



HHS Public Access

Author manuscript

Aging Ment Health. Author manuscript; available in PMC 2017 July 14.

Published in final edited form as:

Aging Ment Health. 2011 April ; 15(3): 385–396. doi:10.1080/13607863.2010.519327.

Affect and Loneliness among Centenarians and the Oldest Old: The Role of Individual and Social Resources

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Abstract

Objectives—Affect and loneliness are important indicators of mental health and well-being in older adulthood and are linked to significant outcomes including physical health and mortality. Given a large focus on young-old adults within gerontological research, the primary aim of the present study was to examine the ability of individual and social resources in predicting affect and loneliness within a sample of oldest-old individuals.

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¹This research was funded by NIH grant PO1AG017553. Additional authors include S. M. Jazwinski, R. C. Green, M. Gearing, W. R. Markesbery, M. A. Johnson, J. S. Tenover, W. L. Rodgers, D. B. Hausman, C. Rott, and J. Arnold.

²Acknowledgements: The Georgia Centenarian Study (Leonard W. Poon, PI) is funded by 1P01-AG17553 from the National Institute on Aging, a collaboration among The University of Georgia, Tulane University Health Sciences Center, Boston University, University of Kentucky, Emory University, Duke University, Wayne State University, Iowa State University, Temple University, and University of Michigan. Authors acknowledge the valuable recruitment and data acquisition effort from M. Burgess, K. Grier, E. Jackson, E. McCarthy, K. Shaw, L. Strong and S. Reynolds, data acquisition team manager; S. Anderson, E. Cassidy, M. Janke, and J. Savla, data management; M. Poon for project fiscal management.

Methods—Participants were assessed during the most recent cross-sectional data collection of the Georgia Centenarian Study. The eligible sample included 55 octogenarians ($M = 83.70$ years, $SD = 2.68$; range = 81–90) and 77 centenarians ($M = 99.78$ years, $SD = 1.64$; range = 98–109). Subjects scored 17 or greater on the Mini-Mental Status Exam and completed mental health assessments.

Results—Hierarchical regression analyses were conducted to examine the relation of affect and loneliness with demographic characteristics, physical and social functioning, cognition, and personality. Social functioning was associated with decreased loneliness and greater positive affect. Neuroticism predicted negative mental health outcomes, whereas extraversion predicted positive affect. Decreased executive control was associated with increased negative affect.

Discussion—Findings indicate the distinctiveness of mental health indicators and the role of individual and social resources in determining these outcomes in late life.

Keywords

Affect; Cognition; Personality; Aged; 80 and over

Mental health and well-being are critical in determining important outcomes in later life such as physical health, vulnerability to disease, and mortality (Friedman & Booth-Kewley, 2003; Mayne, 1999). Research supports the multidimensionality of mental health and well-being indicators (de Beurs, Comijs, & Twisk, 2005), particularly in distinguishing between positive and negative facets and their predictors (i.e., dual-channel hypothesis; Lawton, 1996). For instance, in recent longitudinal findings (Griffin, Mroczek, & Spiro, 2006), positive and negative affect demonstrated differential group- and individual-level trajectories as well as differing predictors. Prior to age 70 negative affect decreased; however, after this age it tended to rise. In contrast with age, positive affect tended to exhibit decline. Given the relative paucity of mental health research with individuals in very late life, the primary objective of the current paper was to identify predictors of three mental health and well-being indicators (i.e., positive and negative affect, loneliness) in an effort to better understand potential contributors to mental health and thus targets for prevention and intervention efforts. Based on prior empirical and theoretical work, we expected that individual resources including cognition, functional ability, and personality, as well as social resources, would contribute to mental health outcomes among the oldest old [Haynie, Berg, Johansson, Gatz, & Zarit, 2001; Isaacowitz & Smith, 2003; Long & Martin, 2000; Martin & Martin, 2002].

The three indicators of mental health and well-being examined in the current paper are important throughout older adulthood and are likely to exhibit synergistic effects, particularly for “negative” mental health indicators. Negative affect in particular appears related to psychological distress and depression [Chang & Sanna, 2001]. Prior work [Wichers, et al., 2007] suggests that those who are genetically predisposed to depressivity are more likely to exhibit negative affective reactions to minor stressors in everyday life. On the other hand, positive affect is seen as a protective factor in older adults, being associated with optimism, adaptive coping responses, and lower depression, independent of negative affect (Steptoe, O’Donnell, Marmot, & Wardle, 2008).

Personality is one dimension shown to predict positive and negative affect. Specific personality traits, such as extraversion, have been linked with positive mental health outcomes such as positive affect, whereas greater neuroticism tends to predict poorer mental health outcomes such as anxiety and negative affect (Boyd, McKiernan, & Waller, 2000). Prior work with older adults (Isaacowitz & Smith, 2003) revealed that extraversion was predictive of positive affect in men and neuroticism was a strong predictor of negative affect in both men and women (average age 85), even after controlling for physical health (e.g., diagnosed illness). In addition to an underlying mechanistic link, personality traits can more practically affect interpretation and reporting of affective and mental health symptoms including “over-reporting” of symptoms by individuals compared to observers (Duberstein & Heisel, 2007).

In addition to affect, prior research ties personality to the mental health outcome of loneliness. Among oldest-old parents (85 years and older) and their adult children, individuals with anxious personalities were more likely to be lonely (Long & Martin, 2000). On the other hand, those high in extraversion reported decreased loneliness. Among the oldest old, research suggests a link between greater neuroticism and increased loneliness (Martin, Hagberg, & Poon, 1997). Psychometrically, loneliness is highly correlated with personality and mood measures, but also strongly related to perceived quality of social support (Russell, 1996).

In terms of cognition, extant literature reports a link between cognitive abilities and mental health. In a study of older adults conducted by Haynie and colleagues, higher cognitive performance, as assessed by the Wechsler block design test, was related to less negative affect (Haynie, Berg, Johansson, Gatz, & Zarit, 2001). Other work suggests that cognitive status may be related to loneliness among older adults, however, the effects varied across cultural context (Martin, Hagberg, & Poon, 1997). Additionally, demographic and functional indicators are also important predictors of mental health in older adulthood. Specifically, institutional residence, ethnic minority status, decreased ability to perform activities of daily living, and lower subjective health are associated with poorer mental health outcomes (Anstey, von Sanden, Sargent-Cox, & Luszcz, 2007; Harralson, et al., 2002; Hybels & Blazer, 2003; Jorm, 1005).

While biological (e.g., neurotransmitter dysfunction, vascular and endocrine changes, and co-morbidities) and social (e.g., loss of companionship) risks tend to increase throughout older adulthood, the prevalence of negative mental health outcomes such as depression are comparable or lower compared to early adulthood (Blazer & Hybels, 2005). This finding indicates that additional factors may be instrumental in protecting older adults from negative mental health outcomes (Blazer & Hybels, 2005). Thus, the current analyses were employed to investigate the ability of individual (i.e., cognition, personality, and functional ability) and social resources to predict positive and negative affect and loneliness. Consistent with prior studies, we expected institutional residence, increased neurotic tendencies, fewer social resources, and diminished cognitive and functional abilities to predict loneliness and negative affect whereas extraversion, greater cognitive ability, and more social resources were expected to predict increased positive affect.

Method

Procedure and Participants

Participants included octogenarians, near centenarians, and centenarians who took part in the most recent Georgia Centenarian Study data collection (Poon, et al., 2007). The study was approved by the University of Georgia Institutional Review Board. Prior to participation, the study was explained to participants and informed consent was obtained. Octogenarians and centenarians were individually tested in their place of residence.

The current analyses rely on self-report data. As a result, the included participants represent a subset of study participants, all of whom scored 17 or greater on the Mini-Mental Status Exam (Folstein, Folstein, & McHugh, 1975) and had the opportunity to be interviewed on mental health questions. Given an increased prevalence of sensory impairment and its impact on MMSE scores along with generally low levels of formal education among this cohort, a lower minimum cut-off was chosen (Tombaugh & McIntyre, 1992). Selecting from the total sample of 375 (88 octogenarians and 287 centenarians), this criterion yielded a subsample of 157 adults composed of 63 octogenarians and 94 centenarians and near centenarians who were eligible to complete more cognitively-demanding assessments. Those 132 participants with complete data on the independent variables were selected for analyses: 55 Octogenarians ($M = 83.70$, $SD = 2.68$; range = 81–90 years) and 77 centenarians ($M = 99.78$ years, $SD = 1.66$; range = 98 – 109 years). Within this subsample, centenarians were more likely to be female ($\chi^2 = 7.61$, $p = .01$), living in a nursing or personal care home ($\chi^2 = 29.63$, $p = .00$), and widowed ($\chi^2 = 42.19$, $p = .00$).

Measures

Participants completed measures of mental health, demographics and functioning, cognition, and social functioning and personality. Table 1 depicts sample averages on these key variables and Table 2 depicts the bivariate correlations between variables.

Mental Health Outcomes—Loneliness was assessed via the 10-item short form of the UCLA Loneliness Scale (Russell, 1996). Each question was responded to using a four-point scale where “1” corresponds to “never” and “4” corresponds to “always.” A total score was created by recoding responses to the positively worded items and then summing together scores on the 10 items, thus higher scores indicate greater loneliness. Observed scores ranged from 10 to 32. Cronbach’s alpha for the Georgia Centenarian Study pilot sample on the 10-item version of the scale was .81. The Bradburn Affect Balance Scale (Bradburn, 1969) was used to assess positive and negative affect. This 10-item scale requires participants to indicate the extent to which they had experienced presented descriptors during the past few weeks including uneasiness, boredom, and excitement. A 4-point response scale was used which ranged from “not at all” (1) to “often” (4). Higher scores represent greater endorsement of the respective affect. In the current sample, scores ranged from 5 to 18 for Positive Affect and 5 to 15 for Negative Affect. Reported internal consistency for each scale is above .80.

Demographics and Functional Indicators—Age, sex (Male = 0, Female = 1), residential status, and ethnicity (White = 0, African American = 1) were included in the analyses. Residential status was collapsed to distinguish private (1) and institutional residence in a personal care or nursing home (0). Perceived ease in completing desired activities despite health troubles was assessed via a single 3-point Likert item (“Not at all” = 2; “A little or some” = 1; “A great deal” = 0). Higher scores indicated greater perceived ease. Ability to perform activities of daily living (ADL) was assessed via 13 items from the Older Americans Resources Survey (Fillenbaum, 1988). Items responses ranged from 0–2 and higher scores indicate greater ability to perform ADL tasks.

Cognition—The Severe Impairment Battery (Saxton, McGonigle-Gibson, Swihart, Miller, & Boller, 1990) was used as an indicator of global cognitive ability. The scale assesses nine cognition-related domains of functioning (e.g., memory, orientation, social interaction, attention) and higher scores indicate better functioning. The Behavioral Dyscontrol Scale (Grigsby, Kaye, & Robbins, 1992) was included as an indicator of executive functioning.

Social Functioning and Personality—Four items from the OARS were used to assess the availability of social resources (i.e., social network size and frequency of contact; Fillenbaum, 1988). Higher scores indicate greater resources. The 12-item Social Provisions scale (Cutrona & Russell, 1987) was used to gauge the nature of social relationships among the oldest old and their partners. A total score was used which reflects individual item pairs gauging alliance, guidance, integration, attachment, worth, and nurturance. Higher scores indicate endorsement of these domains. Items from the NEO Five-Factor Inventory, a short form of the NEO Personality Inventory Revised (Costa & McCrae, 1989, 1992), gauged personality trait endorsement on a 3-point scale (i.e., –1 = Disagree, 0 = Neutral, or 1 = Agree). Given prior research relating extraversion and neuroticism with mental health, we focused on these scales. Observed scores ranged from –11 to 11 on Extraversion and –12 to 10 on Neuroticism; $\alpha = .74 - .89$.

Results

Hierarchical linear regression analysis was employed to assess the role of cognition, personality, and demographic and functional indicators in predicting positive and negative affect and loneliness. Three steps of predictors included: (1) demographic and functional variables (i.e., age, residential status, sex, ethnicity, self-reported health, and self-reported ability to perform activities of daily living), (2) global cognitive ability and executive functioning, and (3) personality (i.e., extraversion and neuroticism) and social resources. Analyses were conducted using SPSS version 15.0, and an alpha level of .05 was adopted. A summary of the regression analyses are presented in Table 3.

For both negative mental health indicators, loneliness and negative affect, only inclusion of Step 3 was a significant addition to the model. The models accounted for 36% and 41% of the explained variance in loneliness and negative affect, respectively. In terms of personality predictors, greater neuroticism predicted both increased loneliness and negative affect. Greater perceived social resources and provisions were related to less loneliness. Cognitive

indicators were not predictive of loneliness; however, greater executive control as assessed by the BDS was related to decreased negative affect.

The analysis examining predictors of positive affect revealed that both Steps 2 and 3 added to the predictive utility of the model. The addition of Step 2 revealed a significant effect of global cognitive functioning on positive affect; better cognitive functioning was related to increased positive affect. The effect however was not retained once Step 3 predictors were included in the model. Addition of the third step indicated a relation between extraversion and social provisions with positive affect. The final model accounted for 33% of the explained variance in positive affect.

Discussion

In the current study, we investigated the role of selected indicators of cognition and personality in predicting loneliness and positive and negative affect in a sample of oldest-old individuals. Personality emerged as a strong and consistent predictor of each mental health outcome; however, the particular influential personality component varied according to the nature of the mental health outcome. Greater neurotic tendencies were related to increased negative affect whereas higher levels of extraversion predicted increased positive affect. The importance of personality characteristics on these particular mental health outcomes may not be surprising given the social implications of neurotic and extraverted tendencies. For instance, personality may serve to elicit or hinder social support (e.g., individuals with high neurotic tendencies may have difficulty garnering satisfactory perceived or actual social support). To account for such relations we included indicators of social functioning in the analyses. Consistent with expectations, perceptions of greater social resources, which reflect the availability of partners, were related to decreased loneliness. The quality of social relationships was also important. Greater social provisions, or the perception of more satisfying relationships with others, was related to decreased loneliness and increased positive affect.

Within this sample of cognitively well-functioning individuals, cognition played a relatively small role in predicting our three mental health outcomes. Executive functioning, as assessed by the BDS, was related to decreased negative affect. Global cognitive functioning, as reflected in the Severe Impairment Battery, was a significant predictor of positive affect. However, this relation was no longer significant once social functioning and personality were entered into the analyses. This result may not be surprising given that the SIB assesses abilities needed to effectively carry out social relations (e.g., communication skill, memory). Similar to our speculation regarding the nature of personality and its implications on social functioning, cognitive abilities have also been related to other mental health predictors, such as perceived social support (Flicker, Macneill, Bank, & Lichtenberg, 1992).

Taken together, these findings suggest that researchers and clinicians may be well served to consider potential mediators of the relations between personality, cognition, and mental health in very late life. Social context appears to be one fruitful path. Given the cross-sectional nature of our data, we cannot disentangle the effects of survivorship on our results. Future work should be aided by longitudinal investigations which can examine the likely

complex causal relations between multiple indicators of personality, cognition, and mental health (e.g., affect effects on cognition; Duncan & Barrett, 2007).

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Table 1

Sample averages on key variables ($N = 105$ via listwise deletion for all variables).

| | <i>M</i> | <i>SD</i> | range |
|---|----------|-----------|--------------|
| Loneliness | 14.63 | 4.80 | 10 – 32 |
| Negative Affect | 6.74 | 2.37 | 5 – 15 |
| Positive Affect | 11.78 | 3.16 | 5 – 18 |
| Ease despite health difficulties ^a | 1.05 | .76 | 0 – 2 |
| Activities of Daily Living ability | 22.10 | 4.38 | 0 – 26 |
| Severe Impairment Battery ^b | 94.47 | 6.58 | 0 – 100 |
| Behavioral Dyscontrol Scale ^b | 15.67 | 3.32 | 2 – 19 |
| Social provisions | 36.53 | 3.31 | 29 – 47 |
| Social resources | 8.44 | 1.21 | 2 – 10 |
| Extraversion | 2.53 | 4.20 | – 11 – 11 |
| Neuroticism | –8.10 | 4.35 | – 12 – 10 |

Note:

^a = Higher values represent less perceived difficulty despite health.

^b Higher scores on the Severe Impairment Battery and Behavioral Dyscontrol Scale indicate superior cognitive functioning.

Table 2

Bivariate correlations between study variables ($N = 105$ via listwise deletion for all variables).

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. |
|-------------------------------------|---------------------|--------------------|--------------------|-------------------|--------------------|--------------------|------------------|-------------------|-----|-------------------|
| 1. Loneliness | | | | | | | | | | |
| 2. Negative affect | .54 ^{***} | | | | | | | | | |
| 3. Positive affect | -.21 [*] | -.24 [*] | | | | | | | | |
| 4. Ease despite health ^a | -.10 | -.14 | .14 | | | | | | | |
| 5. ADL | -.11 | -.07 | .17 | .42 ^{**} | | | | | | |
| 6. SIB ^b | -.12 | -.06 | .30 ^{**} | .05 | .24 [*] | | | | | |
| 7. BDS ^b | .07 | -.14 | .21 [*] | .13 | .42 ^{***} | .39 ^{***} | | | | |
| 8. Social provisions | -.35 ^{***} | -.26 ^{**} | .40 ^{***} | .13 | .31 ^{**} | .16 | .24 [*] | | | |
| 9. Social resources | -.24 [*] | -.06 | .25 [*] | .13 | .15 | .16 | .10 | .17 | | |
| 10. Extraversion | -.24 [*] | -.07 | .40 ^{***} | .13 | -.01 | .18 | -.02 | .28 ^{**} | .10 | |
| 11. Neuroticism | .45 ^{***} | .61 ^{**} | -.15 | -.15 | -.11 | -.14 | -.02 | -.21 [*] | .04 | -.20 [*] |

Note: ADL = Activities of daily living. SIB = Severe Impairment Battery. BDS = Behavioral Dyscontrol Scale.

^a = Higher values represent less perceived difficulty despite health.

^b Higher scores on the Severe Impairment Battery and Behavioral Dyscontrol Scale indicate superior cognitive functioning.

* = $p < .05$.

** = $p < .01$.

*** = $p < .001$.

Table 3
 Summary of three hierarchical linear regression analyses examining mental health indicators.

| Predictors | Model 1 | | Model 2 | | Model 3 | |
|--|---------|------|------------------|-------|----------------------|-------|
| | B | SE | B | SE | B | SE |
| Loneliness (N = 112) | | | | | | |
| Step 1. Demographics & Functioning | | | | | | |
| Age | .03 | .07 | .05 | .07 | -.03 | .06 |
| Sex | .24 | 1.10 | .07 | 1.09 | .48 | .95 |
| Residence | -1.48 | 1.27 | -1.24 | 1.27 | -.68 | 1.10 |
| Ethnicity | .21 | 1.32 | .79 | 1.35 | .48 | 1.16 |
| Ease despite health | -.51 | .67 | -.52 | .66 | .35 | .59 |
| ADL ability | .03 | .16 | -.02 | .16 | -.05 | .14 |
| Step 2. Cognition | | | | | | |
| Severe Impairment Battery | | | -.11 | .08 | -.03 | .07 |
| Behavioral Dyscontrol Scale | | | .31 ^t | .17 | .26 ^t | .14 |
| Step 3. Social Functioning & Personality | | | | | | |
| Social provisions | | | | | -.33 [*] | .13 |
| Social resources | | | | | -.89 ^{**} | .34 |
| Extraversion | | | | | -.10 | .10 |
| Neuroticism | | | | | .43 ^{***} | .09 |
| Intercept | 12.08 | 8.82 | 16.60 | 11.21 | 39.98 | 11.43 |
| F | .64 | | 2.13 | | 10.82 ^{***} | |
| R ² (R ²) | .04(04) | | .07(.03) | | .36(.29) | |
| Negative Affect (N = 122) | | | | | | |
| Step 1. Demographics & Functioning | | | | | | |
| Age | .02 | .03 | .01 | .04 | -.00 | .03 |
| Sex | -.20 | .55 | -.17 | .55 | -.21 | .45 |
| Residence | -.36 | .58 | -.36 | .58 | .08 | .47 |
| Ethnicity | .34 | .63 | .01 | .65 | -.27 | .53 |

| | Model 1 | | Model 2 | | Model 3 | |
|--|----------|------|---------------|------|---------------|------|
| | B | SE | B | SE | B | SE |
| Ease despite health | -.38 | .32 | -.40 | .32 | -.10 | .27 |
| ADL ability | .04 | .07 | .08 | .07 | .08 | .06 |
| Step 2. Cognition | | | | | | |
| Severe Impairment Battery | | | .01 | .04 | .03 | .03 |
| Behavioral Dysfunction Scale | | | -.16 <i>t</i> | .08 | -.14* | .07 |
| Step 3. Social Functioning & Personality | | | | | | |
| Social provisions | | | | | -.12 <i>t</i> | .06 |
| Social resources | | | | | -.19 | .15 |
| Extraversion | | | | | .07 | .05 |
| Neuroticism | | | | | .31*** | .04 |
| Intercept | 4.38 | 4.21 | 6.95 | 5.36 | 12.91 | 5.20 |
| F | .44 | | 2.06 | | 16.18*** | |
| R ² (R ²) | .02(.02) | | .06(.04) | | .41(.35) | |
| Predictors | | | | | | |
| Positive Affect (N = 117) | | | | | | |
| Step 1. Demographics & Functioning | | | | | | |
| Age | -.04 | .05 | -.03 | .05 | .05 | .05 |
| Sex | -.56 | .72 | -.45 | .70 | -.66 | .64 |
| Residence | 1.14 | .77 | 1.03 | .75 | .79 | .68 |
| Ethnicity | .38 | .89 | .49 | .89 | .30 | .82 |
| Ease despite health | .52 | .42 | .57 | .41 | .19 | .39 |
| ADL ability | -.03 | .09 | -.09 | .09 | -.03 | .08 |
| Step 2. Cognition | | | | | | |
| Severe Impairment Battery | | | .11* | .05 | .07 <i>t</i> | .05 |
| Behavioral Dysfunction Scale | | | .08 | .10 | .08 | .09 |
| Step 3. Social Functioning & Personality | | | | | | |
| Social provisions | | | | | .24** | .09 |
| Social resources | | | | | .26 | .22 |
| Extraversion | | | | | .23*** | .07 |

| | Model 1 | | Model 2 | | Model 3 | |
|-----------------------------------|----------|------|----------|------|----------|------|
| | B | SE | B | SE | B | SE |
| Neuroticism | | | | | | |
| Intercept | 14.53 | 5.80 | 2.67 | 7.04 | -12.54 | 7.74 |
| F | 1.69 | | 4.09* | | 7.11*** | |
| R ² (R ²) | .09(.09) | | .15(.06) | | .33(.18) | |

Note: ADL = Activities of daily living; Sex: 0 = Male, 1 = Female; Residence: 0 = Nursing or personal care home, 1 = Private home; Ethnicity: 0 = White, 1 = African American. Higher scores on the Severe Impairment Battery and Behavioral Dyscontrol Scale indicate superior cognitive functioning.

t
= $p < .10$.

*
= $p < .05$.

**
= $p < .01$.

= $p < .001$.