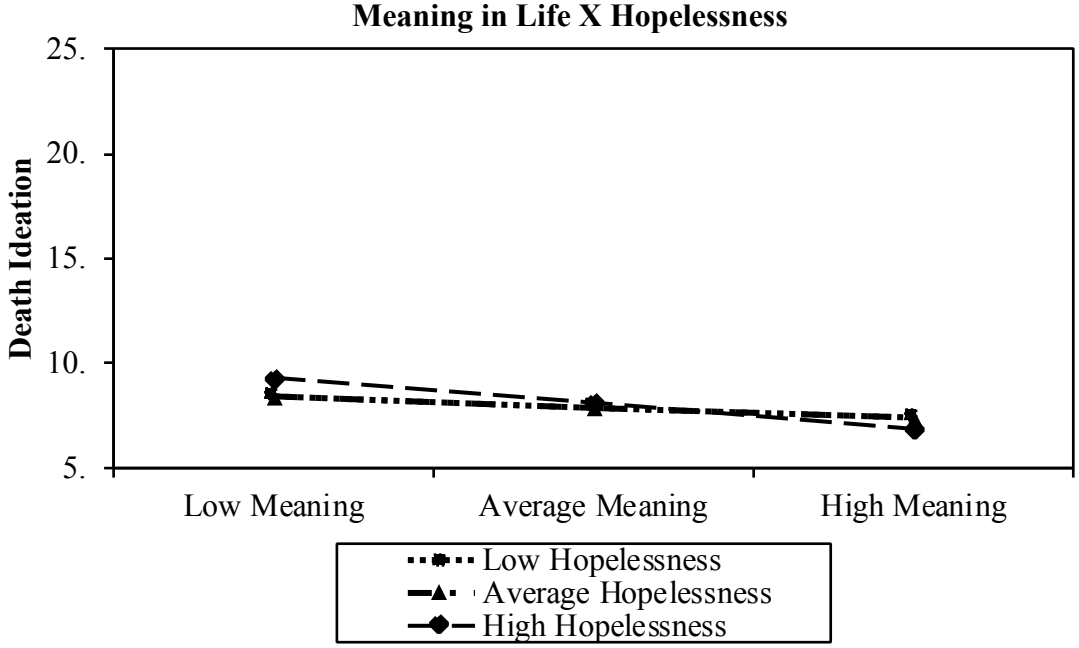

Figure 4B. Plot of Meaning in Life X Hopelessness Controlling for Depressive Symptoms and Previous Suicide Attempt

Table 3

Results from Moderation Linear Regression Procedure for Hypothesis One Examining the Main Effects and Interaction of Hopelessness and Meaning in Life Predicting Death Ideation After Controlling for Previous Suicide Attempt

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.030	.030
Suicide Attempt	3.05**	1.11	.174		
Step 2:				.279	.249
Hopelessness	.257***	.072	.228		
Meaning in Life	-.255***	.046	-.354		
Step 3:					
Hopelessness*Meaning in Life	-.027*	.011	-.183	.296	.017

Note. *B* = unstandardized regression coefficient. *SE B* = standard error of *B*. β = standardized regression coefficient. R^2 = squared multiple correlation coefficient. ΔR^2 = change in the squared multiple correlation coefficient.
*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$.

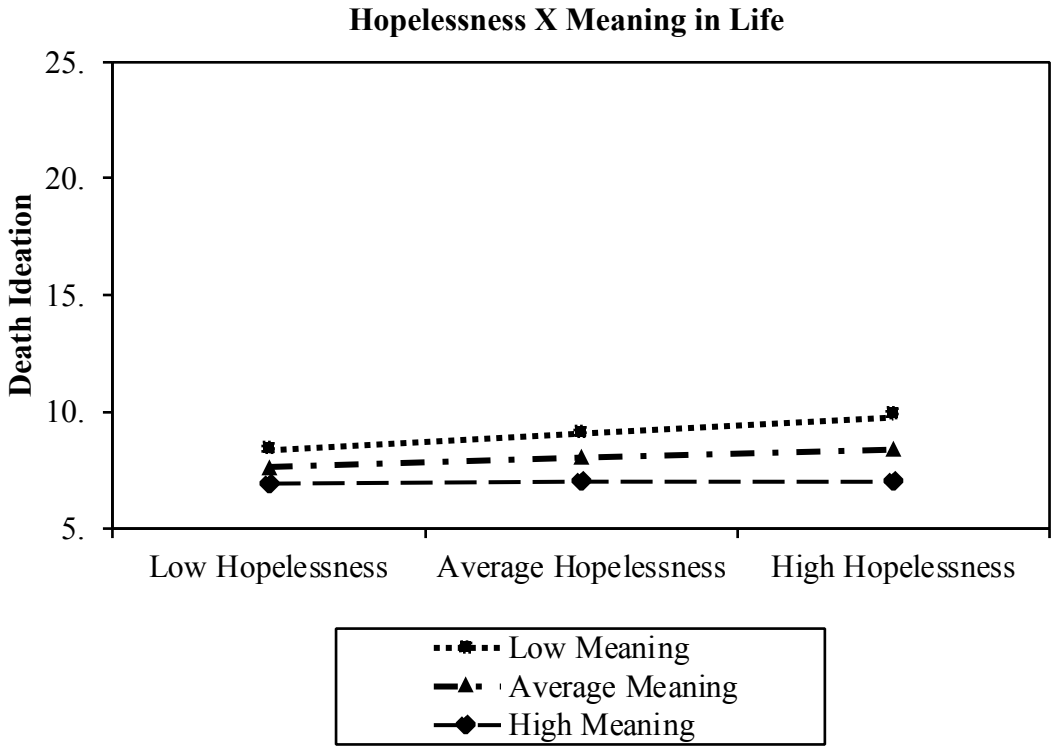

Figure 5A. Plot of Hopelessness X Meaning in Life Controlling for Previous Suicide Attempt

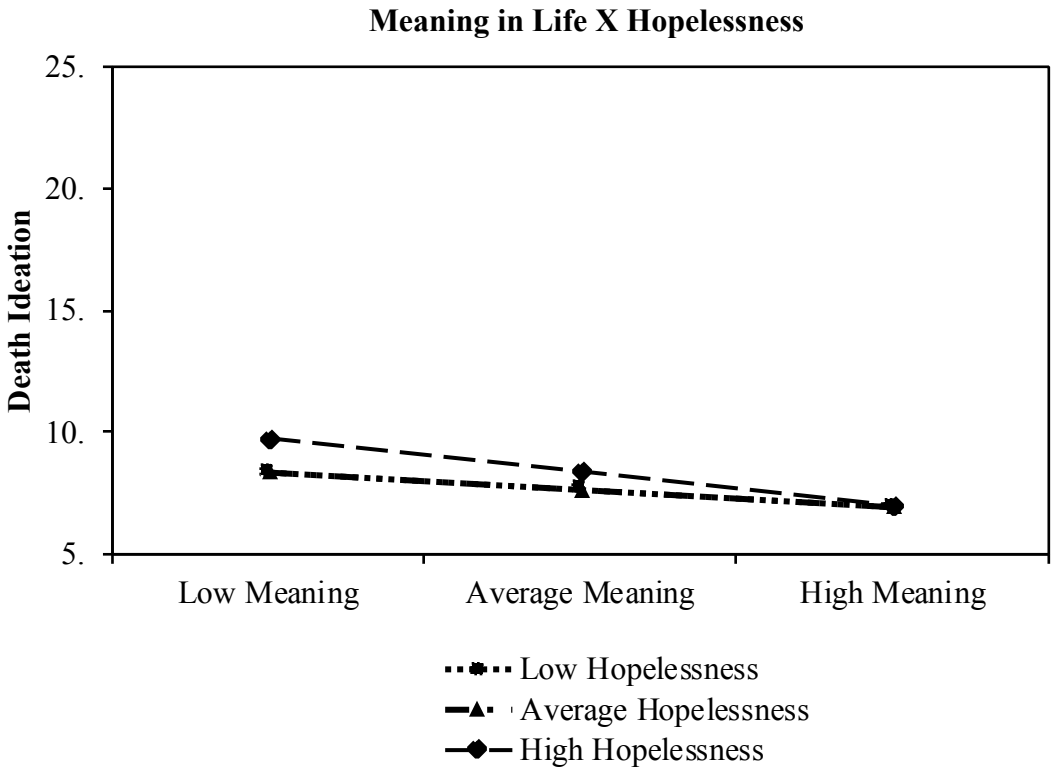

Figure 5B. Plot of Meaning in Life X Hopelessness Controlling for Previous Suicide Attempt

Table 4

Results from Moderation Linear Regression Procedure for Hypothesis Two Examining the Main Effects and Interaction of Thwarted Belongingness and Meaning in Life Predicting Death Ideation After Controlling for Depressive Symptoms and Previous Suicide Attempt

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.199	.199
Depression	.158***	.022	.418		
Suicide Attempt	1.70	1.03	.097		
Step 2:				.284	.085
TB	-.007	.028	-.019		
Meaning in Life	-.250***	.050	-.347		
Step 3:					
TB*Meaning in Life	-.014**	.004	-.209	.315	.031

Note. *B* = unstandardized regression coefficient. *SE B* = standard error of *B*. β = standardized regression coefficient. R^2 = squared multiple correlation coefficient. ΔR^2 = change in the squared multiple correlation coefficient.
*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$.

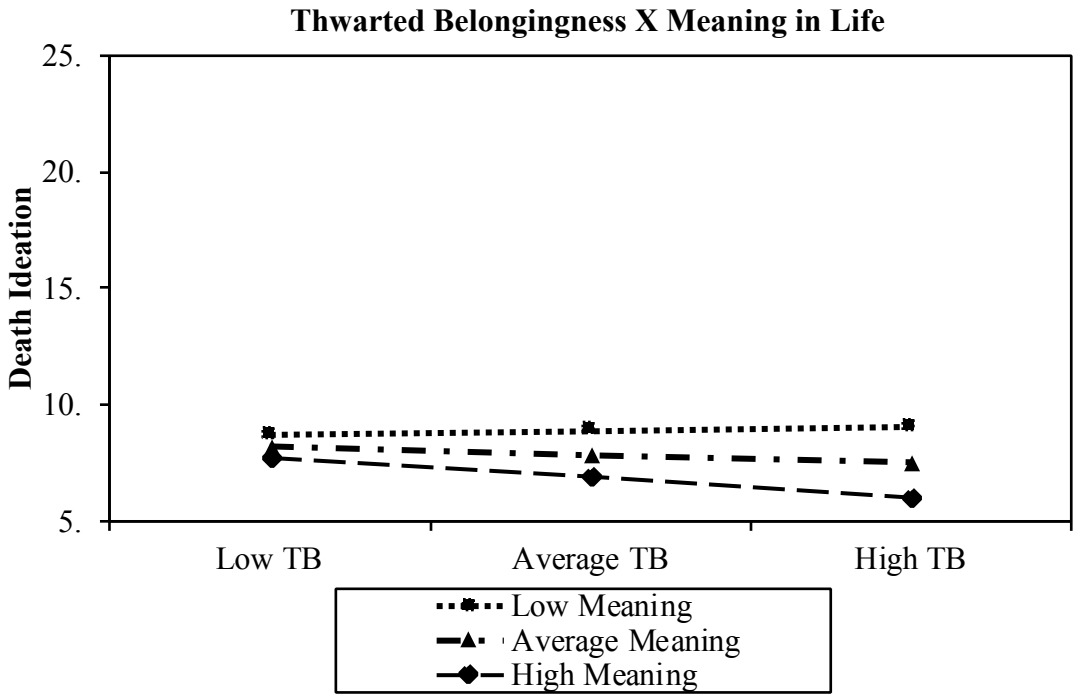

Figure 6A. Plot of Thwarted Belongingness X Meaning in Life Controlling for Depressive Symptoms and Previous Suicide Attempt

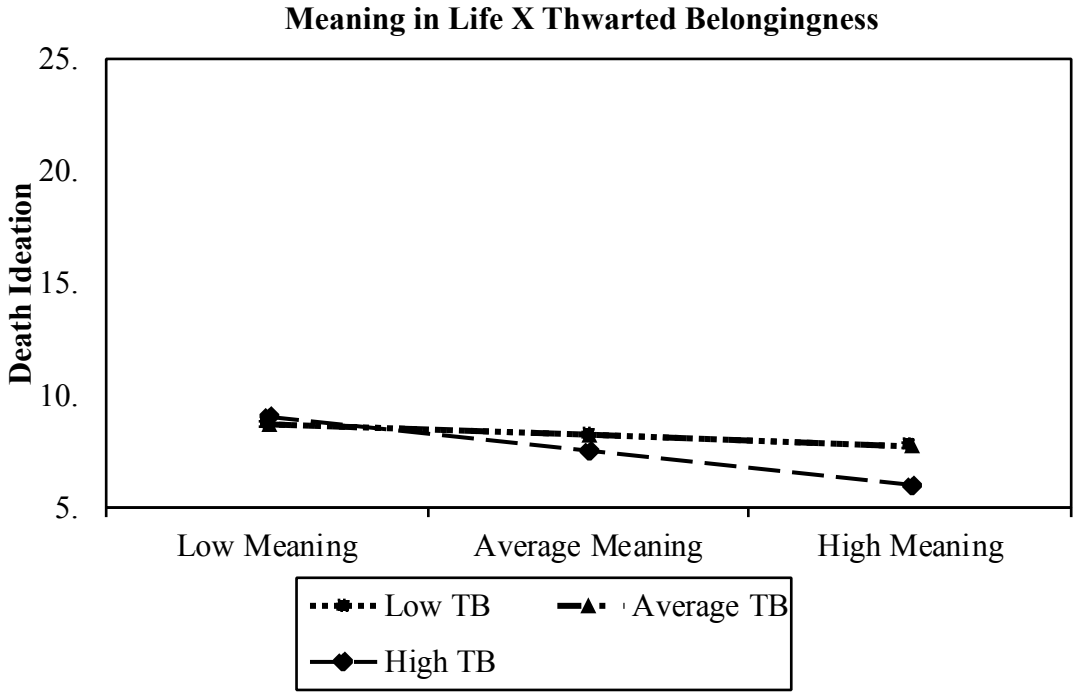

Figure 6B. Plot of Meaning in Life X Thwarted Belongingness Controlling for Depressive Symptoms and Previous Suicide Attempt

Table 5

Results from Moderation Linear Regression Procedure for Hypothesis One Examining the Main Effects and Interaction of Thwarted Belongingness and Meaning in Life Predicting Death Ideation After Controlling for Previous Suicide Attempt

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.030	.030
Suicide Attempt	3.05**	1.11	.174		
Step 2:				.246	.216
TB	.036	.026	.097		
Meaning in Life	-.294***	.050	-.407		
Step 3:					
TB*Meaning in Life	-.013**	.004	-.206	.276	.030

Note. *B* = unstandardized regression coefficient. *SE B* = standard error of *B*. β = standardized regression coefficient. R^2 = squared multiple correlation coefficient. ΔR^2 = change in the squared multiple correlation coefficient.
*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$.

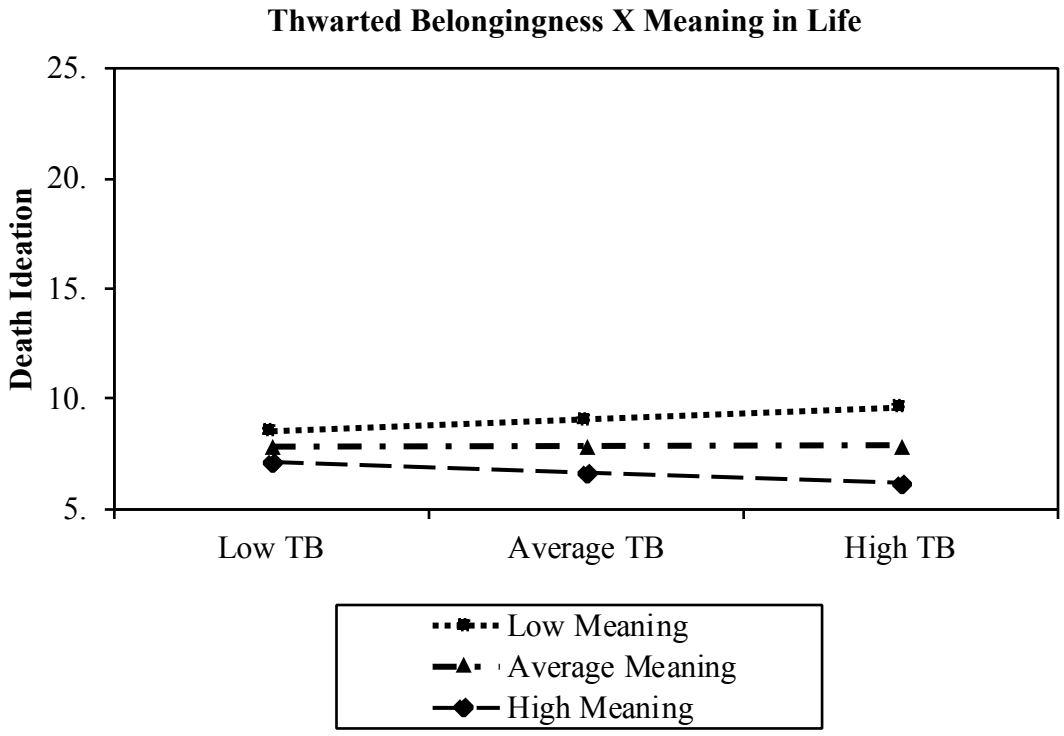

Figure 7A. Plot of Thwarted Belongingness X Meaning in Life Controlling for Suicide Attempt

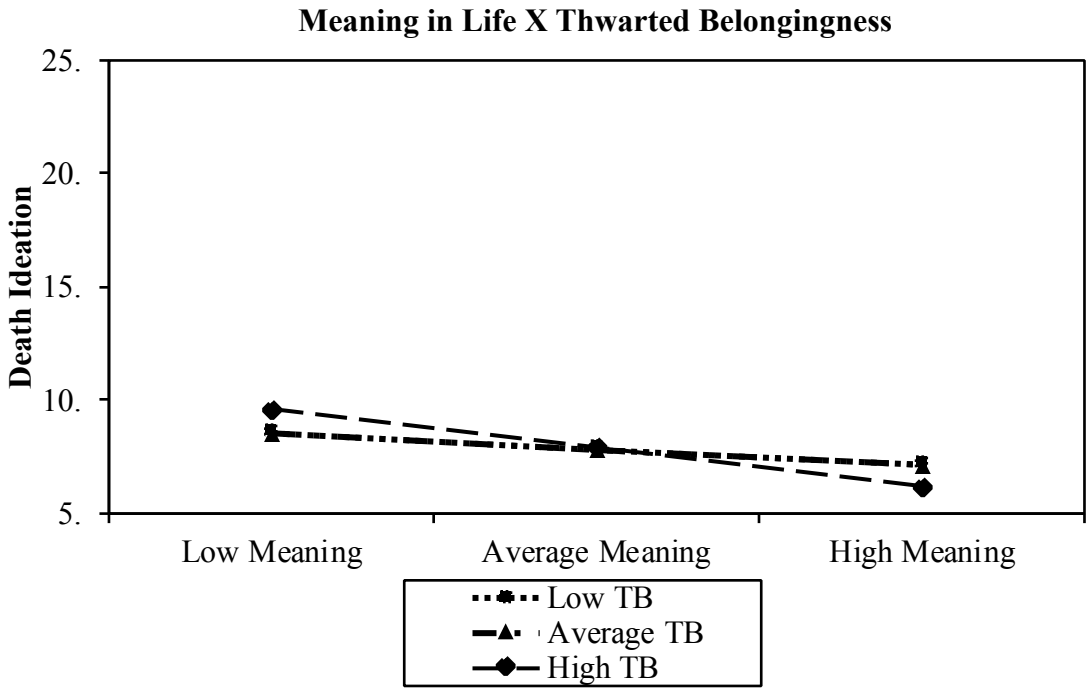

Figure 7B. Plot of Meaning in Life X Thwarted Belongingness Controlling for Previous Suicide Attempt

Table 6

Results from Moderation Linear Regression Procedure for Hypothesis Two Examining the Main Effects and Interaction of Perceived Burdensomeness and Meaning in Life Predicting Death Ideation After Controlling for Depressive Symptoms and Previous Suicide Attempt

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.199	.199
Depression	.158***	.022	.418		
Suicide Attempt	1.70	1.03	.097		
Step 2:				.320	.121
PB	.219***	.062	.233		
Meaning in Life	-.206***	.046	-.285		
Step 3:					
PB*Meaning in Life	-.033***	.009	-.241	.356	.036

Note. *B* = unstandardized regression coefficient. *SE B* = standard error of *B*. β = standardized regression coefficient. R^2 = squared multiple correlation coefficient. ΔR^2 = change in the squared multiple correlation coefficient.
*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$.

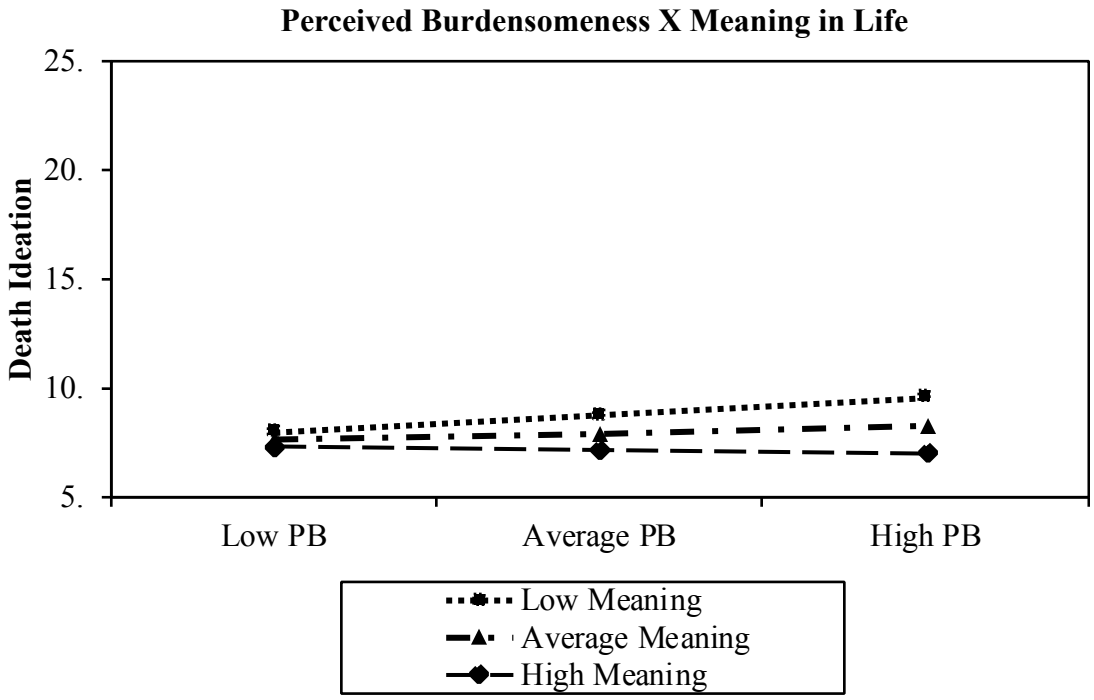

Figure 8A. Plot of Perceived Burdensomeness X Meaning in Life Controlling for Depressive Symptoms and Previous Suicide Attempt

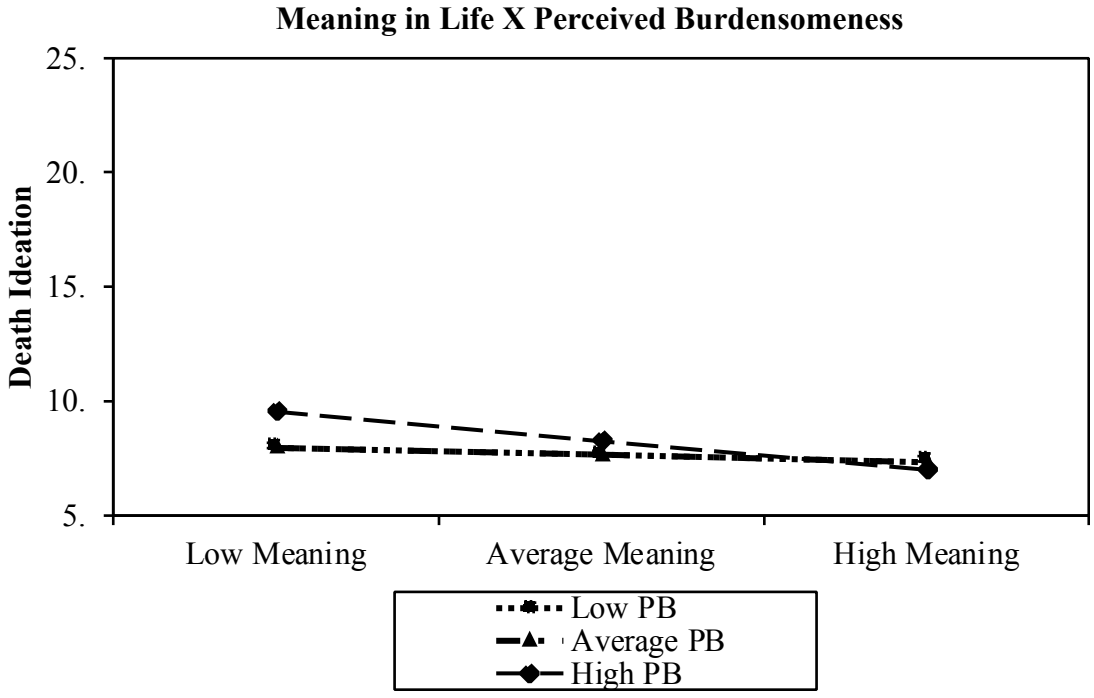

Figure 8B. Plot of Meaning in Life X Perceived Burdensomeness Controlling for Depressive Symptoms and Previous Suicide Attempt

Table 7

Results from Moderation Linear Regression Procedure for Hypothesis One Examining the Main Effects and Interaction of Perceived Burdensomeness and Meaning in Life Predicting Death Ideation After Controlling for Suicide Attempt

Step and predictor variable	*B*	*SE B*	β	R^2	ΔR^2
Step 1:				.030	.030
Suicide Attempt	3.05**	1.11	.174		
Step 2:				.306	.276
PB	.273***	.057	.291		
Meaning in Life	-.241***	.044	-.335		
Step 3:					
PB*Meaning in Life	-.032***	.009	-.236	.341	.035

Note. *B* = unstandardized regression coefficient. *SE B* = standard error of *B*. β = standardized regression coefficient. R^2 = squared multiple correlation coefficient. ΔR^2 = change in the squared multiple correlation coefficient.
*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$.

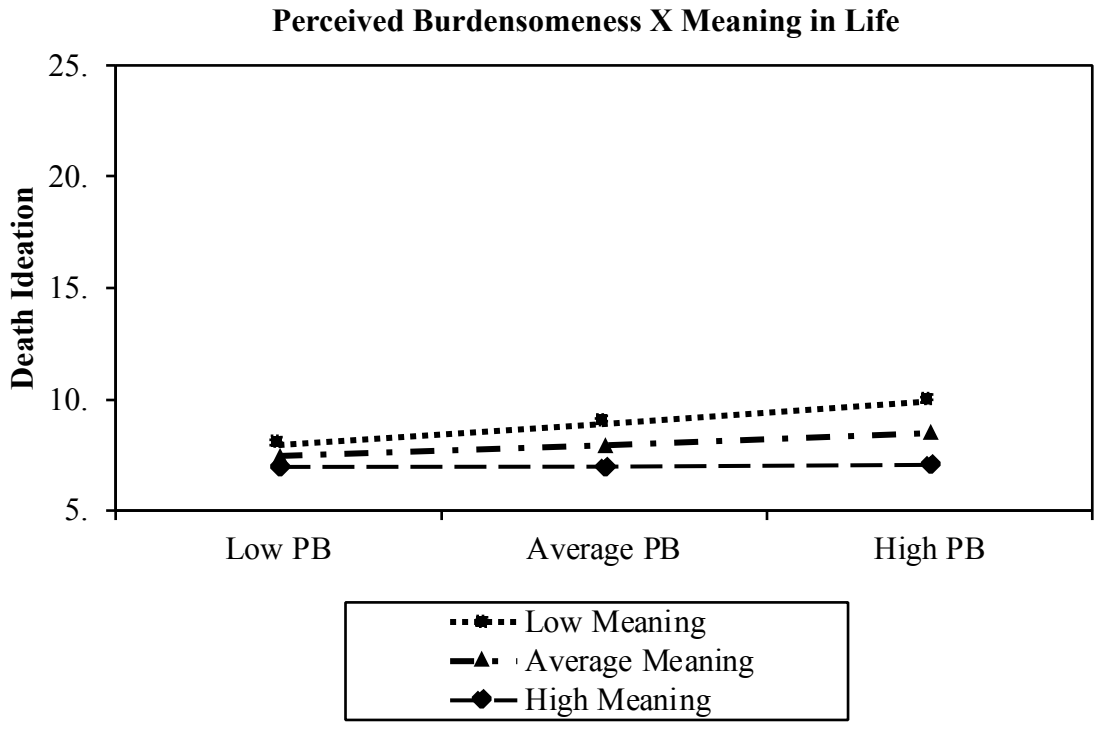

Figure 9A. Plot of Perceived Burdensomeness X Meaning in Life Controlling for Previous Suicide Attempt

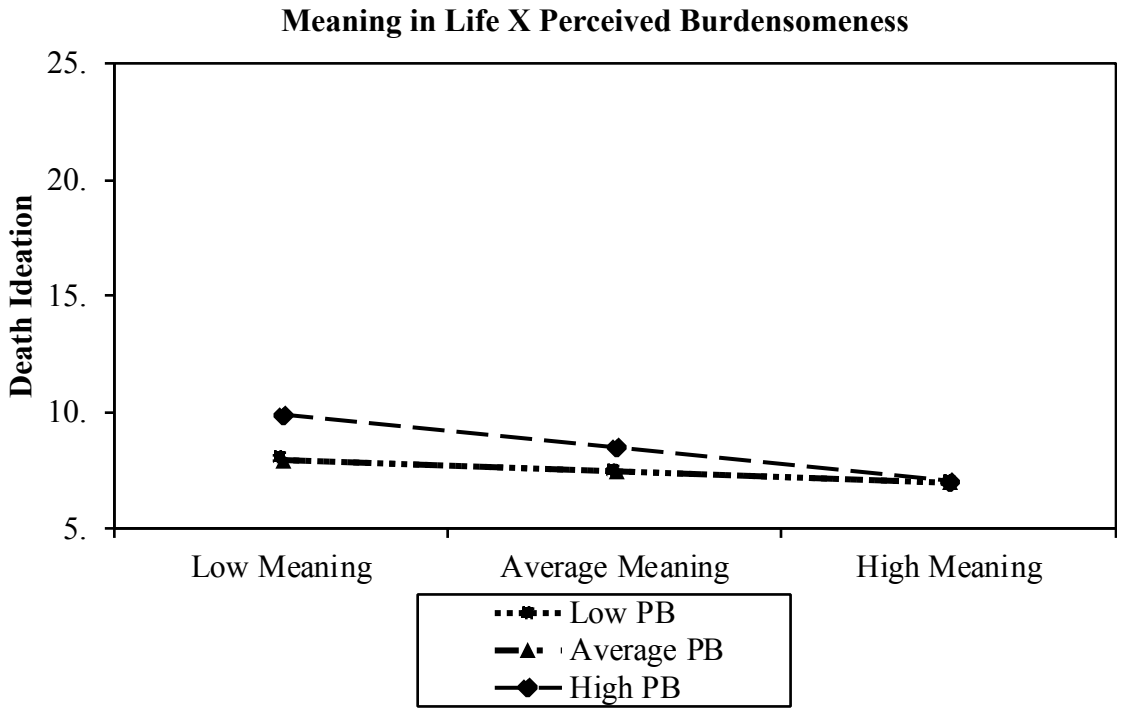

Figure 9B. Plot of Meaning in Life X Perceived Burdensomeness Controlling for Previous Suicide Attempt

CHAPTER V

DISCUSSION

Older adults experience death ideation at a higher rate than the general population, and older adults who endorse death ideation are at a greater risk of suicide compared to older adults who do not endorse death ideation (Baca-Garcia et al., 2011; Choi, Marti, & Conwell, 2016; O'Reilly, Van Orden, He, Richardson, Podgorski, & Conwell, 2014; Scocco, Fantoni, Rapattoni, De Girolamo, & Pavan, 2009; Scocco, Meneghel, Caon, Dello Buono, & De Leo, 2001; Van Orden et al., 2013). This suggests a need to understand theoretical risk factors that contribute to death ideation in older adults. The aim of the current study was to integrate suicide theories and examine the role of meaning in life in the associations between theory-based risk factors (i.e., thwarted belongingness, perceived burdensomeness, and hopelessness) and death ideation among older adults.

First, it was hypothesized that meaning in life would moderate the association between hopelessness and death ideation, such that when meaning in life was low, the association between hopelessness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between hopelessness and death ideation. When controlling for depressive symptoms and previous suicide attempt, this hypothesis was supported. Meaning in life significantly moderated the association between hopelessness and death ideation, and this association was significant at low meaning in life, but not when meaning in life was high or average. When controlling for previous suicide attempt, this hypothesis was supported. Meaning in life significantly moderated the association between hopelessness and

death ideation, and this association was significant when meaning in life was low, but not when meaning in life was high or average. This suggests that low meaning in life may result in higher levels of hopelessness and death ideation. These findings are in line with previous research that has found that low meaning in life is associated with hopelessness and the loss of the will to live (Hedberg et al., 2010; Heisel & Flett, 2008; Kleiman et al., 2013; Kleiman & Beaver, 2013; Pinquart, 2002). Hopelessness plays a key role in both the IPTS and the 3ST. In both theories, hopelessness about aversive states (i.e., thwarted belongingness, perceived burdensomeness, pain) changing is what propels an individual from death ideation to suicide ideation (Joiner, 2005; Klonsky & May, 2015; Van Orden et al., 2010). Therefore, the current findings highlight a need for targeted interventions aimed at increasing meaning in life in older adults to decrease feelings of hopelessness and death ideation, which, in turn, may prevent the development of suicide ideation.

Second, it was hypothesized that meaning in life would moderate the association between thwarted belongingness and death ideation, such that when meaning in life was low, the association between thwarted belongingness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between thwarted belongingness and death ideation. When controlling for depressive symptoms and previous suicide attempt, the hypothesis was partially supported. Meaning in life significantly moderated the association between thwarted belongingness and death ideation, and this association was significant when meaning in life was high, but not when meaning in life was low or average. When controlling for previous suicide attempt, the hypothesis was supported. Meaning in life

significantly moderated the association between thwarted belongingness and death ideation, and this association was significant when meaning in life was low, but not when meaning in life was high or average. According to the interpersonal theory of suicide, thwarted belongingness is independently associated with death ideation (Van Orden et al., 2010). However, contrary to the direction of theory-based predictions, the current study found that at high levels of meaning in life, high thwarted belongingness is associated with low death ideation when controlling for depressive symptoms and previous suicide attempt. This suggests that high meaning may serve as a protective factor against death ideation for individuals who have high levels of thwarted belongingness. This finding holds particular importance for older adults, as loss of social relationships often become more prevalent in older age, which could result in elevated thwarted belongingness (Conwell et al., 2011; Cukrowicz et al., 2011). This finding also provides support for the 3ST, which posits that meaning in life is what motivates one to keep living (Klonsky & May, 2015); therefore, those with high meaning in life may be motivated to keep living despite elevated thwarted belongingness. Furthermore, low meaning in life was associated with a stronger association between thwarted belongingness and death ideation in older adults when controlling for previous suicide attempt. These findings contribute to the paucity of research on thwarted belongingness in older adults, and provide evidence of an association between thwarted belongingness and death ideation in older adults, which has not been found in previous studies (Cukrowicz et al., 2013).

Third, it was hypothesized that meaning in life would moderate the association between perceived burdensomeness and death ideation, such that when meaning in life

was low, the association between perceived burdensomeness and death ideation would be stronger, whereas when meaning in life was high, there would be a weaker association between perceived burdensomeness and death ideation. When controlling for depressive symptoms and previous suicide attempt, the hypothesis was supported. Meaning in life significantly moderated the association between perceived burdensomeness and death ideation, and this association was significant when meaning in life was low, but not when meaning in life was high or average. When controlling for previous suicide attempt, the hypothesis was supported. Meaning in life significantly moderated the association between perceived burdensomeness and death ideation, and this association was significant when meaning in life was low and average, but not when meaning in life was high. These findings suggest that low meaning in life may result in higher levels of perceived burdensomeness and death ideation. This is of particular importance for older adults, who may be at an increased risk of perceived burdensomeness, as physical health and functioning become more prevalent in older age (Conwell et al., 2011; Van Orden, Talbot, & King, 2012). Therefore, interventions that target meaning in life in older adults may be critical to decreasing feelings of perceived burdensomeness and death ideation. These findings are in line with previous research that has demonstrated an association between perceived burdensomeness and death ideation in older adults, and provides support for the IPTS, which posits that perceived burdensomeness is independently associated with death ideation (Cukrowicz et al., 2013; Van Orden et al., 2010).

Limitations

The results of this study should be considered in light of limitations. Due to the cross-sectional design of this study, causal inferences cannot be made. Although this study identified how meaning in life moderates the association between theoretical risk factors and death ideation in older adults, it is not possible to draw conclusions about the role these risk factors play in the development of death ideation. Future research should utilize a longitudinal, repeated measures design to address this limitation. For example, future research could measure how varying levels of hopelessness, thwarted belongingness, and perceived burdensomeness impact death ideation in older adults over time after participants receive a clinical intervention aimed at increasing meaning in life, such as values-based behavioral activation.

Additionally, the generalizability of these findings is limited as the sample had relatively high education levels and lacked geographical and racial diversity. Future research should aim to increase generalizability. This study relied on self-report, which may have resulted in underreporting on sensitive measures, such as death ideation. Future research should ensure effective screening methods that may capture older adults who are underreporting on death ideation. Furthermore, common method variance may threaten the validity of the data given that the participants in the current study responded to all survey items in a single sitting (Campbell & Fiske, 1959; Reio, 2010). This may have resulted in either inflated or deflated correlations between the variables given that only one method (self-report measures) was used to collect the data (Campbell & Fiske, 1959; Reio, 2010). Future research should obtain measures of independent and dependent variables from various sources and spread out the time

between the measurements of variables to help protect against this threat (Reio, 2010). Finally, it is important to note that the models that represent the results are predictive based on available data. Some cells in the models had a sample size of zero, which means that some of the predictions are based on people who do not exist in the current dataset; therefore, the results should be considered in light of this limitation (Figure 10, 11, and 12).

The current study has several strengths. This is the first study to examine theoretical risk factors for death ideation in older adults through the lens of both the IPTS and the 3ST. To date, there have been few studies that have examined thwarted belongingness in older adults, and few that have examined the association between the IPTS constructs and death ideation in this population. Additionally, the current study explores how meaning in life moderates the association between theoretical risk factors and death ideation, whereas previous research focuses heavily on suicide ideation.

Clinical and Theoretical Implications

Given that proposed hypotheses were supported, there are several clinical and theoretical implications. Clinicians working with older adults in primary care settings may aim to increase meaning in life through interventions such as values-based behavioral activation to reduce the impact of hopelessness, thwarted belongingness, and perceived burdensomeness on death ideation. Additionally, interpersonal psychotherapy has been shown to reduce feelings of death ideation in older adults (Heisel, Duberstein, Conner, Franus, Beckman, & Conwell, 2006). Theoretically, this study provided further support for the IPTS and the 3ST. Death ideation was

independently associated with both thwarted belongingness and perceived burdensomeness in older adults, which bolsters the idea that death ideation occurs when either thwarted belongingness or perceived burdensomeness is experienced (Van Orden et al., 2010). To the best of our knowledge, death ideation has never been evaluated through the lens of the 3ST, and the findings in the current study suggest that meaning in life may play a role in the development of death ideation in older adults. Given that older adults who report death ideation are similar to adults who report suicide ideation, we may be able to extrapolate these findings to older adults who are experiencing suicide ideation; however, further research is needed (Szanto et al, 1996). The current study provided a deeper understanding of risk factors for death ideation, and understanding these through the lens of both the IPTS and the 3ST will help to develop further research in death ideation and suicide in older adults.

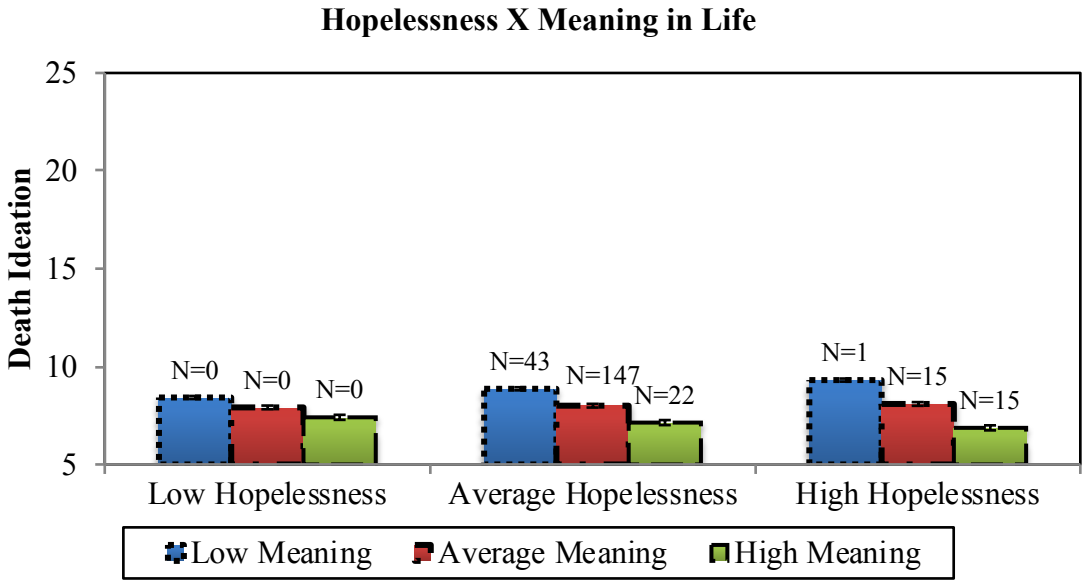

Figure 10. Plot of Meaning in Life X Hopelessness with error bars and cell sample size

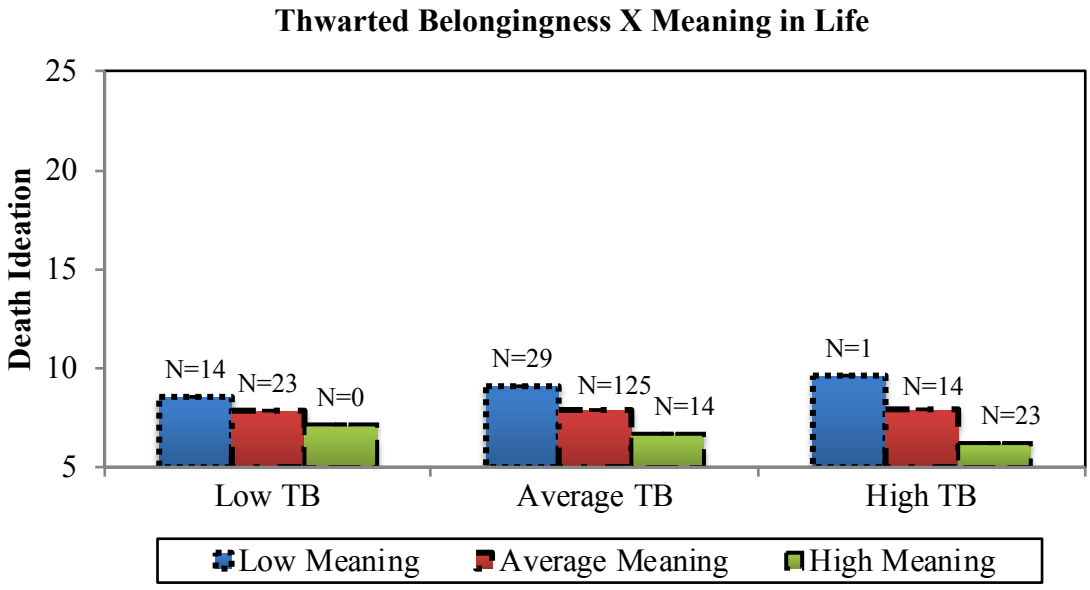

Figure 11. Plot of Meaning in Life X Thwarted Belongingness with error bars and cell sample sizes

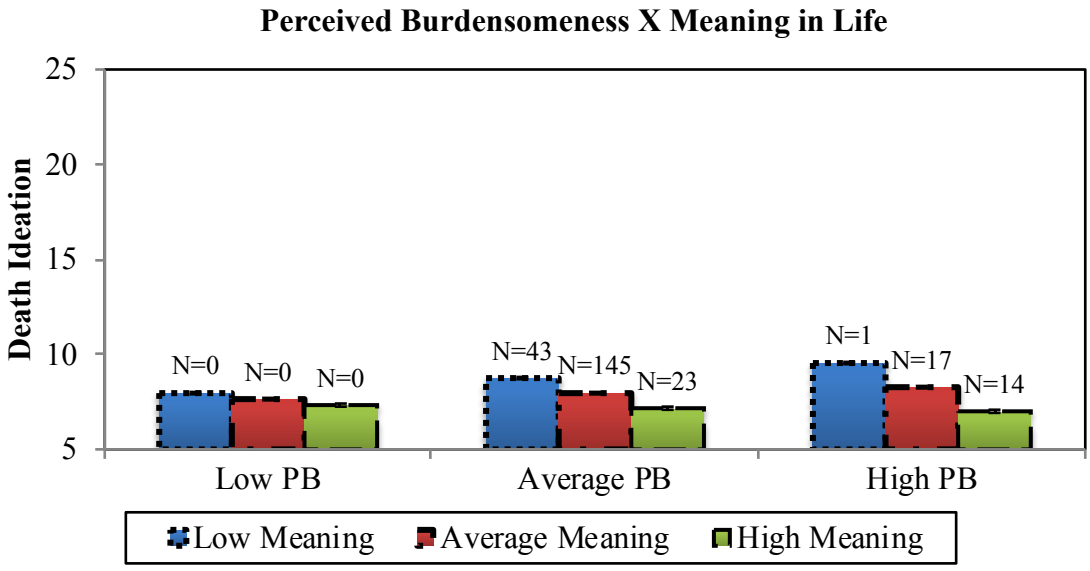

Figure 12. Plot of Meaning in Life X Perceived Burdensomeness with error bars and cell sample size

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