

BRIEF REPORTS

Positive Affect and Suicide Ideation in Older Adult Primary Care Patients

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Suicide is a significant public health problem for older adults. Identification of protective factors associated with reduced risk is important. The authors examined the association of positive affect and suicide ideation in 462 primary care patients ages 65 and older. Positive affect distinguished suicide ideators from nonideators, after controlling for age, gender, depression, negative affect, illness burden, activity, sociability, cognitive functioning, and physical functioning. There was a trend toward age moderation of this relationship. Clinical and theoretical formulations of late-life suicide should consider the role of positive affect, including the possibility that its protective effects grow more pronounced with age.

Keywords: positive affect, suicide ideation, primary care, older adults

Depression and suicide are significant public health problems for adults ages 65 and older (Alexopoulos, 2005; Conwell, Duberstein, & Caine, 2002), who constitute 13% of the general population of the United States but account for 18% of all suicide deaths (National Center for Health Statistics, 2004). Mental disorders, particularly depression, amplify risk for suicide ideation (Bartels et al., 2002; Kuo, Gallo, & Eaton, 2004) and suicide (Beautrais, 2002; Conwell et al., 2000; Harwood, Hawton, Hope, & Jacoby, 2001; Tsoh et al., 2005; Waern et al., 2002) in older adults. Most treatments designed to reduce suicide risk understandably emphasize reduction of negative affect (Dieserud, Roysamb, Ekeberg, & Kraft, 2001; Schotte & Clum, 1987; Szanto et al., 2001; Townsend et al., 2001), but hopelessness—a potent risk factor for suicide (Brown, Beck, Steer, & Grisham, 2000) and correlate of suicide ideation (Uncapher, Gallagher-Thompson, Osgood, & Bongar, 1998)—is driven more by low levels of positive affect than by high levels of negative affect (Duberstein, Conner, Conwell, & Cox, 2001; Young et al., 1996). In this article, we examine the relative

contributions of positive and negative affect to suicide ideation in older primary care patients.

Trait positive affect may psychologically energize older adults, helping them envision a positive future and bear, if not thrive, in the context of aging's chronic strains such as caregiving, bereavement, illness, and functional impairment (Hirsch et al., 2007; Pressman & Cohen, 2005; Stewart, Craig, MacPherson, & Alexander, 2001; Zautra, Maxwell, & Reich, 1989). The strength of the inverse relationship between positive affect and suicide ideation may also increase across the life span. Older individuals are more likely than younger adults to focus on and monitor internal cognitive and emotional states, leading to better intrapersonal and interpersonal functioning and general coping (Labouvie-Vief, Devoe, & Bulka, 1989). As adults age, they may become "cognitively liberated," less rigid and stereotypical in their thinking, more adaptive and flexible in their coping abilities, and more tolerant of conflict within the self and with others (Carstensen, Fung, & Charles, 2003). This developmental process may also include a shift from self-focused negative affect as a form of psychological defense to a more positive affective style (Labouvie-Vief, Hakim-Larson, & Hobart, 1987).

In the present study, we hypothesized that trait positive affect would distinguish suicide ideators and nonideators, over and above the effects of sociodemographic characteristics, medical burden of illness, cognitive and functional status, trait negative affect, severity of depression, trait activity, and trait sociability; along with trait positive affect, the latter two constructs constitute three components of Extraversion (Chapman, 2007; Costa & McCrae, 1992; Saucier, 1998). We also conducted exploratory analyses examining whether the influence of positive affect on suicide ideation becomes stronger with increasing age.

Method

Participants

Participants ($N = 462$; 290 [63%] were women) were 65 years of age and older ($M = 74.9$, $SD = 6.53$) with a mean of 14.3 years

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of education ($SD = 2.32$). Fifty-three (11%) were single, 137 (30%) were widowed, 158 (34%) lived alone, and 73 (16%) were employed.

Participants were part of a larger naturalistic study of older adults in primary care. Older adults in distress are more likely to visit primary care physicians than mental health professionals, making primary care settings an important venue for identification of at-risk patients and implementation of mental health intervention efforts (Bruce et al., 2004; Luoma, Martin, & Pearson, 2002; Unützer et al., 2006). Participants were recruited from private internal medicine practices and hospital-affiliated internal medicine and geriatric clinics in Rochester, New York (see Table 1 for demographic characteristics). Subject selection and screening have been described previously (Lyness et al., 2004). Briefly, this study attempted to recruit all patients 65 years and older who presented for care on selected screening days. More than one third of those approached (34.1%, $n = 462$) consented to participate, a rate that is consistent with previous work in primary care settings using intensive assessment methodologies (Coyne, Fechner-Bates, & Schwenk, 1994).

Measures

Trait positive affect, trait negative affect, trait activity, and trait sociability were assessed using subclusters of the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992), a 60-item, self-report questionnaire measuring five broad domains of personality: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. Unlike the lengthier NEO Personality Inventory—Revised (NEO-PI-R; Costa & McCrae, 1992), which assesses both broad domains and constituent facets, the NEO-FFI was originally designed to measure only the domains, not lower order dimensions of personality traits. Saucier (1998) derived, and Chapman (2007) replicated, item cluster subcomponents for the NEO-FFI that capture much of the NEO-PI-R facet content, with comparable internal consistencies (e.g., $\alpha = .70$ and $.66$ in a development and cross-validation sample, respectively, compared to the average NEO-PI-R facet α of $.70$). For instance, three of the four items we used to assess trait positive affect are from the positive emotions

facet of the NEO-PI-R. Trait negative affect ($M = 7.68$, $SD = 4.02$) was assessed using five items, whereas trait sociability ($M = 8.69$, $SD = 2.38$): and trait activity ($M = 8.30$, $SD = 3.11$) had four items: Higher scores indicate greater trait levels of positive and negative affect, activity, and sociability. Coefficient alphas were $.68$ for positive affect, $.78$ for negative affect, $.70$ for activity, and $.61$ for sociability; although moderate, these values are acceptable given each scale's brevity (Nunnally & Bernstein, 1994), and they are comparable to previous research (Chapman, 2007; Saucier, 1998).

Suicide ideation was examined using items from the rater-administered Structured Clinical Interview for DSM-IV (SCID; Spitzer, Williams, & Gibbon, 1986) and the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960; Williams, 1988), both of which have been used frequently with older adults (Lyness et al., 2002; Szanto et al., 2002). It has been argued that structured and rater-administered measures of suicidal thoughts and behaviors, such as the SCID and HRSD, are preferable to self-report (Malone, Szanto, Corbitt, & Mann, 1995). On the HRSD, suicide ideation scores range from 0 to 4: 0 = absent, 1 = feels life is not worth living, 2 = wishes he/she were dead or any thoughts of possible death to self, 3 = suicidal ideas or gesture, and 4 = attempts at suicide. The SCID classifies suicide ideation as being absent (coded 1) or presenting at a subthreshold (coded 2) or threshold (coded 3) level. Participants were classified as suicide ideators if they endorsed the threshold level of ideation on the SCID or if their HRSD response was coded a 3 or 4, ensuring the clear presence of suicide ideation, rather than subthreshold ideation or death ideation (Brown, Bruce, & Pearson, 2001; Bruce et al., 2004; Duberstein et al., 1999; Szanto et al., 2002).

Functional status was assessed using the Karnofsky Performance Status Scale (KPSS; Karnofsky & Burchenal, 1949), which describes the patient's ability to perform ordinary daily and vocational activities in the context of a medical illness. Scale ratings range from 0 (death) to 100 (normal; no evidence of disease). The scale has established reliability and validity in older adults (Schag, Heinrich, & Ganz, 1984).

Table 1
Means, Standard Deviations, and Bivariate Correlations of Study Variables

Variable	<i>M</i> (<i>SD</i>)	Women ^a	HRSD	MMSE	CIRS	KPSS	Negative affect	Sociability	Activity	Positive affect	Suicide ideation ^b ($n = 37; 8\%$)
Age	74.92 (6.52)	-.12**	.06	-.24**	.27**	.26**	-.03	-.08	-.12*	.05	.00
Women ^a			-.24**	-.13**	-.04	-.17**	-.25**	-.19**	.14**	-.03	-.03
HRSD	8.73 (6.34)			-.12*	.29**	.42**	.57**	.14**	-.38**	-.29**	.44**
MMSE	28.03 (1.88)				-.18**	-.21**	-.09*	-.05	.00	.07	-.06
CIRS	7.37 (2.87)					.59**	.18**	.07	-.25**	-.11*	.14**
KPSS	80.06 (11.35)						.24**	.16**	-.33**	-.10*	.16**
Negative affect	7.68 (4.02)							.14**	-.34**	-.44**	.25**
Sociability	9.03 (1.69)								-.04	-.03	-.04
Activity	8.55 (2.81)									.41**	-.14**
Positive affect	10.33 (2.71)										-.19**

Note. There were 290 women (63%). CIRS = Cumulative Illness Rating Scale; HRSD = Hamilton Rating Scale for Depression; KPSS = Karnofsky Performance Status Scale; MMSE = Mini-Mental State Exam. Negative affect, Sociability, Activity, and Positive affect are subclusters of the NEO Five-Factor Inventory.

^aDichotomous variable; point biserial correlation.

* $p < .05$. ** $p < .01$.

Severity of depression was assessed using the Hamilton Rating Scale for Depression, a 24-item, interviewer-administered measure of the presence and severity of current depressive symptoms. The HRSD has adequate psychometric properties (Williams, 2001); coefficient alpha in the present sample was .81. When the HRSD item assessing suicide ideation was omitted, the mean (*SD*) in this sample was 8.72 (6.34). The HRSD served as a covariate in the analyses reported here to delineate the effect of positive affect over and above the influence of the severity of depressive symptoms.

Medical Illness Burden

Burden of physical illness, another covariate, was assessed utilizing the Cumulative Illness Rating Scale (CIRS; Linn, Linn, & Gurel, 1968), which provides a rating of illness burden in each of 13 organ systems, and is valid and reliable when used with older adults (Conwell, Forbes, Cox, & Caine, 1993). Scoring was based on findings from physical examinations, laboratory evaluations, and medical history gleaned from health records and interviews. A physician reviewed the medical chart and assigned CIRS scores for each organ system. Mean score (*SD*) for the CIRS was 7.37 (2.87).

Cognitive functioning was assessed using the Mini-Mental State Exam (MMSE; Folstein, Folstein, & McHugh, 1975), which has 30 items assessing general cognitive functioning. Scores range from 0–30. The MMSE has good validity and reliability in use with older adults (Tombaugh & McIntyre, 1992).

Statistical Analyses

Bivariate correlations assessed the degree of association between predictor variables; no relationship reached accepted cutoffs for collinearity (Tabachnick & Fidell, 2001) (see Table 1). We used multivariate logistic regression to test the hypothesized associations between trait positive affect and suicide ideator status. Covariates were age, gender, medical illness burden (CIRS), cognitive functioning (MMSE), functional status (Karnofsky), trait negative affect (NEO–FFI), trait activity (NEO–FFI), trait socia-

bility (NEO–FFI), and severity of depressive symptoms (HRSD) in the week prior to the interview. Trait scores were standardized ($M = 0, SD = 1$) to facilitate interpretation. Separate hierarchical, multivariate logistic regressions were conducted. Covariates were entered on the first step; positive affect was entered on the second step. We also examined interaction effects between age group (65–79 years vs. 80–95 years) and positive affect. Predictor variables and covariates were entered on the first step of the model; the interaction term between positive affect and age was entered on the second step of the model.

Results

Thirty-seven patients (8%) were identified as suicide ideators. Bivariate correlation analyses revealed significant positive correlations between suicide ideation and depression severity, trait negative affect, functional status, and illness burden (see Table 1). As hypothesized, suicide ideation was significantly, inversely associated with positive affect. Table 2 shows the results from the multivariate regression. High levels of trait positive affect reduced the odds of suicide ideation (odds ratio = .78, 95% confidence interval = 0.66–0.94, $p < .01, B = -.25, SE = .09$), but trait sociability and trait activity did not. Participants with higher levels of trait positive affect were less likely to endorse suicidal ideation. Depression severity was also a significant predictor of suicide ideation.

To examine whether the effects of trait positive affect become more pronounced with increasing age, we explored their interaction. There was a trend toward significance (odds ratio = .54, 95% confidence interval = 0.28–1.05, $p = .07, B = -.61, SE = .33$). With older age, the inverse relationship between positive affect and suicide ideation may be strengthened.

Discussion

We examined the association of trait positive affect and suicide ideation in a sample of older adult primary care patients. Trait

Table 2
Multivariate Logistic Regression: Predictors of Suicide Ideation

Variable	Step 1				Step 2			
	Odds ratio	95% CI	Unstandardized B (SE)	Wald score	Odds ratio	95% CI	Unstandardized B (SE)	Wald score
Constant	0.00		-7.55 (5.82)	1.69	0.01		-4.63 (6.05)	0.59
Age	1.05	0.98–1.13	0.05 (0.04)	1.92	1.06	0.98–1.14	0.06 (0.04)	2.33
Women	0.47	0.17–1.31	-0.75 (0.52)	2.08	0.49	0.18–1.39	-0.71 (0.53)	1.78
HRSD	1.26**	1.16–1.36	0.23 (0.04)	32.16	1.29**	1.18–1.40	0.25 (0.04)	31.75
MMSE	0.95	0.75–1.19	-0.05 (0.12)	0.22	0.95	0.75–1.19	-0.06 (0.12)	0.21
CIRS	0.95	0.79–1.14	-0.05 (0.09)	0.25	0.95	0.79–1.15	-0.05 (0.10)	0.29
KPSS	1.01	0.97–1.06	0.01 (0.02)	0.39	1.02	0.97–1.07	0.02 (0.02)	0.79
Negative affect	1.13	0.99–1.27	0.12 (0.06)	3.42	1.03	0.89–1.19	0.03 (0.07)	0.21
Sociability	0.99	0.75–1.29	-0.02 (0.14)	0.01	0.94	0.70–1.24	-0.07 (0.15)	0.21
Activity	1.10	0.93–1.31	0.09 (0.09)	1.28	1.16	0.97–1.40	0.16 (0.09)	2.71
Positive affect					0.78**	0.66–0.94	-0.25 (0.09)	7.32

Note. CI = confidence interval; CIRS = Cumulative Illness Rating Scale; HRSD = Hamilton Rating Scale for Depression; KPSS = Karnofsky Performance Status Scale; MMSE = Mini-Mental State Exam. Negative affect, Sociability, Activity, and Positive affect are subclusters of the NEO Five-Factor Inventory.
** $p < .01$.

positive affect distinguished older primary care patients reporting thoughts of suicide from those who did not. This is true even when adjusting for the effects of age, gender, cognitive function, medical illness burden, functional status, depression severity and trait levels of negative affect, activity, and sociability. For older adults, trait positive affect appears to be an important independent contributor to reduced suicidal ideation; this effect may increase in magnitude as a person ages. Our results may have important implications for the development of treatments and preventive interventions.

Older adulthood is a time of emotional complexity. Positive affect may increase and negative affect may decrease with age (Carstensen, Isaacowitz, & Charles, 1999); however, the chronic strains, life events, and physical decline that accompany aging may increase risk for depression (Kraaij, Arensman, & Spinhoven, 2002) or suicidal thoughts and behaviors (Conwell, Duberstein, & Caine, 2002; Turvey et al., 2002). The Dynamic Model of Affect (Zautra, Smith, Affleck, & Tennen, 2001) suggests that, in the context of stressful circumstances such as age-related or illness-related vulnerability, positive and negative affect may become increasingly distinct. Individuals experiencing distress may have a difficult time focusing on anything but their distress, effectively suppressing positive affect (Pruchno & Meeks, 2004). Conversely, the presence of positive affect during periods of distress should be associated with a decrease in negative affect (Strand et al., 2006; Zautra, Johnson, & Davis, 2005). Psychological treatments that are designed to help older adults cultivate positive affective states may also reduce negative affect. There is some evidence to suggest that compensatory coping mechanisms associated with stressful circumstances may work in such a manner. In some individuals, experiences of illness or impairment may initiate a search for meaning in the absence of professional intervention; positive reappraisal, goal revision, and spiritual activation are coping strategies that may arise naturally in response to distress (Folkman, 1997). Others would benefit from an intervention designed to facilitate the development and use of such strategies.

Although older adults are often considered to be a vulnerable population, this period in life may also be characterized by an improved capacity to capitalize on emotional and psychological characteristics to improve well-being. Just as the protective effects of extraversion may become more significant with age (Duberstein et al., 2003), a trend exists in which the relationship of positive affect to suicide ideation becomes more pronounced with age. For elderly, suicidal individuals, treatments that capitalize on the emotional growth and shift toward a more positive affective state that occurs in older adulthood may be appropriate and important.

From a developmental perspective, the aging process may involve cognitive and emotional restructuring that result in both emotional planfulness and regulatory skill, allowing an older adult to self-select emotionally rewarding situations and better manage dysphoric feelings (Labouvie-Vief & Blanchard-Fields, 1982; Mroczek & Kolarz, 1998; Carstensen et al., 2003). Further, age-related reductions in physiological arousal to emotional events may also be important (Charles, Reynolds, & Gatz, 2001). Older adults may simply be less reactive to negative life circumstances, perhaps providing a measure of protection against poor health, functional and psychological outcomes, including suicidal thoughts and behaviors. Older adults also appear to be more keenly aware of the effects of negative emotions on their overall well-

being, and may often purposefully seek to maximize positive experiences and interpersonal interactions (Carstensen et al., 1999). Encouraging the development of a positive future orientation, facilitation of goal setting and achievement, and engagement in meaningful, interpersonal relationships may be clinical strategies for bringing positive affect to the forefront of emotional functioning (Hirsch et al., 2006; Malone et al., 2000).

The current novel findings must be interpreted in the context of the study's limitations. Generalizability to other demographic subgroups is unknown. Investigation of more ethnically and racially diverse community samples is necessary. Although the rate of suicide ideation reported here is consistent with previous studies of older primary care patients (Bartels et al., 2002), there were only 37 suicide ideators in this sample. Nonetheless, this number is within established parameters for power in logistic regression analyses (Hsieh, Bloch, & Larsen, 1998). Cross-sectional data preclude the ability to examine causal effects of positive affect on the initiation or maintenance of suicidal ideation; however, the trait-like stability of positive affect makes it unlikely that this relationship is bidirectional (Charles et al., 2001; Watson & Walker, 1996). Although the majority of individuals with thoughts of suicide do not act on them, prospective studies of the mechanisms by which positive affect might reduce risk of suicidal behavior may be warranted.

Our results begin the process of clarifying the largely unexplored relationship between affective style and suicidal thoughts and behaviors. We believe our findings have implications for the development of treatment and prevention programs aimed at mitigating suicide risk in older adult primary care patients. According to cognitive theory, the overt expression of traits is a manifestation of underlying schema—which are modifiable (Freeman, Davis, & Beck, 2004). There is some evidence that traits may continue to develop and change throughout the life span (McCrae et al., 2000; Mroczek & Spiro, 2003) and can both influence and be influenced by contextual factors (Caspi, Roberts, & Shiner, 2005; Helson, Jones, & Kwan, 2002; Helson & Kwan, 2000). Perhaps treatment strategies focused on the improvement of positive affect via the modification of environmental, social, cognitive, and psychological factors would be effective in the treatment of suicidal individuals. Our results suggest that focusing on the promotion of positive emotionality may be promising in the reduction of suicide ideation in older adults.

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