Article

Suicide Risk Factors Among Older Adults: Exploring Thwarted Belongingness and Perceived Burdensomeness in Relation to Personality and Self-Esteem

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Abstract
The objective of this study was to explore the role of personality and self-esteem in later life within two established risk factors for suicidal ideation (SI)—Thwarted Belongingness (TB) and Perceived Burdensomeness (PB). The data about personality (i.e., Five Factor Model [FFM] and *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* Personality Disorders [PD]), self-esteem, TB, PB, and SI were collected from 102 community-dwelling older adults and analyzed using bivariate and multivariate techniques. All FFM domains and most PD traits were significantly correlated with SI, TB, and PB. Furthermore, FFM and PD traits explained a significant and meaningful amount of variance of SI, TB, and PB. Self-esteem demonstrated strong negative relationships with SI, TB, and PB. Personality features and

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self-esteem are important associated features for SI, TB, and PB. Clinicians should consider this information when assessing and evaluating for suicidal risk among older adults. The findings also highlight the need to consider personality traits in developing prevention strategies.

Keywords

Older adults have higher rates of suicide compared with younger adults in most regions, worldwide (World Health Organization, 2014). Moreover, by 2030, the proportion of individuals 65 years and older is expected to exceed 20% in the United States (US Census Bureau, 2014). An analysis of suicide rates by cohort over the past decades in the United States revealed that Baby Boomers (born between 1946 and 1964) have had consistently higher rates of suicide compared with preceding cohorts (Phillips, Robin, Nugent, & Idler, 2010). Consequently, it is believed that suicide rates for older adults will continue to grow as Baby Boomers reach older age. Thus, suicide among older adults should be considered an important public health problem.

With the ability to inform our understanding of the development of suicidal ideation (SI) and the transition from SI to actual suicide attempts, the interpersonal psychological theory of suicide (IPTS; Joiner, 2005; Van Orden et al., 2010) has significant theoretical and clinical implications. The IPTS suggests that when individuals experience feelings of extreme social disconnection or isolation (*thwarted belongingness* [TB]) and perceive themselves as being a burden to others (*perceived burdensomeness* [PB]), their desire for death is greater. It also proposes that individuals are more likely to die by suicide if they have acquired the capability (*acquired capability*) to overcome the fear of suicidal behaviors—which are inherently opposite to one's evolutionary drive for survival—and habituate themselves to physical pain (Van Orden et al., 2010). TB results from one's unmet need to belong and comprises two latent variables, *loneliness* (i.e., subjective experience of having too few social connections) and an *absence of reciprocal care* (i.e., lack of caring for others and feeling cared for), whereas PB reflects a sense of *liability* (i.e., my death is worth more to others than my life) and *self-hatred* (Van Orden et al., 2010).

Both TB and PB are dynamic cognitive-affective states; thus, their intensity can vary across time, contexts, and relationships (Van Orden et al., 2010). However, to date, little is known about the developmental changes in TB and

PB across adulthood and later life. Many older adults may become vulnerable to loneliness and lowered belongingness, as they are faced with the death of friends/spouses, reduced mobility, sensory declines, or the need to relocate out of familiar environments due to finances or emerging care needs (Segal, Qualls, & Smyer, 2018). Indeed, social isolation has been consistently identified as a salient risk factor for later-life suicide (Van Orden & Conwell, 2011). At the same time, many older adults may also become more reliant on others to meet their instrumental activities of daily living (e.g., shopping, transportation) and activities of daily living (e.g., dressing, bathing), due to physical or cognitive declines, and thus may become more vulnerable to perceiving themselves as being burdensome to others. Regarding burdensomeness, two studies with older adults found that the relational context of burdensomeness matters. Specifically, older adults' perceptions of being a burden to younger generations, as opposed to the older adults' own generation or older generations, were related to greater SI (Jahn & Cukrowicz, 2011), and perceptions of being a burden specifically to one's spouse were found to be especially harmful (Jahn, Van Orden, & Cukrowicz, 2013). With TB and PB as central constructs, the IPTS lends itself well to the study of suicide risk in older adult populations.

In addition to interpersonal factors, personality factors are also strongly related to suicidal behaviors. Using the Five Factor Model (FFM) of personality (Costa & McCrea, 1992), researchers have consistently demonstrated that high levels of Neuroticism and low levels of Extraversion are associated with high levels of SI (Chioqueta & Stiles, 2005; Cramer et al., 2012; DeShong, Tucker, O'Keefe, Mullins-Sweatt, & Wingate, 2015; Heisel & Flett, 2006; Iliceto, Fino, Sabatello, & Candilera, 2014; Segal, Marty, Meyer, & Coolidge, 2012; Useda, Duberstein, Conner, & Conwell, 2004). Among older adults, Agreeableness and Conscientiousness usually show small or no relationships with SI (Heisel & Flett, 2006; Segal et al., 2012; Useda et al., 2004), but the literature regarding Openness to Experience is much less clear. For example, among depressed inpatients 50 years and older, higher Openness to Experience was associated with higher levels of SI in two studies (e.g., Duberstein et al., 2000; Heisel et al., 2006). In contrast, when considering suicide death (not suicide ideation), Duberstein (1995) found that low Openness to Experience (rated by informants, not participants themselves) was a risk factor for suicide death.

Beyond the normative FFM personality dimensions, personality disorders (PD) and PD traits are important considerations for the mental health of older adults (Segal, Coolidge, & Rosowsky, 2006; Segal et al., 2018). According to Reynolds, Pietrzak, El-Gabalawy, Mackenzie, and Sareen (2015), the lifetime prevalence for a diagnosable PD among older adults in the United States is about 14%. In later life, PDs are of particular concern because many individuals with PD traits have gone through life with poor coping or a limited range of coping skills (Segal et al., 2006), which can result in repeated failures and diminished self-esteem. Older adulthood often presents

individuals with new stressors such as physical and cognitive declines, reduced social networks, and threats to independence (Segal et al., 2006). Without effective and flexible coping strategies, older adults with PD traits are at risk for developing comorbid depression and anxiety and are therefore at greater risk for suicide (Harwood, Hawton, Hope, & Jacoby, 2001; Heisel, Links, Conn, van Reekum, & Flett, 2007; Segal et al., 2006). In fact, there is evidence that over 40% of older adults who died by suicide had a diagnosable PD or significant PD traits (Harwood et al., 2001; Segal et al., 2012) and that PD traits account for over 50% of the variance in SI among older adults (Segal, Gottschling, Marty, Meyer, & Coolidge, 2015).

Although the relationships between suicidality and personality have been explored in several studies, less is known about personality and SI within the constructs of the IPTS. A recent study conducted with a sample of 20 year-olds, 40 year-olds, and 60 year-olds explored predictive factors of TB, PB, and acquired capability using Eysenck's personality domains of Neuroticism, Extraversion, and Psychoticism. Results suggested that TB was positively predicted by Psychoticism, but PB was not significantly predicted by any of the personality dimensions (Christensen, Batterham, Mackinnon, Donker, & Soubelet, 2014). Using FFM personality domains in a sample of college students, DeShong et al. (2015) discovered that Neuroticism was a significant positive predictor of TB, whereas Extraversion and Agreeableness were significant negative predictors of TB. DeShong et al. also found that Neuroticism was a positive predictor of PB, whereas Extraversion was a negative predictor of PB. A similar trend was observed in a sample of older adult suicide attempters; notably, high PB was associated with high Neuroticism and low Extraversion (Vanyukov, Szanto, Hallquist, Moitra, & Dombrovski, 2017). Furthermore, Cramer et al. (2012) found evidence of a positive relationship between PB (as captured by the Depression-Cognitive subscale of the Personality Assessment Inventory) and Neuroticism in a sample of adult criminal offenders.

In a study of PD traits and the IPTS specifically among older adults in primary care, Jahn, Poindexter, and Cukrowicz (2015) found that the total number of PD traits had a significant positive relationship with SI. Moreover, TB, PB, and depressive symptoms were significant mediators for the relationship between total PD traits and SI (Jahn et al., 2015). This study demonstrated an important relationship between personality with TB and PB; however, it did not explore this relationship for specific PD traits. Recognizing that PDs frequently cause prominent impairments in the interpersonal domain, there are likely important associations between interpersonal risk factors for suicide—as outlined in the IPTS—and PD traits among older adults (Segal et al., 2006). Indeed, many older people with PDs experience frayed or completely dissolved relationships with family and friends over time and often find themselves particularly vulnerable to the challenges of later life as they lack the buffering

effects of social support from intimate others. Thus, this relationship merits additional exploration.

There is a paucity of research exploring self-esteem among older adults and how self-esteem relates specifically to suicidality. Considering that Van Orden et al. (2010) recognize self-esteem as an indicator of self-hatred (a construct of PB), the link between self-esteem and SI merits exploration. The existing literature about SI and self-esteem among older adults suggests that self-esteem is associated with a sense of achievement and that the loss of this sense of achievement is associated with reduced personal value and increased suicidality (Kj⊘lseth, Ekeberg, & Steihaug, 2009). There is also evidence that severe SI or suicidal attempts are more often associated with a lack of self-esteem, sense of belonging, and tangible support (Harrison et al., 2010).

Due to gaps in this emerging literature (i.e., minimal research with older adults about self-esteem and SI and about relationships between TB and PB with specific FFM or PD traits), we aimed to explore how specific FFM dimensions and PD traits correlate with—and explain—TB, PB, and SI in older adults while also investigating relationships between self-esteem, TB, PB, and SI. We offered the following hypotheses:

1. FFM personality traits would be significantly related to TB, PB, and SI. Given results from past literature, it was expected that bivariate and multivariate analyses would reveal positive relationships betweenNeuroticism with SI, TB, and PB; negative relationships between Extraversion with SI, TB, and PB; and a negative relationship between Agreeableness and TB.
2. Given that past research has identified PD traits as risk factors for SI, we expected significant bivariate and multivariate relationships between PD traits and SI. Given that the IPTS suggests that the interpersonal factors of TB and PB interact to produce the desire for suicide and that PD features are known to disrupt interpersonal relationships, we expected significant bivariate and multivariate relationships between PD traits with TB and PB. Recognizing that past literature has not explored the relationships between SI, TB, and PB with specific PD traits, we included all 10 Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) PD traits in our analyses.
3. Overall self-esteem would have significant negative bivariate relationships with SI, TB, and PB.

Method

Procedures

The study received institutional review board approval, and all participants provided informed consent. One hundred ten community-dwelling individuals

60 years or older were recruited through the University of Colorado at Colorado Springs research registry. Participants were given the choice of completing the study online, in person, or having the research packet sent in the mail (return postage included). The research packet comprised five questionnaires, in addition to basic demographic information. To compensate individuals for their time, participants were offered the opportunity to enter a raffle for one of two $25 VISA gift cards.

The study's primary exclusion criterion was age (less than 60 years old). Data for two individuals were removed from the analysis because they were under the age of 60, and data from six individuals were also removed because the participants failed to complete at least two thirds of the research packet. Of the 102 cases retained, five cases had some missing values. A Little's Missing Completely at Random test (Little, 1988) confirmed that missing data occurred at random, and expectation maximization was conducted in SPSS v24 to impute the missing values.

Participants

The final sample consisted of 102 older adult participants (M age = 73.26 years, range = 61–93 years, SD = 5.69 years, 72.5% female). The ethnic composition of the sample was White (94.1%, n = 96), mixed White and American Indian (1.9%, n = 2), and Hispanic (1.0%, n = 1). See Table 1 for full demographics.

Measures

The Geriatric Suicide Ideation Scale (GSIS) is a 31-item self-report instrument of SI with a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*; Heisel & Flett, 2006). Examples of items include the following: *I have recently been thinking a great deal about specific ways of killing myself*; *I often wish that I would pass away in my sleep*. The GSIS has four subscales (Suicide Ideation, Death Ideation, Perceived Meaning in Life, and Loss of Personal and Social Worth) and a total score. Higher scores on the GSIS and its subscales represent greater suicidality. This instrument has demonstrated strong reliability and internal consistency among older adults (Heisel & Flett, 2006; Segal et al., 2012). The total sum scores were analyzed for this study as the indicator for SI.

The Interpersonal Needs Questionnaire-15 (INQ) is a popular 15-item self-report measure designed to assess TB and PB as defined by the IPTS (Van Orden, Cukrowicz, Witte, & Joiner, 2012). Respondents reflect upon how true the items have been for them and answer using a 7-point scale ranging from 1 (*not at all true for me*) to 7 (*very true for me*). Examples of items include the following: *These days the people in my life would be better off without me*; *These days I think that I am a burden on society*. Nine items measure TB, and six items measure PB. Higher scores on the scales represent greater levels of TB and PB.

Table 1. Participant Characteristics (N = 102).

	M	SD	Range
Age	73.3	5.7	61–93
Education	16.36	2.5	12–20+
	n	%	
Gender			
Female	74	72.5	
Male	27	26.5	
Unknown	1	1.0	
Racial/Ethnic			
Not Hispanic or Latino	97	95.1	
Hispanic/Latino	5	4.9	
White	96	94.1	
Hispanic	1	1.0	
Multiracial (American Indian)	2	1.9	
Do not wish to answer/Other	3	2.9	
Relationship			
Married	58	56.9	
Widowed	18	17.6	
Divorced	16	15.7	
Single/Never Married	5	4.9	
Domestic partnership	5	4.9	

The INQ has demonstrated strong validity for use with older adults (Marty, Segal, Coolidge, & Klebe, 2012). Sum scores for the TB and PB subscales were analyzed for this study.

The Coolidge Axis II Inventory (Coolidge, 2015) is a dimensional measure of PD traits that has been validated for use in both clinical and nonclinical populations of older adults (Segal et al., 2006, 2012). It is a 250-item self-report measure of the 10 official PDs listed in the *DSM-5*. Respondents answer each item on a 4-point Likert-type scale ranging from *Strongly False*, *More False Than True*, *More True Than False*, to *Strongly True*. The raw scores for PD scales are converted to *T*-scores, which were included in the bivariate and multivariate analyses.

The Big Five Mini Marker (BFMM; Saucier, 1994) is a 40-item self-report inventory measuring FFM domains (Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness). Each item is an adjective (e.g., Bold, Energetic, Quiet, Systematic, Warm) that corresponds to an FFM domain. Respondents are asked to rate how accurately the trait describes them. Responses 1 through 4 represent a range between *Extremely Inaccurate* to *Slightly Inaccurate*, a response of 5 corresponds to "*?*", whereas responses 6 through 9 represent a range between *Slightly Accurate* to *Extremely Accurate*.

Higher scores represent higher accuracy of the trait description. Sum scores for each of the five dimensions were analyzed for this study.

The Rosenberg Self-Esteem Scale Bachman Revision (RSE-BR) is a 10-item self-report questionnaire with a 5-point Likert scale ranging from *Almost Always True* to *Never True* (Bachman, 1970). It has two subscales reflecting *positive self-regard* and *usefulness/competence*. Examples of items include the following: *I am a useful person to have around*; *I feel that I do not have much to be proud of*. Higher scores reflect higher global self-esteem and a higher sense of positive self-regard and usefulness/competence. Total RSE-BR sum scores and subscale scores were analyzed for this study.

Data Analyses

All analyses were conducted using SPSS v24. Means, standard deviations, ranges, and Cronbach's α were calculated for each of the study's main variables (see Table 2). Estimates of internal consistency of the measures were in the good to excellent range for the majority of the measures. A series of bivariate correlations was conducted to explore relationships between specific FFM dimensions and PD traits with SI, TB, and PB. Bivariate correlations were also conducted to explore relationships between self-esteem with SI, TB, and PB. Separate multiple linear regressions were conducted to assess the explanatory power of the two different personality models (i.e., FFM, PD traits) upon SI, TB, and PB.

Results

Hypothesis 1

Results revealed significant correlations between all five FFM dimensions with SI, TB, and PB (see Table 3). The FFM personality dimensions all had their highest correlation coefficients with SI, their second highest with TB, and their lowest with PB. As predicted, SI was positively correlated with Neuroticism and negatively correlated with Extraversion. Significant negative relationships were also found between SI with Agreeableness, Conscientiousness, and Openness to Experience. As predicted, TB was positively correlated with Neuroticism and negatively correlated with both Extraversion and Agreeableness. Significant negative relationships were also found with Conscientiousness and Openness to Experience. As predicted, PB was positively correlated with Neuroticism and negatively correlated with Extraversion. Significant negative relationships were also found with Agreeableness, Openness to Experience, and Conscientiousness.

As hypothesized, linear regression revealed that the FFM domains ($n = 5$) explained a significant amount of variance of SI, $F(5, 95) = 20.00$, $p < .001$,

Table 2. Psychometric Properties of the Major Study Variables.

Variable	M	SD	α	Range Potential	Range Actual
GSIS					
Total GSIS	47.47	17.25	.95	31–155	31–114
Suicide Ideation	12.97	5.29	.90	10–50	10–33
Loss of Worth	11.87	4.99	.83	7–35	7–27
Death Ideation	8.66	3.64	.76	5–25	5–21
Meaning in Life	12.81	5.27	.91	8–40	8–39
INQ					
Total	28.18	16.40	.94	15–105	15–105
Perceived Burdensomeness	8.30	5.63	.92	7–42	6–42
Thwarted Belongingness	19.87	12.04	.95	9–63	9–63
RSE-BR					
Total RSE-BR	42.31	4.90	.84	10–50	19–47
Positive Self-Regard	18.67	2.37	.90	4–20	7–20
Usefulness/Competence	23.65	2.79	.58	6–30	12–27
BFMM					
Extraversion	46.53	12.68	.84	8–72	16–68
Agreeableness	61.91	8.27	.85	8–72	21–72
Conscientiousness	58.62	8.76	.60	8–72	35–72
Neuroticism	25.15	9.52	.75	8–72	8–48
Openness to Experience	54.20	10.29	.85	8–72	21–72
CATI (*T*-scores)					
Antisocial	45.03	6.00	.64	20–80	32.75–71.96
Avoidant	45.15	9.34	.86	20–80	28.24–75.97
Borderline	42.06	6.84	.77	20–80	32.32–69.47
Dependent	42.48	9.09	.85	20–80	28.15–80.11
Histrionic	43.69	8.07	.70	20–80	26.66–67.05
Narcissistic	40.19	7.06	.72	20–80	25.00–60.41
Obsessive-Compulsive	41.85	9.72	.80	20–80	20.79–74.18
Paranoid	40.88	8.79	.80	20–80	25.47–62.57
Schizoid	51.61	10.92	.75	20–80	32.47–80.81
Schizotypal	43.27	9.59	.78	20–80	26.09–68.73

Note. GSIS = Geriatric Suicide Ideation Scale; INQ = Interpersonal Needs Questionnaire; RSE-BR = Rosenberg Self-Esteem Scale Bachman Revision; BFMM = Big Five Mini Markers; CATI = Coolidge Axis II Inventory.

$R^2 = .51$, R^2 adjusted $= .48$. Of the five personality dimensions, only two were statistically significant variables at the independent level. Neuroticism ($\beta = .58$, $p = .002$), 95% CI [0.26, 0.90] positively explained SI, whereas Extraversion ($\beta = -.34$, $p = .0016$), 95% CI [−0.59, −0.09] negatively explained SI. Combined, the FFM domains explained a significant amount of variance of

Table 3. Pearson Correlations Between Major Study Variables With Suicide Ideation, Perceived Burdensomeness, and Thwarted Belongingness.

	GSIS Total	GSIS SI	INQ TB	INQ PB
FFM dimensions				
Extraversion	−.55***	−.47***	−.39***	−.31***
Agreeableness	−.53***	−.46***	−.44***	−.35***
Conscientiousness	−.48***	−.39***	−.34***	−.26***
Neuroticism	*.60***	*.49***	*.39***	*.32***
Openness to Experience	−.46***	−.35****	−.29***	−.30**
CATI Traits				
Antisocial	.14***	.20****	.08***	.06***
Avoidant	.64***	.53***	.58***	.39***
Borderline	.59***	.56***	.41***	.39***
Dependent	.58***	.48***	.43***	.39***
Histrionic	−.09***	−.08***	−.11***	.01***
Narcissistic	.24**	.20*	.36***	.20***
Obsessive-Compulsive	.57***	.47**	.52***	.36***
Paranoid	.60***	.52***	.53***	.32***
Schizoid	.66***	.59***	.57***	.41***
Schizotypal	.65***	.59***	.61***	.39***
Self Esteem				
RSE-BR Total	−.74***	−.70***	−.63***	−.53***
RSE-BR Positive Self-Regard	−.73***	−.72***	−.59***	−.56***
RSE-BR Usefulness/Competence	−.68***	−.63***	−.61***	−.46**
GSIS Subscales				
GSIS Total	–	–	.63***	.59***
GSIS LPSW	.91***	–	.60***	.54***
GSIS SI	.93***	–	.57***	.57***
GSIS DI	.78***	–	.38***	.37***
GSIS PML	.89***	–	.56***	*.59***

Note. The GSIS SI subscale was included in the table as a pure measure of suicidal ideation. INQ = Interpersonal Needs Questionnaire; TB = Thwarted Belongingness; PB = Perceived Burdensomeness; FFM = Five Factor Model; CATI = Coolidge Axis II Inventory; RSE-BR = Rosenberg Self-Esteem Scale Bachman Revision; GSIS LPSW = Geriatric Suicidal Ideation Scale—Loss of Personal and Social Worth; GSIS SI = Geriatric Suicidal Ideation Scale—Suicide Ideation; GSIS DI = Geriatric Suicidal Ideation Scale—Death Ideation; GSIS PML = Geriatric Suicidal Ideation Scale—Perceived Meaning in Life. * $p < .05$. ** $p < .01$. *** $p \leq .001$.

TB, $F(5, 95) = 6.87$, $p < .001$, $R^2 = .27$, R^2 adjusted $= .22$. Agreeableness ($\beta = −.35$, $p = .048$), 95% BCa CI [−0.68, .00] and Extraversion ($\beta = −.18$, $p = .038$), 95% BCa CI [−0.34, −0.01] independently explained variance within TB, both in the negative direction. Finally, the FFM domains explained a significant amount of variance of PB, $F(5, 95) = 4.06$, $p = .001$, $R^2 = .22$,

R^2 adjusted $= .17$. However, none of the specific FFM dimensions independently explained variance within PB.

Hypothesis 2

SI, TB, and PB each had significant positive correlations with 8 of the 10 PD traits; Antisocial and Histrionic were the only PD traits that did not demonstrate significant associations with SI, TB, or PB (see Table 3). Regarding SI, there were large positive correlations with traits associated with seven PDs (Avoidant, Borderline, Dependent, Obsessive-Compulsive, Paranoid, Schizoid, and Schizotypal) and a small positive correlation with Narcissistic PD traits. Regarding TB, there were large positive correlations with traits associated with five PDs (Avoidant, Obsessive-Compulsive, Paranoid, Schizoid, and Schizotypal) and moderate positive correlations with three PDs (Borderline, Dependent, and Narcissistic). Regarding PB, there were moderate positive correlations with seven PDs (Avoidant, Borderline, Dependent, Obsessive-Compulsive, Paranoid, Schizoid, and Schizotypal) and a small positive correlation with Narcissistic PD.

As hypothesized, linear regression revealed that the PD traits ($n = 10$) explained a significant amount of variance of SI, $F(9, 92) = 23.02$, $p < .001$, $R^2 = .69$, R^2 adjusted $= .66$. Four PDs were found to significantly explain SI in a positive direction at the independent level: Dependent ($\beta = .75$, $p < .001$), 95% CI [0.37, 1.16]; Schizoid ($\beta = .73$, $p < .001$), 95% CI [0.39, 1.06]; Borderline ($\beta = .70$, $p = .001$), 95% CI [0.31, 1.10]; and Paranoid PD ($\beta = .46$, $p = .033$), 95% CI [0.04, 0.89], whereas Narcissistic PD explained a significant amount of variance within SI ($\beta = -.42$, $p = .031$), 95% CI [-0.81, -0.04] at the independent level, in a negative direction. The PD traits explained a significant amount of variance of TB, $F(8, 92) = 9.80$, $p < .001$, $R^2 = .46$, R^2 adjusted $= .41$. However, no specific PD traits explained TB independently. Finally, the PD traits explained a significant amount of variance of PB, $F(8, 92) = 5.04$, $p < .001$, $R^2 = .33$, R^2 adjusted $= .26$. Schizoid PD ($\beta = .18$, $p = .029$), 95% BCa CI [0.06, 0.29] and Borderline ($\beta = .20$, $p = .08$), 95% CI [0.01, 0.39] were the only significant variables able to explain variance in PB at the independent level, both in the positive direction.

Hypothesis 3

The RSE-BR total score was negatively correlated with SI, TB, and PB (all with large effects), in accordance with the hypothesis (see Table 3). Regarding the two subscales of the RSE-BR, bivariate results revealed that each subscale was significantly and negatively related to SI, TB, and PB, with mostly large effect sizes.

Discussion

Results from this study primarily supported our hypotheses and reinforce the important role of personality factors as risk factors for later-life SI. Bivariate results demonstrated that all FFM personality dimensions and most PD traits had significant (and generally strong) relationships with SI, TB, PB, in the mostly expected directions. This pattern of relationships was true of self-esteem variables as well, which were strongly and negatively associated with SI, TB, and PB. Furthermore, multivariate results demonstrated that the two personality models (FFM and PD traits model) accounted for meaningful percentages of variance in SI (48% by FFM, 66% by PD traits), TB (22% by FFM, 41% by PD traits), and PB (17% by FFM, 26% by PD traits). Of note, we found a negative bivariate relationship between Openness to Experience and SI, which stands in contrast to earlier findings (see Duberstein et al., 2000; Heisel et al., 2006), as noted earlier. Important differences in methodology include different measures of the FFM (BFMM in the present study compared with the Revised NEO Personality Inventory in the earlier two studies) and the fact that participants in the earlier two studies all had diagnosable depression, which raises the issue of whether (or to what extent) depressive mood symptoms impact or mediate the relationship between Openness and suicidal thinking. Finally, our participants were substantially older than those in the prior two studies, which suggests that age may also impact the relationship between Openness and suicidal thinking. Further studies, using prospective designs, are clearly warranted to clarify the relationships between Openness to Experience and diverse suicidal behaviors (e.g., ideation, attempts, deaths) among older adults in community and psychiatric settings, but the present findings point to high Openness as a protective factor at least in this sample.

Despite normal and abnormal personality features accounting for a significant percentage of variance in SI, it is clear that there are other elements that play a meaningful role in explaining SI. Some of these elements may include the desire to escape, levels of functioning and autonomy, hopelessness, and psychological problems (Draper, Kõlves, De Leo, & Snowdon, 2014; Van Orden et al., 2015) or more existential concepts such as reasons for living and meaning in life (Heisel, Neufeld, & Flett, 2016). Researchers should include these topics in the further study of SI, TB, and PB, especially with older adults who are most likely to be vulnerable to suicide.

Bivariate and multivariate results demonstrated a strong positive relationship between Neuroticism with SI and a strong negative relationship between Extraversion with SI. These results are aligned with previous research that consistently demonstrates that high Neuroticism and low Extraversion are both predictive of high SI (Heisel & Flett, 2006; Iliceto et al., 2014; Segal et al., 2012; Useda et al., 2004).

Going beyond established research about SI, this study extends the extant literature by investigating relationships between FFM personality dimensions with important constructs from the IPTS, namely TB and PB, among older adults. Our bivariate results revealed mostly moderate to large relationships between all personality domains with both TB and PB. Furthermore, multivariate results demonstrated that Agreeableness and Extraversion were significant negative predictors of TB. It is conceivable that individuals high in Agreeableness and Extraversion would have more frequent social contact, therefore reducing their loneliness and experiences of TB. Given that high Extraversion could lead an individual to seek out the company of others, which in turn could decrease loneliness, it is possible that loneliness may moderate the relationships between Agreeableness and Extraversion with TB. Future research could be used to explore this pathway in greater depth.

Although no FFM personality domains were able to independently explain variance in PB at the multivariate level, Agreeableness was closest to achieving statistical significance and demonstrated the highest bivariate relationship with PB, which was significantly higher compared with the next highest: Neuroticism ($z = -3.95$, $p < .001$). This relationship may suggest that Agreeableness could be connected to PB by acting as a buffer against self-hate or liability. Past research has demonstrated a stronger correlation between Agreeableness and self-esteem for women than for men, and for participants over the age of 60 than for younger participants (Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001). Given that the present sample had a high proportion of women, and consisted only of individuals over the age of 60, there may be reason to believe that Agreeableness is connected to PB via self-esteem (i.e., the self-hate construct). Alternatively, it is possible that individuals perceive themselves as less of a liability to their loved ones if they consider themselves to be agreeable.

Additional research exploring the relationship between FFM dimensions and PB is warranted in light of divergent findings reported in a recent study. Vanyukov et al. (2017) found that PB correlated positively with Neuroticism and negatively with Extraversion and Conscientiousness. Although the directions of correlation in the present study align with Vanyukov et al.'s results, the strength of the relationships was notably different. In our study, all five FFM variables demonstrated significant bivariate relationships with PB, and the strongest bivariate relationship was found between PB and Agreeableness. However, in the Vanyukov et al.'s study, only three of the five dimensions (Neuroticism, Extraversion, and Conscientiousness) were significantly correlated with PB. It is possible that some of these differences are due to a difference in the measures used (i.e., NEO-Five Factor Inventory vs. BFMM) or due to Vanyukov's younger (42 years of age and older) and more symptomatically diverse group of participants (high-lethality attempters, low-lethality attempters, depressed nonsuicidal, and healthy controls); thus, additional research exploring the divergent findings between FFM domains and PB is warranted.

Furthering the existing literature, a unique contribution of the present study is that it investigated relationships between _specific_ DSM-5 PD traits with SI, TB, and PB among older adults. All PD traits except for Antisocial and Histrionic demonstrated significant bivariate relationships with SI, TB, and PB, all in the positive directions suggesting that increases in personality pathology are associated with increases in SI, TB, and PB. Multivariate results revealed that Dependent, Schizoid, Borderline, and Paranoid PD traits all positively explained variance in SI, whereas Narcissistic PD traits negatively explained variance in SI. The exact mechanisms of these relationships are ripe topics for further inquiry, especially the possibility that some narcissistic traits may serve as potential buffers to SI. In a recent study of adults with mood disorders, patients with narcissistic PD were much less likely to have made a suicide attempt compared with patients without narcissistic PD, which the researchers attributed to the lowered impulsivity associated with narcissism (Coleman et al., 2017).

Bivariate and multivariate results revealed that Schizoid and Borderline PD traits positively explain variance in PB. Although the precise mechanisms are unclear, the chaotic relationships characteristic of the borderline type may possibly contribute to feelings of being a burden. Regarding the schizoid type, it is possible that individuals with schizoid tendencies may be vulnerable to perceptions of being a burden, especially when they are forced to rely on others for support or care.

Regarding self-esteem, the present bivariate results revealed a strong negative relationship between SI and self-esteem (i.e., total, positive self-regard, and usefulness/competence). This suggests that when individuals have a positive self-perception and when they feel useful/competent, they are less likely to think about suicide. Our study revealed that self-esteem was also negatively associated with both TB and PB among older adults. Although we did not determine temporal relationships between these variables in the present study, it is possible that interventions directed toward increasing self-esteem may also result in lowered perceptions of TB and PB, and this should be studied directly in prospective designs.

Despite several strengths of the present study, we wish to acknowledge several limitations. First, the present sample had limited ethnic diversity; second, the ratio of women to men in this study is notably higher than the distribution in the United States. Consequently, our results may not be generalizable to older men in the United States—who are known to have higher suicide rates compared with older women—or to more ethnically diverse samples. Furthermore, because our study was cross-sectional and correlational in nature, we cannot infer causality among the variables. Studies using prospective and longitudinal designs are clearly needed with more diverse samples of older adults, including treatment-seeking older individuals, to tease out the temporal relationships among these variables and to determine more specifically the developmental

changes of core constructs of the IPTS, namely TB and PB. Finally, it should be noted that our sample was a nonclinical sample, with relatively low rates of SI (as per the GSIS), so further studies with older adults with elevated levels of SI are paramount.

Despite these limitations, results from this study may add to the body of knowledge regarding suicidal risk and older adults. Specifically, within the framework of the IPTS, this study elucidates meaningful relationship between TB, PB, and SI with a wide range of specific normal and abnormal personality traits. Thus, clinicians may consider thinking about certain PD traits (e.g., Schizoid, Dependent, Borderline, and Paranoid) as comorbidities for SI and recognize that if individuals express these traits, SI screening may be warranted. Furthermore, this study contributes to a limited body of knowledge regarding self-esteem among older adults and demonstrates that self-esteem is strongly inversely related to SI, TB and PB. It is our hope that by having explored the different factors that relate to and explain TB and PB, the results of this study can be used to improve SI screening and treatment strategies for older adults and to more clearly identify important correlates of suicide risk among older adults, using the IPTS framework. We conclude by reiterating the important point made by other scholars (Duberstein et al., 2000; Heisel et al., 2006) that personality traits must be considered in the planning and implementation of suicide prevention efforts with older adults.

Declaration of Conflicting Interests

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