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Social integration, perceived discrimination, and self-esteem in mid- and later life: intersections with age and neuroticism

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ABSTRACT

Objectives: Social relations can influence well-being throughout the life course. Integration in one's community may serve as a source of social support whereas negative interactions such as day-to-day discrimination can be psychosocial stressors, particularly for neurotic persons. Yet social connectedness may vary in importance across the age range. Individuals trim their social networks in later life to optimize emotional well-being, but older adults may also be at heightened risk of social isolation. This study examines the impacts of social integration and perceived discrimination on self-esteem, and whether such impacts differ according to individuals' age and/or neuroticism.

Method: Random effects models analyzed 2,982 observations from 1,882 individuals who participated in at least one of the two most recent waves of the National Survey of Midlife Development in the United States (2004–2014).

Results: Self-esteem displayed a minor cubic trajectory across the age range, including declines after age 70. Social integration, perceived discrimination, and neuroticism were all significantly associated with self-esteem, in the expected directions. Self-esteem trajectories varied according to the level of social integration, such that low social integration exacerbated later life declines in self-esteem. The influence of social integration on self-esteem was also stronger at higher levels of neuroticism. Perceived discrimination's influence on self-esteem did not vary by participants' age or neuroticism.

Discussion: Social ties are influential for well-being across the life course, but may take on added importance in later life. Oldest-old and neurotic adults are at particular risk of experiencing low self-esteem if they lack integration with their community.

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KEYWORDS

Emotional well-being; life course; psychosocial stressors; social support

Introduction

Social ties are instrumental for mental health and well-being across the life course (Kawachi & Berkman, 2001; Thoits, 2011; Umberson & Montez, 2010). This includes not only intimate ties such as family and close friends, but weaker ties as well, such as integration and interactions within one's community (Berkman, Glass, Brissette, & Seeman, 2000; Cornwell & Waite, 2009). Yet social networks differ according to personality and can vary with age; thus the influence of social ties may vary as well (Carstensen, Isaacowitz, & Charles, 1999; Lang, Staudinger, & Carstensen, 1998). In later life in particular, individuals reduce the size of their social networks to focus on their most emotionally rewarding relationships and to optimize their emotional well-being (Carstensen et al., 1999; Carstensen, Fung, & Charles, 2003). Some later life reductions in social network size are unchosen, however, as social ties are lost to death, incapacity, or relocation (Rook, 2009). These relationships can be difficult to replace, making older adults more susceptible to social isolation and more dependent upon 'weak ties' such as neighbors for social contact (Cornwell, Laumann, & Schumm, 2008; Rook, 2009). Moreover, personality traits such as neuroticism may be related not only with individual well-being, but with perceptions of and experiences within one's community, as well (Keyes, Shmotkin, & Ryff, 2002; Turiano et al., 2012). This study aims to examine the influences of 'weak' social ties on self-esteem across mid- and later life, and to determine whether any such influences may vary according to individuals' age and personality (neuroticism).

Background

Self-esteem is an important aspect of well-being, referring to individuals' feelings of goodness and self-worth. Self-esteem reflects the extent to which individuals feel valued, cared for and about, and that they matter to others (Thoits, 2011). Further, low self-esteem is associated with a number of negative mental and physical health outcomes, including anxiety, depression, and worse self-rated health (Fernandez, Mutran, & Reitzes, 1998; Orth, Robins, & Widaman, 2012; Thoits, 2011). Self-esteem may serve as a resource for coping with stress, but it is also susceptible to social influences such as support and strain (Thoits, 1995; 2011). Even minor everyday demonstrations of caring, understanding, and mattering to others can sustain adults' self-esteem and sense of worth. This is not limited to deliberate acts of support from intimates and close partners either, but may apply to subtle kindnesses and general perceptions of mattering to others as well (Thoits, 2011). Conversely, demonstrations of *not* caring or of devaluation may act as stressors that harm adults' self-esteem (Thoits, 2011). Thus self-esteem is an important mechanism linking social ties and integration with mental and physical health (Berkman et al., 2000; Thoits, 1995; 2011).

Social integration has the potential to promote better self-esteem throughout adulthood, as it connotes a sense of belonging and mattering to one's community (Keyes, 1998; Thoits, 2011). This study follows Keyes' (1998) definition of social integration as 'the evaluation of the quality of one's relationship to society and community,' and thus as a

subjective measure of perceived cohesion or connectedness, rather than an objective measure of social participation or embeddedness (e.g. Berkman et al., 2000). Such perceived belonging may reflect positive relations with community members and neighbors, subtle forms of social support than can bolster feelings of self-esteem (Thoits, 2011).

Social ties and their importance can shift over the life course, however, with potential implications for trajectories of well-being. In particular, older adults have smaller social networks than their younger peers, through a combination of conscious reductions and unintentional losses of social partners (Carstensen et al., 1999; Rook, 2009). Thus, while older adults may prioritize their best relationships and even pay greater attention to positive than to negative stimuli (Mather & Carstensen, 2005), they are also at increased risk of social disconnectedness and isolation as they age (Cornwell et al., 2008; Rook, 2009). As a result, the oldest-old depend more on their neighborhoods and communities for social engagement than their younger – and even young-old – counterparts do (Cornwell et al., 2008). Therefore, it is possible that social integration in one's community may take on added prominence for emotional well-being as individuals age and gradually lose other social ties.

For the most part, self-esteem remains relatively stable throughout adulthood (e.g. Wagner, Hoppmann, Ram, & Gerstorf, 2015). However, there is some evidence that self-esteem declines late in life, and among the oldest-old in particular (McMullin & Cairney, 2004; Orth et al., 2012). The present study examines the role of 'weak' social ties in this process, in order to determine whether social influences on self-esteem are strongest at the latest stages of the life course.

Not all social ties or engagement with one's community are positive, however. While social integration may function as a form of social support, interactions with neighbors and community members can also be negative and straining (e.g. Moorman, Stokes, & Morelock, 2017). Day-to-day experiences of discrimination are not uncommon, for instance, although as adults age they become less likely to experience – or perceive – discrimination against them (Kessler, Mickelson, & Williams, 1999; Mather & Carstensen, 2005; Stokes & Moorman, 2016). Perceived discrimination acts as a psychosocial stressor, with harmful effects for adults' mental, physical, and emotional health (Luo, Xu, Granberg, & Wentworth, 2012; Pascoe & Richman, 2009; Pearlin, 1989; Vogt Yuan, 2007). Yet stressors do not impact all persons uniformly, and intersections between stressors and the life course are of particular interest for gerontologists (Pearlin & Skaff, 1996). Indeed, if social network reductions – both chosen and unchosen – make oldest-old individuals depend more heavily on their communities for social engagement, they may also make the oldest-old more vulnerable to the harmful effects of social stressors such as discrimination. On the other hand, both reduced network size and positivity bias may result in less exposure to discrimination among the oldest-old, diminishing its importance for self-esteem. Thus, this study examines both positive (i.e. social integration) and negative (i.e. perceived discrimination) aspects of social engagement with one's community, and their respective influences on self-esteem across mid- and later life.

In addition to age, social ties and their influences may differ according to personality, as well (Denissen & Penke, 2008; Segel-Karpas & Lachman, forthcoming). Of the Big Five personality traits, neuroticism in particular has been consistently

and strongly linked with worse physical and mental health outcomes (Lahey, 2009; Mroczek & Almeida, 2004; Mroczek, Spiro, & Turiano, 2009; Turiano et al., 2012). Neurotic individuals are more likely than their peers to notice negative stimuli and experience concomitant distress (Bookwala & Schulz, 1998; Mroczek & Almeida, 2004; Segel-Karpas & Lachman, forthcoming). This applies to negative aspects of social relationships, as well, as highly neurotic individuals pay more attention to straining or conflictual aspects of their relationships, and therefore tend to have less satisfying intimate and personal relationships in general (Caughlin, Huston, & Houts, 2000; Iveniuk, Waite, Laumann, McClintock, & Tiedt, 2014).

Neuroticism is also associated with more negative attitudes towards aging, which can in turn be harmful for self-esteem (Bryant et al., 2016; Westerhof, Whitbourne, & Freeman, 2012). This may also make neurotic individuals more likely to notice or report discrimination in later life, as adults become likelier ascribe experiences of discrimination to age as they get older (Kessler et al., 1999). Neurotic individuals may also be more sensitive to discrimination's negative psychological and emotional effects (e.g. Mroczek & Almeida, 2004). Additionally, neurotic individuals are at greater risk of experiencing low self-esteem, and may have fewer social resources to turn to for support (Lang et al., 1998; Ready, Åkerstedt, & Mroczek, 2012). Therefore, this study aims to determine whether the influences of social integration and perceived discrimination on self-esteem differ according to neuroticism, as well as age.

Purpose of the study

The present study has three primary aims. First, to examine the influences of social integration and perceived discrimination on self-esteem across mid- and later life. Second, to determine whether either of these influences differs according to individuals' age. Third, to determine whether either of these influences differs according to individuals' neuroticism.

Methods

Data & sample

Data for this study came from the two most recent waves of the National Study of Midlife Development in the United States (MIDUS, 2004–2014). The first wave of MIDUS data collection commenced in 1995–1996 with a national probability sample of noninstitutionalized, English-speaking residents of the contiguous U.S. aged 24–74, who were selected using a random digit dial (RDD) procedure (Ryff et al., 2017). Follow-up surveys were conducted between 2004–2006, and again between 2013–2014. Questions concerning self-esteem were added at wave 2 and were repeated at wave 3; therefore, wave 1 data were excluded from the present study. Information was collected from participants via two instruments: phone interviews and a self-administered questionnaire (Ryff et al., 2017). Since items of interest for this study (e.g. self-esteem) were collected via the self-administered questionnaire, the sample was restricted to those individuals who completed both the phone interview and the questionnaire.

There were 1,805 individuals (a 59% retention rate from wave 1) who responded to both the phone interview and self-administered questionnaire at wave 2. Of these, 1,100 (61%) responded to both the phone interview and self-

administered questionnaire again at wave 3. An additional 77 individuals participated at wave 3, but not at wave 2. The final analytic sample for the present study thus consisted of 2,982 observations from 1,882 individuals gathered across the two most recent waves of MIDUS. Respondents who participated at both wave 2 and wave 3 reported significantly higher self-esteem and were significantly younger, wealthier, healthier, and better educated than those who responded at wave 2 only. Additionally, participants who returned at wave 3 were significantly more likely to be White and less likely to be Black; more likely to be married and less likely to be widowed; and more likely to be employed and less likely to be retired than were those who responded at wave 2 only. Data were analyzed using random effects models, which account for the nesting of observations within individuals and allow for analysis of data from all participants who responded at either wave, and not only those who responded at both waves.

Outcome

Self-esteem. Self-esteem was measured using a 7-item scale (Rosenberg, 1965). Response options ranged from 1 (*Strongly agree*) to 7 (*Strongly disagree*). Sample items included 'I take a positive attitude toward myself' and 'At times I feel that I am no good at all.' Self-esteem was coded such that higher values indicated better self-esteem ($\alpha = .76$).

Predictors of interest

Social integration

Social integration was measured using a 3-item scale (Keyes, 1998). Response options ranged from 1 (*Strongly agree*) to 7 (*Strongly disagree*) to questions including 'I feel close to other people in my community' and 'My community is a source of comfort.' Social integration was coded such that higher values indicated greater social integration ($\alpha = .74$).

Perceived discrimination

Perceived discrimination was measured using a 9-item scale concerning the frequency of participants' day-to-day experiences of discrimination (Williams, Yu, Jackson, & Anderson, 1997). Responses ranged from 1 (*Never*) to 4 (*Often*) concerning items such as 'You are treated with less respect than other people' and 'People act as if they think you are not as good as they are' ($\alpha = .92$). Due to significant positive skew, perceived discrimination was recoded such that 1 = *Never*, 2 = *More than never to rarely*, 3 = *More than rarely to sometimes*, and 4 = *More than sometimes to often*. Results of interest were unchanged compared with the raw coding.

Neuroticism

Neuroticism was measured using a 4-item scale (Lachman & Weaver, 1997). Response options ranged from 1 (*A lot*) to 4 (*Not at all*). Sample items included 'Moody describes you how well' and 'Nervous describes you how well.' The scale was coded such that higher values indicated greater neuroticism ($\alpha = .72$).

Age

Age was measured as a continuous variable, in years. Age ranged from 30 to 84 at wave 2, and from 39 to 93 at wave 3. Age was mean-centered, and quadratic and cubic

transformations were also included for analysis, in order to model nonlinearity.

Covariates

To ensure the validity of results, a number of potential confounds were also examined. Control measures were included for income, self-rated health, gender, race/ethnicity, education, marital status, parental status, and employment status. *Income* was measured using a self-report item. At wave 2, participants reported income for the previous year, with responses ranging from 1 (*less than \$0*) to 42 (*\$200,000 or more*). At wave 3, response options expanded to a maximum of 44 (*\$300,000 or more*). Participants' income reports were standardized for each wave, to improve comparability across waves. *Self-rated health* was measured using a single item ranging from 1 (*poor*) to 5 (*excellent*). Gender was measured using a dichotomous indicator for *female*. Race/ethnicity was measured using three dichotomous indicators for *White* (reference), *Black*, and *Other race*, along with a separate dichotomous indicator for *Hispanic*. Education was measured using dichotomous indicators for *less than high school*, *high school degree* (reference), *some college*, *college degree*, and *some education beyond college*. Marital status was measured using dichotomous indicators for *married* (reference), *divorced/separated*, *widowed*, and *never married*. Parental status was measured using a dichotomous measure of whether a participant *had any children*. Employment status was measured using three dichotomous indicators for *employed* (reference), *retired*, and *not employed*. All continuous variables were mean-centered for analysis. All multi-item scales were generated as mean-score scales, and were set to missing for participants who answered fewer than half of the scale items.

Analytic strategy and missing data

The majority of cases (76%) had complete data for all measures included in the analysis. The item with the greatest missingness was income, for which 18% of cases were missing data. Missing data diagnostics revealed no clear patterns of missingness. Thus multiple imputation by chained equations was used to address missing data, with a total of 10 complete data sets generated for analysis (Johnson & Young, 2011; Royston, 2005). Listwise analyses produced similar substantive results. The imputed analyses were preferred, however, as they incorporated all possible cases and reduced potential bias.

Because observations were nested within individuals, random effects models were used to account for non-independence of the data. That is, intercepts for self-esteem were modeled as random and could vary across individuals, while the effects of predictors were modeled as stable (i.e. fixed) across individuals. Random effects models estimate both between- and within-person effects simultaneously. Fixed effects and change-score models analyzing only within-person change produced similar substantive results. Random effects models were preferred and are presented below, as they analyze data from all participants who responded at *either* wave, rather than only those who responded at *both* waves (i.e. 58% of the total sample).

Analysis began with a main effects model, which included all predictors of interest and all control measures. Visual examination of the data suggested a cubic distribution of self-

esteem; therefore quadratic and cubic transformations of age were included in the main effects model. Model 2 added interactions between social integration and each of the curvilinear age variables (age, age-squared, and age-cubed). Model 3 tested interactions between perceived discrimination and each of the curvilinear age variables, adding these to the main effects model. Model 4 added the interaction between social integration and neuroticism to the main effects model, while Model 5 did the same for the interaction between perceived discrimination and neuroticism. Lastly, Model 6 simultaneously tested all significant (at $p < .05$) interaction terms found in Models 2 through 5. Additional interactions between neuroticism and age, as well as a three-way interaction between social integration, neuroticism, and age, were considered but ultimately excluded due to non-significance ($p \geq .05$).

Results

Descriptive statistics

Overall, participants reported fairly high levels of self-esteem and social integration, averaging 5.36 and 4.85 on the 7-point scales, respectively. Participants also reported moderate levels of neuroticism, with an average of 2.10 on the 4-point scale. Perceived discrimination was moderate, as well, with 40% of cases reporting no discrimination, and an overall average of 1.72 on the 4-point scale. Participant age ranged from 30 to 93, with an overall average slightly below 60. Table 1 presents descriptive statistics for all variables included in the analysis.

Table 1. Descriptive statistics, National Study of Midlife Development in the United States, 2004–2014 ($N = 2,982$ observations from 1,882 individuals).

	Wave 2 ($n = 1,805$) Mean (SD), or %	Wave 3 ($n = 1,177$) Mean (SD), or %
Self-esteem	5.36 (1.05)	5.36 (1.02)
Social integration	4.86 (1.33)	4.85 (1.33)
Perceived discrimination	1.74 (0.67)	1.70 (0.68)
Neuroticism	2.09 (0.63)	2.10 (0.63)
Age	56.85 (12.62)	64.72 (11.37)
Income ^a	\$25,969 (\$17,798)	\$25,234 (\$21,161)
Self-rated health	3.50 (1.00)	3.38 (1.06)
<i>Gender:</i>		
Female	54.68%	53.27%
Male	45.32%	46.73%
<i>Race:</i>		
White	89.92%	91.33%
Black	5.43%	4.59%
Other race	4.65%	4.08%
<i>Ethnicity:</i>		
Hispanic	3.89%	3.66%
Not Hispanic	96.11%	96.34%
<i>Education:</i>		
Less than HS	7.10%	5.27%
HS degree	27.23%	24.83%
Some college	28.62%	29.59%
College degree	18.86%	20.75%
Some education beyond college	18.19%	19.56%
<i>Marital status:</i>		
Married	67.37%	63.83%
Divorced/separated	16.54%	16.68%
Widowed	8.60%	11.91%
Never married	7.49%	7.57%
<i>Parental status:</i>		
Has children	87.04%	87.26%
No children	12.96%	12.74%
<i>Employment status:</i>		
Employed	49.28%	47.75%
Retired	27.76%	29.12%
Not employed	22.97%	23.13%

^a Income reported in U.S. dollars, calculated from the raw scores. Income was transformed into standardized scores for analysis.

Analytic results

Table 2 displays the results of the analytic models. Model 1 included all predictors of interest, as well as all control variables. First, social integration was significantly positively associated with self-esteem ($B = .18, p < .001$), whereas perceived discrimination ($B = -.12, p < .001$) and neuroticism ($B = -.57, p < .001$) were significantly negatively associated with self-esteem. Lastly, self-esteem displayed a cubic distribution across the age range, as the linear ($B = .01, p < .01$), quadratic ($B = -2e-4, p < .01$), and cubic ($B = -1e-5, p < .01$) age variables were all significant predictors. This curvilinear distribution is illustrated in Figure 1.

On average, self-esteem declined slightly from age 30 until approximately age 40, increased slightly from age 40 until approximately age 70, then declined again after age 70. Despite the significant curvilinearity of this distribution, self-esteem appears relatively stable across the age range of this sample (30–93). The largest of these changes, for instance (the decline in self-esteem after age 70), marks only a roughly 0.5-point change on the 7-point scale.

Model 2 added interaction terms between social integration and the linear, quadratic, and cubic age variables. The previous main effects of social integration, perceived discrimination, and neuroticism remained significant, as did the effects of the linear, quadratic, and cubic age variables. Additionally, the interactions between social integration and linear age ($B = -.01, p < .01$) and between social integration and cubic age ($B = 9e-6, p < .05$) were statistically significant, while the interaction between social integration and quadratic age was not. This indicates that the trajectory of self-esteem across the age range varies according to the level of social integration. More specifically, the directions of the coefficients indicate that at higher levels of social integration, both the (positive) linear and the (negative) cubic effects of age weaken, making the trajectory of self-esteem less curvilinear and more constant.

Model 3 tested interactions between perceived discrimination and each of the three age variables. No significant effects were altered, and none of the interaction terms were significant. Model 4 tested an interaction between social integration and neuroticism, which was significant ($B = 0.08, p < .001$), indicating that the influence of social integration on self-esteem was stronger for those who reported higher levels of neuroticism. No other significant effects were changed. Model 5 tested an interaction between perceived discrimination and neuroticism, which was not significant and did not alter any other effects. Lastly, Model 6 simultaneously tested the significant interaction terms found in Models 2 through 5, namely between social integration and each of the three age variables, as well as between social integration and neuroticism. The interactions between social integration and linear age, cubic age, and neuroticism remained significant, with no other changes in coefficient significance. Taken together, these interactions indicate that the self-esteem gap between individuals with high and low levels of neuroticism (i.e. the effect of neuroticism on self-esteem) was reduced at higher levels of social integration, and that social integration helped buffer against late life declines in self-esteem. Figure 2 illustrates the intersecting roles of all three of these factors in fostering self-esteem in mid- and later life.

Table 2. Random effects models predicting self-esteem in mid- and later life ($N = 2,982$).

	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)	Model 5 B (SE)	Model 6 B (SE)
<i>Predictors of interest</i>						
Social integration ^a	0.18*** (.01)	0.18*** (.01)	0.18*** (.01)	0.17*** (.01)	0.18*** (.01)	0.18*** (.02)
Perceived discrimination ^a	-0.12*** (.02)	-0.12*** (.02)	-0.14*** (.03)	-0.12*** (.02)	-0.12*** (.02)	-0.12*** (.02)
Neuroticism ^a	-0.57*** (.03)	-0.56*** (.03)	-0.57*** (.03)	-0.55*** (.03)	-0.57*** (.03)	-0.55*** (.03)
Age ^a	0.01** (3e-3)					
Age ^{2a}	-2e-4** (8e-5)	-2e-4** (9e-5)	-2e-4** (9e-5)	-2e-4** (8e-5)	-2e-4** (8e-5)	-2e-4** (8e-5)
Age ^{3a}	-1e-5** (5e-6)	-1e-5** (5e-6)	-1e-5* (5e-6)	-1e-5** (5e-6)	-1e-5** (5e-6)	-1e-5** (5e-6)
<i>Interaction terms</i>						
Social integration ^a x age ^a	-	-0.01** (2e-3)	-	-	-	-4e-3** (2e-3)
Social integration ^a x age ^{2a}	-	-5e-5 (6e-5)	-	-	-	-7e-5 (6e-5)
Social integration ^a x age ^{3a}	-	9e-6* (4e-6)	-	-	-	8e-6* (4e-6)
Perceived discrimination ^b x age ^a	-	-	4e-3 (3e-3)	-	-	-
Perceived discrimination ^b x age ^{2a}	-	-	1e-4 (1e-4)	-	-	-
Perceived discrimination ^b x age ^{3a}	-	-	-10e-6 (8e-6)	-	-	-
Social integration ^a x neuroticism ^a	-	-	-	0.08*** (.02)	-	0.08*** (.02)
Perceived discrimination ^b x neuroticism ^a	-	-	-	-	-0.03 (.03)	-
<i>Covariates</i>						
Income ^b	0.12*** (.02)	0.12*** (.02)	0.12*** (.02)	0.12*** (.02)	0.12*** (.02)	0.12*** (.02)
Self-rated health ^a	0.13*** (.02)	0.13*** (.02)	0.13*** (.02)	0.13*** (.02)	0.13*** (.02)	0.13*** (.02)
Female ^c	-0.04 (.04)	-0.04 (.04)	-0.04 (.04)	-0.04 (.04)	-0.04 (.04)	-0.04 (.04)
Black ^d	0.27** (.08)	0.27** (.08)	0.28** (.08)	0.26** (.08)	0.27** (.08)	0.26** (.08)
Other race ^d	-0.04 (.09)	-0.04 (.09)	-0.05 (.09)	-0.05 (.09)	-0.04 (.09)	-0.05 (.09)
Hispanic ^e	0.20* (.09)	0.20* (.09)	0.20* (.09)	0.20* (.09)	0.20* (.09)	0.21* (.09)
Less than HS ^f	-0.03 (.07)	-0.04 (.07)	-0.03 (.07)	-0.03 (.07)	-0.03 (.07)	-0.04 (.07)
Some college ^f	0.04 (.04)	0.04 (.04)	0.04 (.04)	0.05 (.04)	0.04 (.04)	0.04 (.04)
College degree ^f	0.16** (.05)	0.16** (.05)	0.16** (.05)	0.17** (.05)	0.16** (.05)	0.17** (.05)
Some education beyond college ^f	0.08 (.05)	0.08 (.05)	0.08 (.05)	0.09 (.05)	0.08 (.05)	0.09 (.05)
Divorced/separated ^g	-0.09 (.05)	-0.08 (.05)	-0.09 (.05)	-0.08 (.05)	-0.09 (.05)	-0.08 (.05)
Widowed ^g	-0.08 (.06)	-0.08 (.06)	-0.08 (.06)	-0.07 (.06)	-0.08 (.06)	-0.07 (.06)
Never married ^g	-0.08 (.08)	-0.08 (.08)	-0.09 (.08)	-0.07 (.08)	-0.08 (.08)	-0.07 (.08)
Has children ^h	0.08 (.06)	0.09 (.06)	0.08 (.06)	0.10 (.06)	0.08 (.06)	0.10 (.06)
Retired ⁱ	0.05 (.05)	0.05 (.05)	0.05 (.05)	0.05 (.05)	0.05 (.05)	0.05 (.05)
Not employed ⁱ	-4e-3 (.04)	-3e-3 (.04)	-1e-3 (.04)	1e-3 (.04)	-3e-3 (.04)	2e-3 (.04)
<i>Model fit</i>						
F ; df	60.43***, 22	53.93***, 25	53.30***, 25	59.48***, 23	57.80***, 23	53.05***, 26

^a Mean-centered variable.

^b Standardized variable.

^c Reference group is male.

^d Reference group is White.

^e Reference group is Not Hispanic.

^f Reference group is HS degree.

^g Reference group is Married.

^h Reference group is No children.

ⁱ Reference group is Employed.

* $p < .05$,

** $p < .01$,

*** $p < .001$

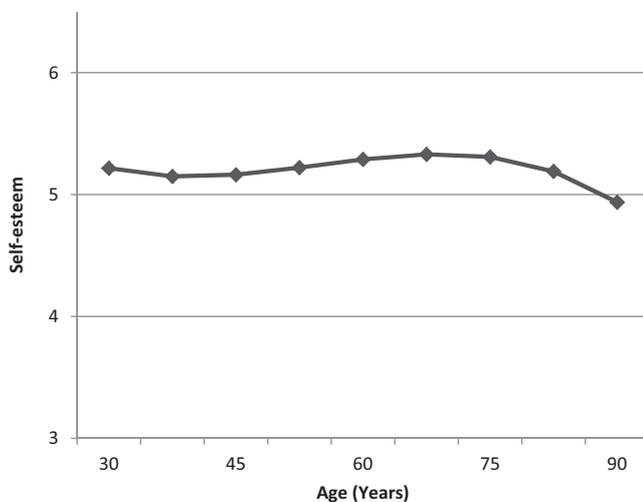


Figure 1. Trajectory of self-esteem across mid- and later life, 2004–2014.

Note: All continuous covariates set to mean-level; all categorical covariates set to reference group. Y-axis truncated.

Discussion

This study sought to examine the influences of positive (i.e. social integration) and negative (i.e. perceived discrimination) aspects of social engagement on self-esteem in mid- and later life, as well as whether these influences differed according to individuals' age and neuroticism. Key findings were that (a) self-esteem displayed a slight cubic trajectory throughout mid- and later life, declining until about age 40, rising to a peak near age 70, and declining again from age 70 onwards; (b) social integration, perceived discrimination, and neuroticism were all significantly associated with self-esteem, in the expected directions; (c) the trajectory of self-esteem across the age range varied according to the level of social integration; and (d) the effect of social integration on self-esteem was stronger at higher levels of individual neuroticism.

Social integration, self-esteem, and age

Social ties in one's community can contribute to well-being across the life course (Berkman et al., 2000; Kawachi &

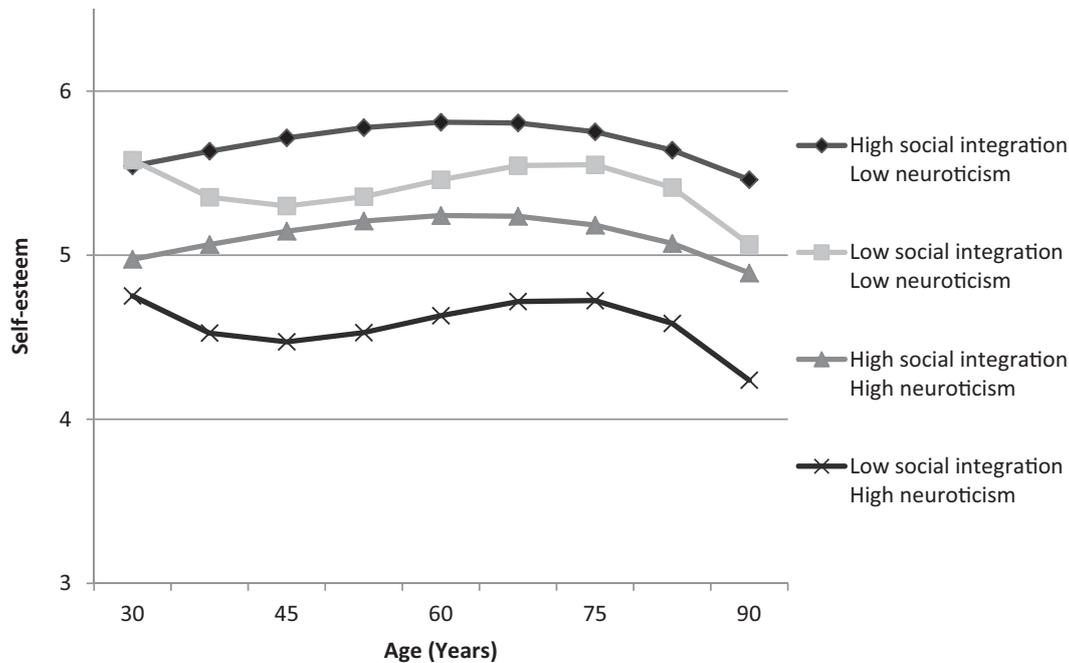


Figure 2. Social integration, neuroticism, and trajectories of self-esteem across mid- and later life, 2004–2014.

Note: High social integration and high neuroticism are defined as 1 SD above average. Low social integration and low neuroticism are defined as 1 SD below average. All continuous covariates set to mean-level; all categorical covariates set to reference group. Y-axis truncated.

Berkman, 2001). Social integration may serve as a source of social support, fostering a sense of belonging and reducing the disconnectedness and feelings of isolation that can be harmful for adults' mental and physical health (Cornwell & Waite, 2009; Thoits, 2011). As anticipated, this study found that social integration was associated with higher self-esteem. However, the influence of social integration on self-esteem varied according to age.

The overall trajectory of self-esteem across the age range displayed a cubic distribution, but only a very minor one; indeed, the average trajectory of self-esteem was quite stable (e.g. Wagner et al., 2015). However, the interactions shown in Figure 2 illustrate that this stability was not uniform: First, self-esteem improved slightly in late middle age and early older age (i.e. approximately between ages 45 and 70) regardless of one's level of social integration. It is possible that this reflects individuals prioritizing their best relationships and consciously trimming their social networks to optimize well-being (e.g. Carstensen et al., 1999; Carstensen et al., 2003). Second, however, social integration became a more crucial determinant of well-being in later life: After age 70, high levels of social integration were associated with a slow and minor decline in self-esteem, whereas low levels of social integration were associated with a sharp decline in self-esteem that became ever steeper at older ages (e.g. McMullin & Cairney, 2004; Orth et al., 2012; Wagner et al., 2015). These results suggest that age-related reductions in social network size – due to both intentional selection and unchosen losses – make older adults more dependent upon their communities for social engagement (Cornwell et al., 2008; Rook, 2009). This then leads to social integration having the strongest influence on self-esteem at the latest stages of the life course. In short, the oldest-old were more dependent upon social integration to bolster their self-esteem than their younger and young-old counterparts were, highlighting the importance of a life course approach to studies of social ties and well-being.

Perceived discrimination and self-esteem

As expected, perceived discrimination was associated with poorer self-esteem (e.g. Luo et al., 2012; Pascoe & Richman, 2009). However, the effect of perceived discrimination on self-esteem did not vary across the age range. It is possible that, as individuals modify their social networks and remove poor or straining ties, older persons successfully avoid discriminatory interactions, social partners, and/or social spaces as an aspect of emotional regulation (e.g. Carstensen et al., 2003). This coheres with prior evidence that perceived discrimination decreases with age (Kessler et al., 1999). Moreover, older adults may effectively ignore or overlook discriminatory interactions, as an aspect of positivity bias (Mather & Carstensen, 2005). Thus, although perceived discrimination remains harmful for those who experience it, it does not take on added prominence in oldest-old age as social integration appears to.

Social ties and neuroticism

As noted, both social integration and perceived discrimination were associated with adults' self-esteem. Additionally, neuroticism was related with lower self-esteem throughout mid- and later life (Ready et al., 2012). Yet these social and individual influences were not independent of one another: Social integration was more strongly linked with self-esteem at higher levels of neuroticism. It is possible that because neurotic individuals are likelier to focus on conflictual aspects of social interactions and to have poorer personal relationships, they may have fewer social resources and thus depend more heavily than others on their communities for social connectedness and support (Bookwala & Schulz, 1998; Caughlin et al., 2000; Iveniuk et al., 2014; Lang et al., 1998). This finding is partly at odds with some prior research, which has found heightened sensitivity to negative but not positive stimuli for neurotic individuals (e.g. Bookwala & Schulz, 1998; Mroczek & Almeida, 2004; Segel-Karpas & Lachman, forthcoming). Thus

the results concerning social integration may instead reflect the impact of distress associated with social dis-integration, isolation, or rejection. Alternatively, these results may indicate the importance of quality rather than simply the amount of social contact for neurotic individuals' well-being (e.g. Segel-Karpas & Lachman, *forthcoming*).

The interaction between social integration and neuroticism underscores the beneficial impact of social ties in the community, when those ties are positive and supportive (Berkman et al., 2000; Thoits, 2011). Social integration does not only stabilize self-esteem trajectories throughout mid- and later life, but also reduces the self-esteem gap between those with high and low levels of neuroticism. As Figure 2 illustrates, the difference in self-esteem between those reporting high and low levels of neuroticism – whether at high or low levels of social integration – remains stable across the age range, but is larger for those reporting low levels of social integration (.83 vs. .57 on the 7-point scale). Thus, fostering social integration may mitigate the adverse effects of neuroticism on self-esteem throughout adulthood.

There was no increased vulnerability to perceived discrimination at higher levels of neuroticism, contrary to expectations. However, neurotic individuals may still be at heightened risk of poor self-esteem due to discrimination, as neurotic persons are equally impacted by experiences of discrimination but are more likely than others to perceive discrimination (e.g. Bookwala & Schulz, 1998; Huebner, Nemeroff, & Davis, 2005; Mroczek & Almeida, 2004).

Limitations

There are a number of limitations to this study that are worth noting. First, although this analysis makes use of longitudinal data, it is limited to only two waves since questions concerning self-esteem were not included in the first wave of MIDUS. Second, the approximately 9-year lag between data collection waves is quite long and may obscure within-person effects with shorter timespans. Third, the 9-year lag – combined with the age of participants – resulted in relatively high attrition between waves (39%), reducing the representativity of the longitudinal / within-person sample. This could lead to bias in fixed effects or change-score models, making random effects models preferable. Fourth, this study does not include direct measures of individuals' social resources (e.g. changes in network composition) and instead uses chronological age as a proxy. Lastly, this study cannot disentangle potential differences in age and cohort effects.

Implications and future directions

Despite these limitations, this study contributes to the literature on social integration and discrimination, personality, and well-being in later life. First, the findings of this study underscore the importance of social ties with one's community for older adults' well-being (Berkman et al., 2000; Cornwell & Waite, 2009). Social integration and discrimination were both significant predictors of self-esteem, with the former having a heightened influence at older ages. Although effect sizes were modest, long-term influences on outcomes such as self-esteem may be of special importance: Self-esteem is considered a coping resource (e.g. Thoits, 1995) as well as a mechanism linking stressors to mental and physical health (e.g. Thoits, 2011). Therefore, even moderate declines in self-

esteem may have snowball effects for other aspects of well-being, increasing the harmful effects of a variety of stressors on multiple different outcomes, such as anxiety, depression, and even health (Fernandez et al., 1998; Orth et al., 2012; Sowislo & Orth, 2013). That self-esteem was a correlate of attrition in this study underlines its importance for other outcomes. Future research should assess longer-term impacts of self-esteem declines throughout the life course.

Second, this study highlights the role of age as a central contextual factor when analyzing social ties and well-being. Self-esteem displayed a cubic – although fairly stable – distribution across mid- and later life overall, but this trajectory varied by the level of social integration. More specifically, self-esteem increased in late middle age and early later life irrespective of the level of social integration. Among the oldest-old, however, social integration served as a key stabilizing factor for self-esteem. The overall decline in self-esteem among older adults seen in this study coheres with prior research (McMullin & Cairney, 2004; Orth et al., 2012), while the interaction between age and social integration demonstrates the increased importance of community ties for the oldest-old, whose social networks have contracted due to a combination of chosen and unchosen relationship cessations (Cornwell et al., 2008). These findings illustrate the complex ways in which social ties and their influence(s) may differ over time; not only do social networks and well-being both vary with age, but so too do the associations between them. Future studies should further explore social factors that impact trajectories of self-esteem and related aspects of well-being throughout the life course, across multiple birth cohorts, and specifically among older adults (Cornwell et al., 2008; McMullin & Cairney, 2004).

Third, this study revealed the interconnection between social and personality factors associated with self-esteem in mid- and later life. Neuroticism was associated with poorer self-esteem across the age range. Additionally, social integration was more influential for self-esteem at higher levels of neuroticism, suggesting that neurotic individuals may be more dependent upon community ties for social support than their less-neurotic peers are. Furthermore, the present findings indicate that social integration may help diminish the self-esteem gap between high- and low-neuroticism individuals. Future research should seek to determine which social factors – both positive and negative – neurotic individuals are especially sensitive to (e.g. Mroczek & Almeida, 2004; Segel-Karpas & Lachman, *forthcoming*).

Conclusion

Social ties with one's community can impact well-being throughout adulthood, yet their influence may vary across the life course as well as according to personality factors. Older adults see their social networks shrink with age, putting them at risk of social isolation and making them more dependent upon their communities for social engagement. Accordingly, social integration becomes particularly important for self-esteem among the oldest-old. Further, neuroticism is related with worse self-esteem overall, but neurotic individuals also appear more sensitive to the benefits of social integration for self-esteem. Future research and interventions designed to improve later life outcomes ought to take seriously the role of positive and negative social ties in

mitigating – or exacerbating – age-related and personality-related differences in well-being.

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