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Reasons for living, meaning in life, and suicide ideation: investigating the roles of key positive psychological factors in reducing suicide risk in community-residing older adults

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Objectives: To investigate the roles of reasons for living (RFL) and meaning in life (MIL) in potentially promoting mental health and well-being and protecting against suicide ideation among community-residing older adults and to investigate the psychometric properties of the Reasons for Living Scale–Older Adult version (RFL-OA).

Method: Of 173 older adults initially recruited into a longitudinal study on late-life suicide ideation, 109 completed the RFL-OA and measures of cognitive and physical functioning and positive and negative psychological factors at a two-year follow-up assessment. We tested a model in which RFL and MIL protect against suicide ideation, controlling for demographic and clinical factors. We also assessed the psychometric properties of the RFL-OA in community-residing older adults, investigating its internal consistency and its convergent (MIL, perceived social support, and life satisfaction), divergent (loneliness, depressive symptom severity, and suicide ideation), and discriminant validity (cognitive and physical functioning).

Results: RFL-OA scores explained significant variance in suicide ideation, controlling for age, sex, depressive symptom severity, and loneliness. MIL explained significant unique variance in suicide ideation, controlling for these factors and RFL, and MIL significantly mediated the association between RFL and suicide ideation. Psychometric analyses indicated strong internal consistency ($\alpha = .94$), convergent, divergent, and discriminant validity for the RFL-OA relative to positive and negative psychological factors and cognitive and physical functioning.

Conclusion: These findings add to a growing body of literature suggesting merit in investigating positive psychological factors together with negative factors when assessing suicide risk and planning psychological services for older adults.

Keywords: psychological resiliency; older adults, reasons for living; RFL; meaning in life; suicide ideation; GSIS; validation; geropsychology; loneliness; depression; social support

Introduction

Suicide claims more than 800,000 lives every year, accounting for approximately 2% of all deaths worldwide (World Health Organization [WHO], 2014). Adults over the age of 65, men in particular, have the highest rates of suicide in North America and around the world (WHO, 2014). More than 7700 older adults die by suicide every year in North America; these figures are increasing consistent with the aging of the vast baby-boom cohort (Statistics Canada, 2015; WISQARS database, Centers for Disease Control and Prevention, 2015). Efforts are needed to improve the understanding of the etiology of late-life suicide risk and thus influence psychological assessment and intervention (Canadian Coalition for Seniors' Mental Health, 2006).

The study of late-life suicide and its prevention is in its relative infancy. With one notable exception (Miller, 1978), initial studies investigating potential suicide risk factors among older adults are scarcely two decades old (e.g., Conwell, Olsen, Caine, & Flannery, 1991; Henriksen et al., 1995). Researchers have consistently identified a set of variables associated with suicide risk in later life,

including presence of suicide ideation or history of suicide behavior, presence of one or more mental disorders, extreme personality traits or disorders, medical illness and pain, psychosocial difficulties, and experienced or anticipated reduction in cognitive functioning or physical functioning (Heisel & Duberstein, 2005). The mitigating effects of resilience in buffering suicide risk are receiving increased attention in the research literature (Fanning & Pietrzak, 2013; Johnson, Wood, Gooding, Taylor, & Tarrier, 2011). However, a fundamental change is needed in the approach to understanding later life suicide and its prevention, aiming to enhance knowledge regarding factors that contribute to the promotion of mental health and well-being and so prevent the onset of suicide ideation and behavior, rather than exclusively focusing on assessment and treatment of biopsychosocial factors that contribute to suicide risk (Heisel & Flett, 2014).

Psychological explanations for the onset of suicide risk have focused historically on the role of negative cognitive and emotional states in the etiology of suicide thoughts and behavior. These included such variables as 'psychache'—referring to the emotional pain associated

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with suicide (Shneidman, 1996; Troister & Holden, 2010) and ‘hopelessness’-referring to negative or pessimistic expectancies regarding one’s future (Beck, 1963; Beck, Weissman, Lester, & Trexler, 1974; Brown, Beck, Steer, & Grisham, 2000; McMillan, Gilbody, Beresford, & Neilly, 2007). More recent theory and research have expanded this etiologic focus to incorporate interpersonal difficulties, including perceived absence of social support or integration and of burdening others (Joiner, 2005; Van Orden et al., 2010) and personality traits and/or disorders (e.g., Clark, 1993; Duberstein & Conwell, 1997). Research findings support associations among indices of psychopathology, emotional pain, negative personality characteristics, global and interpersonal forms of hopelessness, and late-life suicide ideation (Almeida et al., 2012; Heisel et al., 2006; Neufeld & O’Rourke, 2009; Neufeld, O’Rourke, & Donnelly, 2010). However, consistent with Seligman and Csikszentmihalyi’s (2000) call for research investigating positive psychological factors, geropsychology researchers have been increasingly investigating the role of salutogenic factors, including adaptive and affirming perceptions of reasons for living (RFL; Britton et al., 2008; Edelstein et al., 2009; Segal et al., *in press*) and of meaning in life (MIL; Heisel & Flett, 2006, 2008, 2014; Moore, 1997), in promoting psychological resiliency and preventing the onset or exacerbation of suicide risk.

Linehan and colleagues (1983) theorized that, just as pessimistic beliefs might contribute to the development of suicide thoughts and behavior, adaptive beliefs should decrease the likelihood of doing so. Terming these positive beliefs and expectancies reasons for living (or RFLs), these authors developed an RFL Inventory to assess RFLs in research and clinical practice (Linehan, Goodstein, Nielsen, & Chiles, 1983). Linehan initially conceptualized the RFL construct within the context of suicide prevention. Her measure instructed respondents to rate each RFL with reference to deterring or preventing acting on thoughts of suicide. Nevertheless, RFLs can be conceptualized from a positive psychological standpoint as reflecting unique aspects of one’s satisfaction with or enjoyment of life, or comprising specific sources of meaning or purpose in life, and thus may serve as critical indicators of psychological health and well-being. Research findings among community-residing older adults have generally supported associations between RFLs and indices of health and well-being, including self-rated global health (Segal, Levenson, & Coolidge, 2008), sense of belonging (Kissane & McLaren, 2006), social support, and religiosity (June, Segal, Coolidge, & Klebe, 2009). RFLs have also been shown to be positively associated with coping among community-residing older adults (Marty, Segal, & Coolidge, 2010; Range & Stringer, 1996). Marty and colleagues (2010) reported significant associations between problem-focused and emotion-focused coping with RFL and MIL; in contrast, dysfunctional coping was not associated with RFL or MIL, but it was associated with suicide ideation. Significant associations have also been reported between RFL and personality factors, including positive associations with extraversion and conscientiousness and

traits of histrionic personality disorder, and negative associations with paranoid, schizoid, schizotypal, and depressive personality features (Segal, Marty, Meyer, & Coolidge, 2012; Segal et al., *in press*).

Researchers investigating RFL among older adults have typically utilized Linehan and colleague’s (1983) RFL Inventory, a measure that was not developed or validated exclusively with older adults. This measure contains component subscales assessing Survival and Coping Beliefs, Responsibility to Family, Child-Related Concerns, Fear of Suicide, Fear of Social Disapproval, and Moral Objections to suicide; however, this factor structure has not been investigated among older adults. Edelstein and colleagues (2009) developed the Reasons for Living Scale-Older Adult version (RFL-OA) in keeping with guidelines for psychological assessment and treatment with older adults that recommend use of age-specific assessment tools (American Psychological Association, 2004), and a trend to develop age-specific RFL scales (e.g., Cole, 1989; Gutierrez, Osman, Kopper, & Barrios, 2000, 2002; Osman et al., 1996, 1998; Westefeld, Cardin, & Deaton, 1992) given age differences in perceived RFLs (Koven, Edelstein, & Charlton, 2001; Miller, Segal, & Coolidge, 2001). They used a similar procedure to the one followed by Linehan and colleagues (1983) in developing their RFL Inventory. Specifically, they mailed open-ended surveys to 500 community-residing older adults to generate RFLs. There was also a second mail-out to a new sample of 500 community-residing older adults to assess response characteristics of a revised measure, and psychometric assessment among adults 50 years and older receiving treatment for depression. This approach yielded a set of 69 internally consistent RFLs ($\alpha = .96-.98$), of which 30 overlapped with items on Linehan’s scale. Many of the non-overlapping items shared thematic similarity with that of the original RFL; exceptions concerned items reflecting worry about the impact of suicide on one’s children and an item asserting that life has purpose. Novel items included in the RFL-OA scale addressed themes of concern for one’s spouse, grandchildren, pet, and a number of additional items with religious content. The RFL-OA demonstrated convergent, discriminant, and criterion validity; RFL-OA scores explained unique variance in suicide ideation scores over and above demographic factors and depression severity, and differentiated between participants with or without histories of suicide behavior (Edelstein et al., 2009). Limitations noted included a relative homogeneity across ethnic and religious backgrounds. The higher endorsement of religious items and moral objections to suicide in the RFL-OA scale development sample may suggest greater relevance of these constructs to older adults or regional cohort effects.

Recently, Heisel and Flett (2014) proposed a conceptual framework regarding the onset or exacerbation of later life suicide ideation that went beyond earlier models focusing primarily on the accumulation of cognitive, interpersonal, and/or personality risk factors and life stressors (e.g., Baumeister, 1990; Clark, 1993; Heikkinen, Aro, & Lönnqvist, 1993; Joiner, 2005) by also incorporating

consideration of resiliency factors and processes. Whereas this framework makes passing reference to more distal suicide behavior and death by suicide, it focuses primarily on the etiology of suicide ideation, a variable that is conceptually, clinically, and empirically associated with suicide behavior and death (e.g., Brown et al., 2000; Heisel & Flett, 2006; Waern, Beskow, Runeson, & Skoog, 1999). Divergent schools of thought exist as to whether suicide ideation lies on a continuum with suicide behavior and death by suicide or is conceptually distinct from these outcomes. Although it is not the purpose of this paper to test these theories, a premise of our research is that thoughts of suicide among older adults are significantly associated with severe psychological distress, restrict one's health and well-being, and may ultimately increase risk for suicide. Our conceptual framework was influenced by Frankl's (1985) meaning-centered theory and therapy, and focuses largely on the role of perceptions of MIL in potentially conferring resiliency to suicide ideation. This approach is consistent with Frankl's treatment of the subject and with research demonstrating that MIL is significantly associated positively with indices of psychological well-being and negatively with indices of psychopathology among community and clinical samples of adults and older adults (Heisel & Flett, 2004, 2008). Research findings have shown positive associations between MIL and adaptive psychological factors, including purpose in life (PIL), RFL, subjective well-being, self-transcendence, resiliency, creativity, optimism, self-esteem, perceived social support, and longevity (Braam et al., 2006; Heisel & Flett, 2006, 2008; Hickson & Housley, 1997; Hirsch et al., 2006, 2007; Krause, 2003, 2009; Nygren et al., 2005). We found specifically that older adults who endorse significantly greater MIL report better health, more life satisfaction, psychological well-being, social support, and PIL, and less depression, hopelessness, and suicide ideation (Heisel & Flett, 2006, 2008, 2014). We further demonstrated that perception of MIL protects against suicide ideation above and beyond the impact of depression, and that MIL appears to be most protective at higher levels of depressive symptom severity (Heisel & Flett, 2014).

Research findings have thus far indicated positive associations between RFLs and cognitive-affective, personality, and interpersonal indicators of health and well-being in later life, and similarly indicated positive associations between MIL and positive psychological factors and negative associations between MIL and negative factors. Taken in tandem, these findings suggest that older adults who struggle with cognitive-affective or interpersonal stressors and yet who nonetheless experience MIL and can articulate RFLs might find strength to overcome these difficulties, be protected against contemplating suicide, and might experience positive psychological growth.

The current study was conducted to test a model in which RFLs potentially protect against suicide ideation controlling for demographic factors and psychological risk indices. We have previously tested our framework, focusing largely on the role of MIL in potentially conferring resiliency to suicide ideation (Heisel & Flett, 2014).

Consistent with our framework, and with earlier findings (Edelstein et al., 2009), it was hypothesized that the RFL-OA would explain unique variance in suicide ideation, controlling for negative cognitive-affective and interpersonal factors (depressive symptom severity and loneliness). We additionally sought to investigate the potential overlap in MIL and RFL constructs and to assess whether MIL enhances prediction of suicide ideation beyond RFL, and whether MIL mediates the association between RFL and suicide ideation. Given a paucity of research using the RFL-OA and an absence of published data on the psychometric properties of this scale with community-residing older adults, we also investigated the psychometric properties of the RFL-OA, assessing the internal consistency of the RFL-OA and its respective convergent (MIL, perceived social support, and life satisfaction), divergent (loneliness, depressive symptom severity, and suicide ideation), and discriminant validity (cognitive and physical functioning).

Methods

Procedures

We recruited 173 community-residing older adults from seniors' exercise and wellness programs, recreation or health fairs, retirement groups, places of worship, public malls, coffee shops, and through local newspaper advertisements and flyers for a 'healthy aging study' in Ontario, Canada (see Heisel & Flett, 2014). Eligible participants were 65 years or older and capable of speaking and understanding English and providing written informed consent. Cognitive functioning was screened with the Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) at baseline; those scoring ≥ 21 out of 30 were deemed sufficiently cognitively intact to meaningfully complete study measures. Individuals were excluded from study participation if they did not meet these inclusion criteria, appeared sufficiently cognitively impaired despite producing an acceptable MMSE score to invalidate their participation, or appeared intoxicated, psychotic, or delusional to study personnel. Participants were referred for care if deemed necessary by the principal investigator (PI) (M.J. Heisel), a clinical psychologist, and all were provided with information listing potential sources of assistance. A risk protocol was in place in the event of suspected suicide risk, including initial evaluation by the PI, and referral to emergency mental health services in the event of imminent suicide risk. No participant required referral to the emergency department; however, a few participants were referred to mental health services, primarily due to mood, anxiety, memory, or interpersonal difficulties.

Participants met with the researchers in an office setting in an academic health sciences center for a baseline assessment. Allowances were made for vision or comprehension problems by verbally administering all study measures to participants, ensuring a standardized presentation of assessment measures. Participants were invited to return for a second interview at two to four weeks post-baseline (Time 2; $N = 146$) to assess the test-retest reliability of study measures, and for two additional follow-

up assessments, planned to take place at approximately 6–12 months (Time 3; $N = 126$) and 1–2 years post-baseline (Time 4; $N = 112$), investigating recent and more remote risk and resiliency factors associated with suicide ideation and intervening stressors. The RFL-OA was administered at the Time 4 assessment; hence, the present study focuses on this assessment point. Participants were reimbursed for their time and travel consistent with a research protocol approved by The University of Western Ontario Health Sciences Research Ethics Board.

Sample

Of the 173 individuals who participated in this study's baseline assessment, 112 participated in the Time 4 assessment, and 109 (97%) completed all of the measures investigated in the present study (see Table 1). This sample included 80 women and 29 men and had an average age of 74.8 years ($SD = 5.9$; range: 66–95). The baseline demographic assessment indicated that the majority was retired (80.6%) and reported an average of 15.5 years of formal education ($SD = 3.4$; range: 8–24). Nearly half reported being married and living with a spouse ($n = 52$; 48%), and 49% living alone. Nearly half ($n = 50$; 47%)

Table 1. Descriptive characteristics of study participants ($N = 109$).

Variable	<i>M</i>	<i>SD</i>	Range	<i>N</i>
Age	74.8	5.9	66–95	109
Number of children	3.0	1.4	0–7	103
Number of grandchildren	5.9	4.3	1–25	91
MMSE-2	28.3	1.6	22–30	109
IADL	0.3	1.5	0–13	109
PSMS	0.2	0.6	0–3	109

Variable	<i>N</i>	%
Sex		
Men	29	27
Women	80	73
Birthplace ^a		
North America	69	63
United Kingdom	23	21
Europe	13	12
Marital status		
Married, living with spouse	52	48
Widowed	31	28
Separated or divorced	21	19
Education		
Grade school	4	4
Some high school	20	19
College or trade school	27	25
University	38	35
Graduate school	19	18

Note: MMSE-2 = Mini-Mental State Examination 2nd Edition; IADL = Instrumental Activities of Daily Living Scale; PSMS = Physical Self-Maintenance Scale. Information regarding participant place of birth, marital status, progeny, and educational background were all collected at this study's baseline assessment.

^aFor the sake of confidentiality, only categories containing more than five participants have been presented in this table.

reported considering themselves to be 'a religious person' and 78% ($n = 84$) to be 'a spiritual person.'

We investigated possible correlates of participant attrition from baseline through Time 4 assessments, given concern about the potential for systematic bias associated with discontinuing participation in this study (see Table 2). Specifically, we assessed whether attrition was associated with participant sex, age, marital status, number of children, number of grandchildren, place of birth, education level, and baseline cognitive (MMSE) or physical functioning (IADL and PSMS). Age was the only factor significantly associated with study attrition; individuals who remained in the study until its conclusion were approximately two years younger ($M = 73.06$, $SD = 5.75$; $t_{(171)} = 2.32$), on average, than those who discontinued study participation ($M = 75.27$, $SD = 6.48$; $t_{(171)} = 2.32$; $p < 0.05$).

Measures

Reasons for living were assessed with the RFL-OA, a 69-item Likert-scored measure designed for use with older adults (Edelstein et al., 2009). The RFL-OA was developed incorporating items drawn from Linehan and colleagues' (1983) RFL Inventory. Respondents are instructed to indicate, on a response scale ranging from 1 = extremely unimportant to 6 = extremely important, the degree of importance of each RFL listed for NOT engaging in self-injurious behavior despite contemplating suicide. Scores consist of summed totals of these responses, potentially ranging from 69 to 414. The RFL-OA has demonstrated extremely high internal consistency in a mail-out sample to 119 community-residing West Virginians 65 years and older ($\alpha = .96$), and negative association with depression ($r = -.43$, $p < .001$) and both current and worst lifetime episodes of suicide ideation ($r = -.40$ and $r = -.42$, $p < .001$ for both) among 181 mental health care recipients 50 years and older in Upstate New York (Edelstein et al., 2009).

Suicide ideation was assessed with the Geriatric Suicide Ideation Scale (GSIS; Heisel & Flett, 2006), a 31-item, five-point Likert-scored measure of suicide ideation developed with older adults. The GSIS yields summed total scores and subscale scores assessing Suicide Ideation (e.g., 'I want to end my life.'). Death Ideation (e.g., 'I welcome the thought of drifting off to sleep and never waking up.'). Loss of Personal and Social Worth (e.g., 'I generally feel pretty worthless.'). and a reverse-coded subscale assessing Perceived Meaning in Life (e.g., 'I am certain that I have something to live for.'). The GSIS has demonstrated strong internal consistency ($\alpha = .91-.96$ for GSIS Totals) and construct validity, including positive associations with depression, hopelessness, impulsivity, and suicide ideation, negative associations with MIL, PIL, psychological well-being, and life satisfaction among clinical samples and community-residing older adults (Heisel & Flett, 2008, 2014; Neufeld & O'Rourke, 2009; Segal, Marty, Meyer, & Coolidge, 2012), and sensitivity to clinical change in a focused trial of interpersonal psychotherapy (IPT) for suicidal older

Table 2. Attrition analyses comparing study participants who did ($N = 109$) or did not ($N = 64$) complete the Time 4 assessments.

Variable	Participants		Attritees		
	M (SD)	N	M (SD)	N	t (df)
Age at baseline	73.06 (5.75)	109	75.27 (6.48)	64	2.32* ₍₁₇₁₎
Number of children	2.96 (1.43)	103	2.88 (1.19)	58	-0.37 ₍₁₅₉₎
Number of grandchildren	5.86 (4.26)	91	4.67 (3.03)	55	-1.80 [†] ₍₁₄₄₎
MMSE at baseline	28.96 (1.34)	109	28.83 (1.40)	63	-0.64 ₍₁₇₀₎
IADL at baseline	0.69 (2.13)	107	0.80 (1.90)	61	0.34 ₍₁₆₆₎
PSMS at baseline	0.15 (0.60)	107	0.18 (0.53)	61	0.34 ₍₁₆₆₎
Variable	N	%	N	%	χ^2 (df)
Sex					1.17 ₍₁₎
Men	29	26.6	22	34.4	
Women	80	73.4	42	65.6	
Birthplace					1.47 ₍₂₎
North America	69	65.7	43	72.9	
United Kingdom	23	21.9	12	20.3	
Europe	13	12.4	4	6.8	
Marital status					0.20 ₍₂₎
Married, living with spouse	52	50.0	25	46.3	
Widowed	31	29.8	17	31.5	
Separated or divorced	21	20.2	12	22.2	
Education					2.23 ₍₄₎
Grade school	4	3.7	1	1.6	
Some high school	20	18.5	13	20.3	
College or trade school	27	25.0	13	20.3	
University	38	35.2	21	32.8	
Graduate school	19	17.6	16	25.0	

Note: MMSE = Mini-Mental State Examination; IADL = Instrumental Activities of Daily Living Scale; PSMS = Physical Self-Maintenance Scale. Information regarding participant place of birth, marital status, progeny, and educational background were all collected at this study's baseline assessment.

* $p \leq .05$; [†] $p \leq .10$.

adults (Heisel et al., 2009, 2015). Internal consistency for the GSIS overall at this study's Time 4 assessment was strong ($\alpha = .92$).

Depression symptom severity was assessed with the Revised Center for Epidemiologic Studies Depression Scale (CESD-R; Eaton, Muntaner, Smith, Tien & Ybarra, 2004), a 20-item self-report measure of presence and severity of depressive symptoms over the past two weeks. The CESD-R was developed based on Radloff's (1977) original CES-D, and updated to reflect current conceptualizations of mood disorders consistent with the DSM. The CESD-R has displayed strong psychometric properties with diverse samples (Eaton et al., 2004), including sensitivity to clinical change and high internal consistency ($\alpha = .90$; Heisel et al., 2015). CESD-R scores had strong internal consistency in the present study's Time 4 assessment ($\alpha = .88$).

Loneliness was assessed with the 10-item version of the UCLA Loneliness Scale (Russell, 1996; Russell, Peplau, & Ferguson, 1978), a measure designed to assess subjective feelings of loneliness. Responses are provided along a four-point Likert-type scale ranging from 1 = never to 4 = often, with total scores potentially ranging from 10 to 40. Cronbach's alpha coefficients range from .89 to .94 suggesting strong internal consistency with adult and older adult community samples (Knight, Chisholm, Marsh, & Godfrey, 1988; Russell, 1996). This scale

demonstrated strong internal consistency in the present study's Time 4 assessment ($\alpha = .89$).

Perceptions of social support were assessed with the 12-item Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988), a self-report measure assessing perceived adequacy of support from family, friends, and significant others (Canty-Mitchell & Zimet, 2000; Zimet, Powell, Farley, Wekman, & Berkoff, 1990). The MSPSS uses a seven-point Likert-type scale, with response options ranging from 1 = very strongly disagree to 7 = very strongly agree. Total scores potentially range from 12 to 84. Cronbach's alpha coefficients for total and subscale scores range from .85 to .91 (Zimet et al., 1990). The MSPSS demonstrated strong internal consistency in the present study at Time 4 ($\alpha = .90$).

Life satisfaction was assessed with the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), a well-known five-item Likert-scored measure with strong internal consistency ($\alpha = .79-.89$) and construct validity, including negative associations with late-life suicide ideation (Heisel & Flett, 2006; Pavot & Diener, 1993, 2008). The SWLS has been used extensively with adolescents, adults, and older adults in clinical and health settings, and in cross-cultural studies. SWLS scores range from 5 to 35. Internal consistency for the SWLS in the present study at Time 4 was $\alpha = .79$.

Meaning in life was assessed with the Experienced Meaning in Life Scale (EMIL; Heisel, 2009). The EMIL is composed of 40 items with total scores potentially ranging from 40 to 200. Items are scored on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The EMIL contains four 10-item subscales designed to assess constructs of Creative (e.g., 'I enjoy participating in recreational activities.'). Experiential (e.g., 'The beauty of nature is uplifting to me.'). Attitudinal (e.g., 'I try to find meaning in life even when I am suffering or in pain.'). and Ultimate meaning (e.g., 'My spirituality helps me feel connected with something greater than myself.'). consistent with Frankl's (1988) theory. All items are scored in a positive direction with higher scores reflecting greater perceived meaning in life. EMIL scores demonstrated strong internal consistency in the present study's Time 4 assessment ($\alpha = .95$).

Physical functioning was assessed with the eight-item Instrumental Activities of Daily Living scale (IADL) and the six-item Physical Self-Maintenance Scale (PSMS; Lawton, 1988; Lawton & Brody, 1969), brief interviewer-rated measures of competence in basic (e.g., toileting, feeding, dressing, and bathing; PSMS) and instrumental daily activities (e.g., using the telephone, shopping, preparing food, and housekeeping; IADL). Higher scores on these measures reflect greater functional impairment.

Cognitive functioning was assessed with the Mini-Mental State Examination 2nd Edition (MMSE-2; Folstein, Folstein, White, & Messer, 2010). Although we had used the original MMSE (Folstein et al., 1975), a popular cognitive screening measure for use with older adults, to screen for cognitive functioning at baseline, we incorporated the newer version of this scale for the current

assessment. The MMSE-2 comprises a revised and updated version of the MMSE, and assesses mental status by testing five areas of cognitive functioning. It was revised to remain equivalent to the original MMSE (Folstein et al., 1975) and updated with new language and to improve its sensitivity to subcortical dementia and to lessen the ceiling effect of the initial measure. The MMSE-2 retains a potential range of scores from 0 to 30.

Results

Descriptive statistics for the present study's sample are presented in Table 1 and attrition analyses in Table 2. Psychometric analyses are presented next, followed by tests of a theoretical model of suicide ideation incorporating the positive psychological factors. Between-group comparisons of RFL-OA scores by sex, age, and level of formal education appear in Table 3. Zero-order correlation coefficients for measures of RFL, MIL, and other positive and negative psychological factors appear in Table 4, along with indices of central tendency. Findings of multiple regression analyses are presented next (Table 5) predicting suicide ideation with RFL and MIL, adjusting for demographic (age and sex) and negative psychological factors (depressive symptom severity and loneliness). Analyses were computed using SPSS software, versions 22.0 and 23.0, with alpha levels set at $p < .05$, two-tailed.

The sample largely comprised reasonably healthy and well-adjusted community-residing older adults (see Table 1). Descriptive statistics indicated that participants scored at moderate to high levels of cognitive and physical functioning on measures of basic and instrumental activities of daily living, and at relatively low levels of

Table 3. RFL-OA means, standard deviations, and range by sex, age group, and education level ($N = 109$).

Variable	<i>M</i>	SD	<i>N</i>	Range	<i>F</i> (dfbg, dfwg)
Sex					9.64(1, 107)**
Men	291.4	44.6	29	192–377	
Women	318.2	37.9	80	325–403	
Age					0.81(2, 106)
Young-old (65–74)	313.3	41.4	64	192–403	
Old-old (75–84)	309.5	41.8	41	203–377	
Oldest-old (85+)	283.0	33.7	3	254–320	
Education					0.65(4, 103)
Grade school	326.0	37.4	4	284–367	
Some high school	315.0	36.7	20	254–403	
College or trade school	316.5	42.0	27	235–400	
University	307.7	38.5	38	240–375	
Graduate school	300.6	51.5	19	192–377	
Are you a religious person?					18.87(1, 105)**
Yes	328.0	37.7	50	248–403	
No	295.6	39.3	57	192–360	
Are you a spiritual person?					6.56(1, 106)*
Yes	316.2	37.9	84	203–403	
No	292.3	48.6	24	192–400	

Note: dfbg = degrees of freedom, between-groups; dfwg = degrees of freedom, within-groups.

* $p \leq .05$; ** $p \leq .01$.

Table 4. Descriptive statistics and zero-order correlations among the RFL-OA and both negative and positive psychological factors ($N = 109$).

Variable	1	2	3	4	5	6	7
1. RFL-OA	1.00	-.41***	-.25**	-.36***	.59***	.35***	.43***
2. GSIS ^b		1.00	.42***	.50***	-.57***	-.50***	-.49***
3. CESD-R			1.00	.27**	-.27**	-.17†	-.45***
4. UCLA				1.00	-.40***	-.57***	-.43***
5. EMIL					1.00	.35***	.34***
6. MSPSS						1.00	.52***
7. SWLS							1.00
<i>M</i>	311.06	41.50	3.80	16.98	172.54	71.17	28.35
<i>SD</i>	41.34	9.99	6.21	5.52	16.83	8.54	4.01
Range	192–403	30–79	0–48	10–33	132–200	44–84	10–35

Note: RFL-OA = Reasons for Living Scale-Older Adult version; GSIS = Geriatric Suicide Ideation Scale; CESD-R = Revised Center for Epidemiologic Studies-Depression Scale; UCLA = UCLA Loneliness Scale; EMIL = Experienced Meaning in Life Scale; MSPSS = Multidimensional Scale of Perceived Social Support; SWLS = Satisfaction with Life Scale.

** $p \leq .01$; *** $p \leq .001$; † $p \leq .10$.

^bThe GSIS Meaning in Life item (#9, 'I feel that my life is meaningful') was removed from the total score in the correlation with the EMIL, as this item is common to both measures.

suicide ideation, depressive symptom severity, and loneliness. However, a small number of participants scored at levels approximating clinical severity on measures of cognitive functioning ($MMSE-2 \leq 23$; $n = 2$; Folstein et al.,

2010), depressive symptom severity ($CESD-R \geq 17$; $n = 5$; Eaton et al., 2004), and suicide ideation ($GSIS \geq 65$; $n = 4$; Heisel & Flett, 2006).

Table 5. Multiple regression analysis predicting suicide ideation (GSIS^b) with reasons for living (RFL-OA), controlling for age, sex, depressive symptom severity, loneliness, and meaning in life ($N = 109$).

Step	Variable	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
1	Constant	15.46	12.47	—	1.24	.218
	Age	.40	.16	.23	2.48	.015
	Sex	-2.10	2.12	-.09	-.99	.324
2	Constant	7.15	10.63	—	.67	.503
	Age	.29	.14	.17	2.12	.036
	Sex	-.67	1.78	-.03	-.38	.707
	CESD-R	.47	.13	.29	3.52	.001
3	Constant	24.02	12.34	—	1.95	.054
	Age	.28	.13	.16	2.13	.036
	Sex	.56	1.80	.03	.31	.759
	CESD-R	.42	.13	.26	3.21	.002
	UCLA	.61	.15	.34	4.02	.0001
4	Constant	56.14	13.86	—	4.05	.0001
	Age	.21	.12	.12	1.69	.095
	Sex	1.58	1.69	.07	.93	.353
	CESD-R	.38	.12	.23	3.09	.003
	UCLA	.47	.15	.26	3.25	.002
	RFL-OA	-.01	.02	-.04	-.42	.678
EMIL	-.23	.06	-.39	-4.13	.0001	

Note: $N = 109$. $R^2 = .06$, $F_{(2,106)} = 3.50$, $p = .034$ for Step 1; $R^2 = .36$, $\Delta R^2 = .30$, $\Delta F_{(2,104)} = 24.53$, $p = .0001$ for Step 2; $R^2 = .40$, $\Delta R^2 = .04$, $\Delta F_{(1,103)} = 6.34$, $p = .013$ for Step 3; $R^2 = .49$, $\Delta R^2 = .09$, $\Delta F_{(1,102)} = 17.07$, $p = .000$ for Step 4. GSIS = Geriatric Suicide Ideation Scale; RFL-OA = Reasons for Living Scale-Older Adult version; CESD-R = Revised Center for Epidemiologic Studies-Depression Scale; UCLA = UCLA Loneliness Scale; EMIL = Experienced Meaning in Life Scale.

^bThe GSIS Meaning in Life item (#9, 'I feel that my life is meaningful') was removed from the total score in this analysis, as it is common to both the GSIS and EMIL measures.

Descriptive findings

As is common with measures of MIL and associated positive psychological variables (Heintzelman & King, 2014), the present study's community-residing participants scored towards the high end on the RFL-OA, as reflected in the 25th (276), median (316), and 75th percentile scores (341), despite producing a wide range of scores (192–403), and a reasonable approximation of normality (skewness = -.33, $SE = .23$; kurtosis = -.17, $SE = .46$). The present sample's mean RFL-OA score ($M = 311.06$, $SD = 41.3$, $N = 109$) was significantly higher than that reported for Edelman and colleagues' (2009) original validation sample ($M = 265.3$, $SD = 74.5$, $N = 181$; $t = 6.72$, $p < .0001$). This is not surprising, given differences between study samples, as the present sample comprised community-residing adults 65 years and older and the validation study reported on mental health clients 50 years and older.

RFL-OA scores were next compared by sex, age categories, and levels of formal education (see Table 3). Older women scored significantly higher on the RFL-OA ($M = 318.2$, $SD = 37.9$) than did older men ($M = 291.4$, $SD = 44.6$; $F_{(1,107)} = 9.64$, $p < .01$). No significant between-group differences in RFL-OA scores emerged across age groups or levels of formal education. Zero-order correlations with RFL-OA scores, treating age ($r = -.11$, $p = .28$) and number of years of formal education ($r = -.18$, $p = .06$) as continuous variables, generally supported these null findings. Given the inclusion in the RFL-OA of a number of items assessing religious RFLs, we compared RFL-OA totals for participants based on their self-endorsement of being 'a religious person' or 'a spiritual person.' Participants who reported being religious ($M = 328.0$, $SD = 37.7$) or spiritual ($M = 316.2$, $SD = 37.9$)

scored significantly higher on the RFL-OA than those who did not (religious: $M = 295.6$, $SD = 39.3$; $F_{(1,105)} = 18.87$, $p < .0001$; spiritual: $M = 292.3$, $SD = 48.6$; $F_{(1,106)} = 6.56$, $p < .05$).

Reliability

We next investigated the internal consistency of RFL-OA scores for the total sample and by sex. The RFL-OA demonstrated strong internal consistency overall ($\alpha = .94$), and for both men ($\alpha = .95$) and women ($\alpha = .93$). Corrected item–total correlations (not shown; available upon request) were high for the full sample, exceeding $r = .40$ for 45 (65%) of the RFL-OA items. The few items with item–total correlations less than $r = .20$ reflected content not relevant to all participants (e.g., regarding one's spouse or pet).

Validity

Zero-order correlation coefficients supported hypothesized associations between the RFL-OA and all study measures in the hypothesized direction (see Table 4). The positive psychological factors were significantly inter-correlated, as were the negative psychological factors, and the positive and negative factors inversely correlated, as anticipated. RFL-OA scores were negatively associated with measures of loneliness (UCLA: $r = -.36$, $p < .001$), depressive symptom severity (CESD-R: $r = -.25$, $p < .01$), and suicide ideation (GSIS: $r = -.41$, $p < .001$) attesting to the scale's divergent validity. Positive associations between RFL-OA scores and measures of MIL (EMIL: $r = .59$, $p < .001$), perceived social support (MSPSS: $r = .35$, $p < .001$), and life satisfaction (SWLS: $r = .43$, $p < .001$) attested to the scale's convergent validity. RFL-OA scores were not significantly associated with measures of cognitive functioning (MMSE-2, $r = -.04$, $p = .65$) or impairment in either basic (PSMS: $r = -.07$, $p < .47$) or instrumental activities of daily living (IADL: $r = -.06$, $p < .53$), attesting to the scale's discriminant validity. None of the associations exceeded $r = .70$, a threshold indicating problematic levels of multicollinearity (Tabachnick & Fidell, 2001).

We next conducted a multiple regression analysis testing our proposed model of suicide ideation incorporating consideration of negative and positive psychological factors. We conducted a regression analysis predicting suicide ideation with MIL and RFL, controlling for age, sex, depressive symptom severity, and loneliness, in order to investigate the unique contribution of these positive variables to the prediction of suicide ideation, above and beyond negative psychological factors articulated in Shneidman's (1996) and Joiner's (2005) theories (see Table 5). Demographic variables were entered as covariates on Step 1. Depressive symptom severity and loneliness were entered on a second step, and together accounted for significant added variance in suicide ideation ($R^2 = .36$, $\Delta R^2 = .30$, $\Delta F_{(2,104)} = 24.53$, $p = .0001$). RFL-OA scores were entered on the third step of the model, and explained significant additional variance in

suicide ideation, above and beyond these demographic variables and negative psychological factors strongly implicated in suicide risk ($R^2 = .40$, $\Delta R^2 = .04$, $\Delta F_{(1,103)} = 6.34$, $p = .013$). We next entered MIL scores on a fourth and final step, in order to assess whether perceptions of MIL might further protect against suicide ideation above and beyond the impact of RFL ratings. EMIL scores explained significant added variance in suicide ideation controlling for demographic factors, depression, loneliness, and RFLs ($R^2 = .49$, $\Delta R^2 = .09$, $\Delta F_{(1,102)} = 17.07$, $p = .0001$). RFLs no longer explained significant variance in suicide ideation once MIL was included in the model ($t = -.42$, $p = .678$), suggesting that perception of MIL may be a more potent protective factor against contemplations of suicide. A similar interpretation appears to follow from the finding that suicide ideation was significantly more strongly associated with MIL than with RFL ($r = -.57$ as compared with $r = -.41$, $Z = 2.18$, $p < .05$; Lee & Preacher, 2013).

The finding that EMIL scores were significantly associated with GSIS totals, controlling for RFL-OA scores, suggests that MIL might mediate the association between RFL and suicide ideation. We thus tested this hypothesis, employing Baron and Kenny's (1986) approach to mediation, and conducted a set of regression analyses (not shown; available upon request), first predicting the mediator (EMIL) with the independent variable (RFL-OA) and then predicting the outcome variable (GSIS) with both RFL-OA and EMIL, followed by a Sobel test of mediation (<http://quantpsy.org/sobel/sobel.htm>). This analysis was significant ($Z = -4.32$, $p < .0001$), supporting MIL as a mediator of the association between RFL and suicide ideation. We next conducted a second mediation analysis, reversing the proposed mediator and independent variables, to assess whether RFL might mediate the association between MIL and suicide ideation. It did not ($Z = -.99$, $p = .32$), providing further support for the initial mediation hypothesis.

Discussion

In the current article, we investigated whether endorsing RFL and/or perceiving MIL would protect community-residing older adults from contemplating suicide, controlling for relevant demographic (age and sex) and clinical risk factors (depressive symptom severity and loneliness). The present study's findings indicated that RFL and MIL were each significantly negatively associated with suicide ideation, controlling for demographic and negative psychological factors. Our findings further indicated that MIL significantly mediated the association between RFL and suicide ideation, suggesting a key contributory role of meaning recognition in promoting recognition of reasons to live and decreasing the likelihood of contemplating suicide in later life.

RFLs were significantly negatively associated with suicide ideation in the present study, supporting a call to incorporate a positive psychological perspective when working with suicidal older adults (Heisel & Flett, 2006). These findings go beyond those of Edelstein and

colleagues' (2009) initial analyses in incorporating use of an older adult measure of suicide ideation, investigating additional positive psychological variables, and outlining a process by which RFL may protect against contemplations of suicide. As hypothesized, RFL-OA scores explained unique variance in suicide ideation over and above demographic variables and measures of depressive symptom severity and loneliness, suggesting that key positive psychological factors confer unique protection against despair, rather than merely serving as the polar opposite of psychological risk factors. Inclusion of MIL explained further unique variance in suicide ideation, suggesting that this existential variable may have a robust protective role against later life suicide ideation, supporting previous findings with mixed, clinical, and community-residing older adults (Heisel & Flett, 2008, 2014).

Measures of RFL and MIL were strongly inter-correlated, further suggesting value in assessing RFLs when seeking to identify sources of meaning in the lives of older adults. Although MIL and RFL are theoretically related constructs, they are conceptually distinct. RFLs might be conceptualized as comprising specific examples of MIL *when contemplating suicide*, whereas MIL scales typically assess sources of meaning that have been discovered or are currently experienced in one's life. As such, RFL may be seen as having more of an 'as if' quality, whereas MIL may be seen as reflecting current, lived experience. Hence, for individuals who have rarely, if ever, contemplated suicide, responding to an RFL scale may be seen as a more theoretical exercise, whereas responding to an MIL scale may be more reflective of actual experience. The stronger association between suicide ideation and MIL in the present study may be seen as supporting this hypothesis.

The findings of the current study's mediation analyses suggest a theoretical process by which RFL protects against suicide risk. MIL significantly mediated the association between RFL and suicide ideation, suggesting that RFLs may promote a wish to continue living and protect against contemplations of suicide by fostering a deeper recognition of potential and actual sources of life's meaning. The present findings are specific to suicide ideation, rather than suicide behavior or death by suicide; however, research and clinical experience support associations between suicide thoughts and actions (e.g., Waern et al., 1999). Given the extreme lethality of suicide behavior in later life, conceptual models are needed that elucidate psychological processes more distally associated with either promoting or preventing trajectories toward suicide (Heisel & Duberstein, 2005).

Given the relative paucity of research utilizing the RFL-OA measure, we additionally sought to investigate this measure's psychometric properties among community-residing older adults. The psychometric findings indicated strong reliability and validity for the RFL-OA, suggesting its utility in research and practice in later life. These findings demonstrated extremely strong internal consistency for the RFL-OA, consistent with findings from the scale development study's community and clinical samples of older Americans (Edelstein et al., 2009).

An internal consistency statistic of the high magnitude obtained in the present study reflects both a high degree of reliability of an instrument and suggests that it might be shortened without appreciable loss of reliability. We have previously reported on findings involving brief internally consistent subsets of RFL-OA items reflecting themes of future orientation (Hirsch et al., 2006, 2007), family connectedness (Purcell et al., 2012), and religiosity (Tavasoli, 2011), suggesting value in deriving one or more abbreviated RFL-OA measures for use in screening for suicide risk or for conducting a focused assessment of RFLs in research and clinical practice. A brief RFL-OA scale would be attractive to clinicians in busy health care services who lack sufficient time to administer, score, and interpret a 69-item measure, and could enhance the possibility that assessment of RFLs might be incorporated into routine clinical practice with older adults.

The RFL-OA demonstrated strong construct validity among the present study's sample of community-residing older adults. Convergent validity was suggested by significant positive associations between the RFL-OA and positive psychological factors, including perception of MIL, psychological well-being, social support, and life satisfaction. Divergent validity was suggested by significant negative associations between the RFL-OA and negative factors, including loneliness, depressive symptom severity, and suicide ideation. Discriminant validity was suggested by a lack of significant association between RFL-OA scores and measures of both cognitive and physical functioning. Although not the intent of this study, the finding that the current sample scored significantly higher on the RFL-OA than did mental health patients in the scale validation study (Edelstein et al., 2009) is suggestive of criterion validity in effectively differentiating community from clinical samples of older adults. Cross-sectional research is now needed comparing RFL ratings between older adults across levels of clinical symptom severity.

Research findings with Linehan and colleagues' (1983) RFL Inventory indicate that older adults score higher than younger adults on RFL subscales assessing moral objections and child-related concerns (Miller, Segal, & Coolidge, 2001). We did not find evidence of an overall age difference in RFL-OA totals in the present study; however, we only included participants 65 years of age or older, restricting the potential range of participant ages. We were also unable to compare potential age differences across specific RFL subscales, as these have not yet been developed for the RFL-OA measure. Research findings are somewhat inconsistent regarding the presence of potential sex differences in RFL scores (Range & Stringer, 1996; Segal & Needham, 2007). In the present study, community-residing women endorsed significantly greater reasons for living than did men, consistent with Range and Stringer's (1996) findings utilizing the original RFL Inventory. The mean score on the measure of suicide ideation was relatively low in this community sample, yet comparable to other studies (Marty, Segal, & Coolidge, 2010; Segal, Marty, Meyer, & Coolidge, 2012).

The findings of the present study can be considered within the context of the growing evidence base for

positive psychological factors in helping to enhance psychological resiliency, promote mental health and well-being, and prevent, buffer, or otherwise mitigate risk for suicide among older adults. The majority of depressed older adults never become actively suicidal, suggesting value in investigating which RFLs may protect against suicide risk and seeking to enhance perceptions of MIL and other psychological resiliency factors that might help promote mental health and well-being when working to prevent suicide among older adults. Our findings are consistent with Heisel and Flett's (2014) conceptual framework for late-life suicide ideation incorporating consideration of risk, resiliency, and precipitating factors and demonstrate added value in evaluating RFLs and MIL when assessing late-life suicide ideation, in addition to indices of intrapersonal and interpersonal sources of distress.

The current findings should be considered within the context of the limitations of this study, including recruitment of a generally healthy older adult sample, potentially restricting the range of scores for the measures of depression and suicide ideation, producing a skewed distribution of depression symptom severity scores, and precluding our ability to compare RFL-OA scores between older adults who had or had not engaged in suicide behavior. The present study sample had a nearly 3:1 ratio of women to men, a majority of whom were of European-American descent, further limiting the potential generalizability of study findings. Our regression analysis used a relatively large number of predictors given the sample of 109 participants; use of a larger sample size would have increased the study's power and potentially enhanced the relative generalizability of its findings. Whereas we relied primarily upon self-report measures, it is difficult to conceive of methods for objectively rating subjective constructs like RFLs, loneliness, and perceptions of social support. Although this measure performed extremely well in the present study, items inquiring into RFLs not common to all older adults, such as presence of a spouse, grandchildren, and pets, yielded low to moderate item-total correlations, restricting somewhat the internal consistency of this scale. This was unexpected, given that these are the very items that were introduced into this novel RFL-OA scale for use with older adults. However, inclusion of a 'not applicable' option, or clear instructions to the respondent on how to respond to personally irrelevant items, might overcome this difficulty and further enhance this otherwise strong measure. A limitation noted in Edelstein and colleague's (2009) scale development article was a lack of conceptually or empirically derived RFL-OA subscales, similar to those incorporated into Linehan and colleagues' (1983) initial RFL measure. Derivation of RFL-OA subscales would likely further enhance the clinical and research utility of this measure. Research is additionally needed to evaluate the test-retest reliability of the RFL-OA and its sensitivity to clinical change, statistics relevant to its potential utility as a clinical outcome measure.

Overall, the current findings support the contention that MIL is a key existential factor that is protective against suicide risk among older adults (Heisel & Flett,

2008, 2014). That MIL significantly explained added variance in suicide ideation, controlling for RFL, and significantly mediated the association between RFL and suicide ideation is further suggestive of the potentially robust effect of this variable in promoting life and preventing thoughts of suicide. In addition to RFL and MIL, research supports perceptions of PIL (Heisel & Flett, 2004), and positive interpersonal relationships (Neufeld, Hirdes, Perlman, & Rabinowitz, 2015; Purcell et al., 2012; Rowe, Conwell, Schulberg, & Bruce, 2006) in potentially conferring resiliency to suicide ideation and behavior. Researchers are thus encouraged to build on these positive findings by incorporating assessment of RFL, MIL, and other positive psychological factors into longitudinal and/or interventional research investigating the onset and prevention of psychopathology and suicide risk among older adults (e.g., Heisel et al., *in press*).

Clinicians and health care administrators are similarly encouraged to incorporate consideration of RFL, MIL, and other positive factors into routine assessment and intervention practices with older adults. Intervention studies have shown that enhancing MIL and other positive psychological factors can help improve mental health and well-being and decrease or resolve suicide ideation and the wish to die among older adults (e.g., Breitbart et al., 2010; Heisel et al., 2015; Lapierre, Dubé, Bouffard, & Alain, 2007). We may ultimately promote mental health and wellness across the life course by expanding the focus of our current health care services and approaches beyond exclusive consideration of risk and pathology to incorporate contemplation of health and well-being.

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