A meaningful life is worth living: Meaning in life as a suicide resiliency factor

Evan M. Kleiman*, Jenna K. Beaver
Department of Psychology, George Mason University, Fairfax, VA 22030, USA

1. Introduction

The continuously increasing rate of suicide is a problem of considerable worldwide concern. Indeed, from 1999 to 2010, the rate of suicide in some age groups in the United States has increased by nearly 30% (Sullivan et al., 2013), with similar trends being shown worldwide (Nock et al., 2008). This increased rate of suicide highlights the need for more research on factors that can prevent suicide. Accordingly, our goal is to assess meaning in life as a suicide resiliency factor. In the present study, we examine meaning in life as a prospective predictor of suicidal ideation and a retrospective predictor of suicide attempt status.

1.1. Meaning in life

Meaning in life, although defined in various ways throughout a diverse literature, can be broadly defined as a sense of purpose that is believed to matter in a way beyond the individual living that life (King et al., 2006; Steger, 2009). The most well-supported model of meaning in life (Steger et al., 2006) divides meaning in life into two components: the search for meaning in life and the presence of meaning in life. Individuals who do not possess presence of meaning in life may be searching for it; however, these facets are not mutually exclusive and individuals who do possess meaning in life may still continue to search for a greater or different meaning (Steger et al., 2011). Meaning in life is associated with overall psychological well-being (Ho et al., 2010; McMahan and Renken, 2011) as well as related factors such as positive affect (Hicks and King, 2009; King et al., 2006; Trent et al., 2013). Despite the number of studies that find that meaning in life is associated with increased psychological well-being, there is a relatively paucity of research that applies meaning in life to the study of resiliency, especially resiliency to suicide. Thus, the primary goal of this manuscript is to examine meaning in life as a resiliency factor in suicide.

1.2. Meaning in life and suicide

There is a small, but promising, body of literature linking meaning in life with suicidality. To our best knowledge, only one study has directly assessed the role of meaning in life within the context of suicide. Kleiman et al. (2013a) found that meaning in life mediated the synergistic relationship of gratitude (i.e., a tendency to “notice and appreciate the positive in the world”; Wood et al., 2010, p. 891) and grit (i.e., passionate perseverance towards goals despite adversity; Duckworth et al., 2007), predicting suicidal ideation, and suggesting that meaning in life is a more proximal suicide resiliency factor than either gratitude or grit.
This study examined meaning in life as a unitary construct; however, examination of the individual constructs of presence of and search for meaning in life is important because, as we discuss later, they may have different relationships with suicidal ideation and attempts. Moreover, interventions targeting meaning in life are found to be effective to reduce suicide risk (Lapiere et al., 2007). Finally, other studies find that purpose in life, a distinct but conceptually related factor to meaning in life, is associated with decreased suicidal ideation (Harlow et al., 1986; Heisel and Flett, 2004). Taken together, these studies suggest that meaning in life may not only be associated with decreased suicidal ideation, but is also modifiable in treatment. Indeed, several interventions currently exist to modify meaning in life (e.g., Lee et al., 2006; Mok et al., 2012; Westerhof et al., 2010). Although these interventions are primarily targeted at cancer patients, it is plausible that such interventions to modify meaning in life may also be effective in other populations, such as those at risk for suicide.

In addition to empirical support, the idea of meaning in life conferring resiliency to suicide is compatible with the frameworks of several theories of suicide. For example, Joiner’s interpersonal theory of suicide (IPT; Joiner et al., 2009) finds that the desire to die by suicide is the result of beliefs that one is a burden to others (perceived burdensomeness) and does not belong to a social group (thwarted belongingness). Both perceived burdensomeness (Van Orden et al., 2012a,b) and social exclusion (which may be related to thwarted belongingness; Stillman et al., 2009) predict decreased meaning in life. Given that both IPT variables (i.e., perceived burdensomeness and thwarted belongingness) predict meaning in life as well as suicidal ideation, it may be that meaning in life actually mediates the relationship between the IPT variables and suicidal ideation. Thus, a subsidiary goal of this study is to examine meaning in life as a mediator in the relationship between the IPT variables and suicidal ideation.

1.3. Do presence of and search for meaning both confer resiliency to suicide?

For several reasons, we expect that the presence of meaning in life will be the primary predictor of suicide resilience and that the search for meaning in life will either predict increased suicidal ideation/attempt history or be unrelated to either suicide variable. First, the presence of a meaningful life is simply incompatible with suicide; an individual who perceives his or her life as meaningful would be unlikely to end his or her life. Second, search for meaning in life is often related to negative psychological constructs that are associated with suicide such as perceived lack of personal growth and control over one’s environment (Steger et al., 2008), depressive symptoms (Steger et al., 2006; study 1) and rumination (Steger, et al., 2008; study 2). Conversely, presence of meaning in life is associated with psychological well-being and happiness (Steger and Kashdan, 2007). Finally, although search for meaning in life and absence of meaning in life are two distinct facets, individuals who are searching for meaning may fall short of their expectations to find it. Reflection on this absence could generate suicidal ideation.

1.4. The present study

The goal of the present study is to examine the effects of the search for and the presence of meaning in life as suicide resiliency factors. We hypothesize that the presence of, but not the search for, meaning in life will be associated with decreased suicidal ideation and decreased likelihood of a lifetime suicide attempt. We examine this hypothesis using two relevant outcomes: prospective prediction of suicidal ideation over an eight-week period and retrospective prediction of suicide history. We used both predictors because suicidal ideation and suicide attempts each represent discrete steps on the path to completed suicide. Showing that meaning in life confers resiliency to both steps (or only one) may provide useful information for possible intervention targets. Moreover, past suicidal behavior is the strongest predictor of future suicidal thoughts and behavior and thus eventual suicide (Joiner et al., 2005). To stringently test this hypothesis in a similar manner to previous studies on suicide resiliency (e.g., Kleiman and Liu, 2013), we conducted our analyses controlling for a variety of relevant risk factors for and resiliency factors against suicide.

The first set of covariates includes relevant demographic variables: age (De Leo et al., 2005), race (Moicicki, 1997), and gender (Moicicki, 1994). The second set of covariates includes risk factors for suicide: depression symptoms (Minkoff et al., 1973); anxiety symptoms (Sareen, 2005); and the variables associated with Joiner et al. (2009) theory, perceived burdensomeness and thwarted belongingness. The third set of relevant covariates includes other suicide resiliency factors: social support (Kleiman and Liu, 2013) and gratitude (Kleiman et al., 2013b).

In the present study we also test a third, subsidiary hypothesis that meaning in life mediates the relationship between the variables associated with IPT (i.e., perceived burdensomeness and thwarted belongingness) and suicidal ideation. In line with our other hypotheses, we expect presence of, but not search for, meaning in life to mediate the relationship between the IPT variables and suicidal ideation.

2. Method

2.1. Subjects

Initially, 670 undergraduate students completed the baseline measures, and 585 of these participants (87.3%) completed the follow-up measures as well. Those who did the baseline only did not significantly differ on any of the study measures from those who did both the baseline and follow-up measures. All descriptive statistics and prospective analyses (hypothesis 1) use the 585 participants in the prospective sample. The cross sectional analysis of lifetime suicide attempt history (hypothesis 2) uses the full sample of 670 because we wanted to maximize the usable data since a suicide attempt is a low base rate event in a college population. The prospective sample of 585 was approximately 82% female and had an average age of 21.2 years (SD = 5.18, range = 17–60). Approximately 55% of the sample was Caucasian, 19% was Asian, 11% was African American, and the rest self-identified as another race. Of the 670 participants in the full (i.e., cross-sectional) sample, 39 participants (5.5%) indicated that they had attempted suicide in the past.

2.2. Procedure

Participants completed self-report measures on an online website twice, separated by approximately eight weeks, as part of an IRB-approved study. At baseline, participants completed measures of perceived burdensomeness and thwarted belongingness, depression and anxiety symptoms, gratitude, social support, meaning in life, suicidal ideation, and suicide attempt history. At follow-up, participants completed a measure of suicidal ideation again. The average time between baseline and follow-up was 60.8 days (SD = 8.03). Stringent, IRB-approved suicide risk assessment procedures were utilized to ensure the safety of the participants.

2.3. Materials

2.3.1. Perceived burdensomeness and thwarted belongingness

The Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2008) is a 12-item measure of the variables associated with Joiner’s interpersonal-psychological theory of suicide. Seven items assess perceived burdensomeness and five items assess thwarted belongingness. Higher scores for the two scales indicated higher thwarted belongingness and perceived burdensomeness. Similar versions of this measure demonstrate strong convergent validity with other related measures (Van Orden et al., 2012a,b).
2.3.2. Depression and anxiety symptoms
The depression and anxiety subscales of the Brief Symptom Inventory (BSI; Derogatis, 1992) are self-report measures of depressive and anxious symptomology, with six items each. Scores are averaged so that higher scores equal higher levels of symptoms. Previous research documents high convergent validity with other symptom measures of psychopathology (Boulé & Boss, 1991).

2.3.3. Gratitude
The Gratitude Questionnaire (GQ-6; McCullough et al., 2002) is a six-item measure of the trait-like tendency to experience gratitude. Scores are summed so that higher scores equal higher levels of gratitude. Previous research documents the strong psychometrics of this measure in a variety of college populations (Kashdan et al., 2009; Wood et al., 2008).

2.3.4. Social support
The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) is a 12-item self-report measure of perceived support from family, friends, and significant others. Higher total scores on the MSPSS indicate higher levels of perceived social support. Several studies describe high external validity and internal consistency of this measure (Canyt-Mitchell and Zimet, 2000; Zimet et al., 1990).

2.3.5. Meaning in life
The Meaning in Life Questionnaire (MLQ; Steger et al., 2006) is a 10-item self-report measure of meaning in life. Five items measure search for meaning in life and the other five items measure presence of meaning in life. The MLQ has strong convergent validity with other unitary measures of meaning in life (Steger et al., 2006).

2.3.6. Suicidal ideation
The Beck Suicide Scale (BSS; Beck and Steer, 1991) is a 21-item self-report measure that assesses current suicidal ideation and past suicidal behaviors. Nine-teen items measure suicidal ideation and two items measure past suicidal behaviors. As we only used this measure to assess suicidal ideation, only the 19 suicidal ideation items were used. Higher scores indicate higher suicidal ideation. The BSS is found to have strong convergent validity with clinician ratings of suicide risk in psychiatric inpatients (Beck et al., 1988).

2.3.7. Suicide attempt history
Past suicide history was determined by using the item of the Suicidal Behavior Questionnaire-Revised (SBQ-R; Osman et al., 2001) that assessed previous suicide attempts. Scores on this single item of the SBQ-R have been found to predict suicidal ideation in both undergraduates and adult inpatients (Osman et al., 2001). The variable was scored so that 1 = past suicide attempt and 0 = no past suicide attempt.

2.4. Analytic strategy
To test our first hypothesis, that presence of meaning in life would predict lower levels of suicidal ideation over time, we conducted a series of negative binomial regressions. Suicidal ideation scores were negatively skewed (Skew = 5.06, Kolmogorov–Smirnov Z = 14.39, p < .001) and zero-inflated (i.e., many participants had scores of zero); however, log transforming the variable (as is generally recommended) did not appreciably correct this skewed distribution (Skew = 3.45, Kolmogorov–Smirnov Z = 14.96, p < .001). Thus, we used a negative binomial model to avoid violating the assumptions of regression. We entered the predictors in four steps to assess the predictive ability of groups of factors above and beyond other factors. The first step included demographic variables, the second step added baseline suicidal ideation and the risk factors for suicide (i.e., perceived burdensomeness, thwarted belongingness, depression symptoms, and anxiety symptoms), the third step added resiliency factors (i.e., gratitude and social support) to the first model, and the fourth step added search for and presence of meaning in life.

To test our second hypothesis that presence of meaning in life would predict lower lifetime odds of a suicide attempt, we used a set of binary logistic regression models (because the outcome was dichotomous) predicting suicide attempt history. The format of the model was the same as the model for the first hypothesis. The first step had only demographic variables, the second step added the risk factors, the third step added the protective factors, and fourth step added the meaning in life variables. Given that we were assessing retrospective reporting of a suicide attempt, we used only the baseline variables for this analysis, which allowed us to use the full sample of 670 participants. At this point it should be noted that this analysis was still considerably underpowered. Common rules of thumb for logistic regression (e.g., Peduzzi et al., 1996) suggest that there be 10 events (i.e., suicide attempts) per predictor variable used. To test our hypothesis we would sample with more than double the number of suicide attempts than our sample currently has. Thus, we frame these analyses within an exploratory context.

To test our third hypothesis, that presence of, but not search for, meaning in life would mediate the relationship between the IPT variables (i.e., perceived burdensomeness and thwarted belongingness) and suicidal ideation, we conducted a path analysis using AMOS 21.0. We examined indirect (mediated) effects using bias-corrected bootstrapping (MacKinnon et al., 2004). We used asymptotically distribution-free estimation, as this is most appropriate for non-normally distributed endogenous variables, such as suicidal ideation scores in the present study (Finnney, and DiStefano, 2006).

3. Results
Means, standard deviations, intercorrelations, and alpha statistics are presented below in Table 1. Female gender was negatively correlated with thwarted belongingness and positively correlated with gratitude, social support, and presence of meaning in life. Age was negatively correlated with perceived burdensomeness, thwarted belongingness and was positively correlated with presence of

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<tr>
<th>Table 1</th>
<th>Means, standard deviations, intercorrelations, and internal consistency of study variables.</th>
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Note: INQ—Interpersonal Needs Questionnaire, BSI—Brief Symptom Inventory, MSPSS—Multidimensional Measure of Perceived Social Support, GQ—Gratitude Questionnaire, BSS—Beck Suicide Scale, SBQ—Suicidal Behaviors Questionnaire. Mean, SD, and alpha do not apply to gender or history of suicide attempt as they are dichotomous.

*** p < .001.
** p < .01.
* p < .05.
meaning in life and lifetime suicide attempt history. With the exception of search for meaning in life not being significantly correlated with gratitude, baseline or follow-up suicidal ideation, and life time history of a suicide attempt, all other non-demographic variables were positively correlated with each other at the p < .05 level or lower. All measures had good to excellent internal consistency (alphas range from .87 to .94).

3.1. Hypothesis 1: Presence of meaning in life predicts decreased suicidal ideation over time

Table 2 shows the results of a series of negative binomial regression models testing the first hypothesis. Each step significantly increased model fit over the previous step, with the step for risk factors showing the greatest increase in model fit. Significant covariates in the model included gender, baseline suicidal ideation, perceived burdensomeness, and anxiety symptoms. Both search for meaning in life and presence of meaning in life significantly predicted lower levels of suicidal ideation. It is interesting that, contrary to our hypothesis, search for meaning in life was associated with decreased suicidal ideation. It should be noted, however, that the magnitude of the effect for presence of meaning in life was considerably greater (b = −0.08, p < .001) than the effect for search for meaning in life (b = −0.03, p < .05). Thus, when examined in context, the results are generally consistent with our hypothesis. However, the findings for search for meaning in life require more thorough discussion and research.

3.2. Hypothesis 2: Presence of meaning in life predicts lower lifetime odds of a suicide attempt

Table 3 shows the results of a series of logistic regression analyses testing the second hypothesis. With the exception of the step with resiliency factors, each step significantly increased model fit above the previous step. This finding supports our hypothesis that presence of meaning in life is a suicide resiliency factor.

3.3. Hypothesis 3: Meaning in life as a mediator between IPT variables and suicidal ideation

We first analyzed a model with all relevant direct paths identified (from burdensomeness and thwarted belongingness to presence and search for a presence of meaning in life, and all four variables to time 2 suicide ideation). Perceived burdensomeness and thwarted belongingness were allowed to covary, as they are subscales from the same measure and were correlated at the bivariate level. This model is displayed in Fig. 1. According to common conventions for model fit (e.g., $\chi^2/df < 2$, CFI close to 1, RMSEA < .08; Hu and Bentler, 1999), this model had excellent overall fit ($\chi^2/df = 1.80$, p = .180, $\chi^2/df = 1.80$, CFI = .99, RMSEA = .04). Moreover, trimming the non-significant paths did not significantly increase model fit ($\Delta = 4.05$, p = .256) and AMOS did not suggest any model modifications.
Results indicated that presence of meaning in life partially mediated the relationship between perceived burdensomeness and suicidal ideation (i.e., the direct path between perceived burdensomeness and suicidal ideation was significant) and fully mediated the relationship between thwarted belongingness and suicidal ideation (i.e., the direct path between thwarted belongingness and suicidal ideas was not significant). The combined indirect effect of perceived burdensomeness and thwarted belongingness on suicidal ideation through presence of meaning in life was significant ($b = -34$, 95% CI: 17 to 54, $p < .01$). Results also indicated that search for meaning in life did not mediate the relationship between the IPT variables and suicidal ideation, as the indirect effect was not significant ($b = -04$, 95% CI: -09 to 02, $p = .02$). Taken together, these results support our third hypothesis that presence of meaning in life (but not search for meaning in life) mediates the relationship between the IPT variables and suicidal ideation.

4. Discussion

The present study is the first to our knowledge that was solely focused on examining meaning in life as a suicide resiliency factor. Such studies are important because, although the rate of suicide is high and ever increasing, there is an alarming paucity of studies on factors that could potentially be used to prevent suicide. This study attempted to address the need to increase such research on resiliency. We hypothesized that the presence of meaning in life would be associated with lower levels of suicidal ideation over time as well as lower lifetime odds of a suicide attempt. We also hypothesized that this relationship may not necessarily exist for the search for meaning in life, as search for meaning in life is associated with greater psychopathology and other factors also relevant to suicide (Steger et al., 2008). Our final, subsidiary hypothesis was that presence of (but not search for) meaning in life would mediate the relationship between the variables from the interpersonal psychological theory (IPT) of suicide (perceived burdensomeness and thwarted belongingness; Joiner et al., 2005) and suicidal ideation. Our results were generally in line with our hypotheses, with only one exception that is discussed below.

We found that presence of meaning in life was associated with decreased suicidal ideation over time and decreased lifetime odds of a suicide attempt. These findings are especially interesting because presence of meaning in life conferred suicide resiliency above and beyond the effects of low levels of risk factors such as psychopathology and high levels of protective factors such as gratitude. Indeed, presence of meaning in life was the only factor that predicted lower lifetime odds of a suicide attempt. The clearest implication from this finding is that the presence of meaning in life may be a useful target for interventions designed to decrease suicide risk. This may be especially true for the IPT variables, as presence of meaning in life was found to mediate the relationship between the IPT variables and suicidal ideation. Thus, interventions that increase meaning in life might possibly serve to weaken or eliminate the suicide risk conferred by the IPT variables. Several interventions designed to increase meaning in life in individuals with depression (Westerhof, et al., 2010) and terminal cancer (Lee et al., 2006; Mok, et al., 2012) are found to be effective. Thus, adapting these interventions to suicide risk may be useful for helping suicidal individuals with low meaning in life.

While search for meaning in life was unassociated with lifetime odds of a suicide attempt, it was marginally associated with decreased suicidal ideation over time. These findings were unexpected, as increased search for meaning in life is generally associated with factors that are related to increased, rather than decreased, suicidal ideation (e.g., depression symptoms and rumination). Nevertheless, it may be that, given that a suicide attempt is more severe form of suicidality than suicidal ideation, the search for meaning in life only acts a resiliency factor against less severe forms of suicidality. There are also several statistical explanations. First, the effect for search for meaning in life was nearly non-significant and was half the magnitude of the effect for presence of meaning in life. Second, there was no bivariate relationship between search for meaning in life and baseline suicidal ideation ($r = \text{-.01}, p > .05$) or follow up suicidal ideation ($r = \text{-.02}, p > .05$). This might indicate the presence of moderator variables that could be explored in future research.

There are several weaknesses that should be acknowledged. First, we used an undergraduate sample, and future studies are needed to replicate our findings in a clinical sample. Second, our sample was predominantly female and studies with more males are needed to support generalizability to both genders. This is especially important within a suicide prevention context because while women are more likely to attempt suicide, men are more likely to die by suicide (Mościcki, 1994). Thus, males represent a particular area of concern for reducing suicide risk. Third, we used self-report measures of anxiety and depression symptoms, but a clinical interview may provide more reliable results in future
studies. Fourth, due to the relatively low number of participants with a suicide attempt history, the analysis predicting suicide attempt history was underpowered. Future studies with a larger number of participants with a suicide attempt history are warranted. There are also several strengths that should be acknowledged. First, we used a relatively large sample that was ethnically diverse. Second, we measured two forms of suicidality: suicidal ideation over time and retrospective history of suicide attempts. While many studies of suicide resiliency utilize cross-sectional designs, our longitudinal approach represents an advancement in methodology above many previous studies. Finally, our study joins only a handful of other studies that examine potentially modifiable suicide resiliency factors, which is an area in need of much more research.

References


