Satisfying Singlehood as a Function of Age and Cohort: Satisfaction With Being Single Increases With Age After Midlife

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A growing body of research suggests that despite the stereotype of being dissatisfied with their relationship status, there is variability in how single (unpartnered) individuals feel about singlehood. The current research examined how satisfaction with singlehood varies (linearly or nonlinearly) with age. In Study 1, we analyzed five cross-sectional samples of single individuals ($N = 3,304$; collected in 2020–2021) using an integrative data analysis (IDA) approach. In Study 2, we used Dutch longitudinal data ($N = 3,193$; collected in 2008–2019) to more precisely separate the effect of age from that of birth cohort. Study 1 demonstrated that satisfaction with singlehood was positively associated with age after midlife whereas desire for a partner was negatively associated with age. Study 2 provided conceptually consistent evidence for age-related increases in satisfaction with singlehood during mid to late adulthood (around 40s–80s). Some evidence was found in Study 2 that more recent cohorts were higher in satisfaction with singlehood, but this effect did not hold when accounting for differences in marital status. These results provide evidence for potential age effects in well-being related outcomes for singles and suggest that midlife may be an important turning point. Understanding what makes singles satisfied with singlehood at older age may be a promising approach to gain insights into how to promote well-being of the rising single population.

> **Public Significance Statement**
> We found that midlife may be an important turning point for the well-being of single individuals as satisfaction with singlehood appeared to begin an upward trajectory around age 40. Our data add to the growing evidence that despite negative societal stereotypes about singles, there are a number of singles (such as those past midlife) who report being relatively satisfied about being single.

Keywords: relationship status, partnership, well-being

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Considerable research has shown that, on average, individuals with a romantic partner exhibit greater well-being than those without a partner (e.g., higher life satisfaction; Stahnke & Cooley, 2021). One contributor to such partnership differences in well-being is the varying degrees to which partnered and unpartnered individuals (singles hereafter) are content with their relationship status. Singles on average report lower levels of satisfaction with their relationship status compared to partnered individuals, which in turn has negative implications for their global life satisfaction (Lehmann et al., 2015). Nevertheless, despite lower average satisfaction, singles are likely to vary in how satisfied they are with being single and a growing body of research is attending to this within-group variability (e.g., Park et al., 2021). The aim of the present research is to further our understanding

of variability in single individuals' well-being by examining how age is related to satisfaction with singlehood. Examining age-related changes in experiences of singlehood emerges as particularly important given recent trends suggesting an increasing single population in later life (e.g., gray divorce revolution; Stepler, 2017).

Different lines of research may lead to different predictions about how feelings about singlehood may change across the lifespan. One way to think about how satisfied people are about being single is to consider how much they want and pursue finding a partner, absence of which defines singlehood. On this note, several theoretical perspectives on lifespan development (see Haase et al., 2013) such as the motivational theory of lifespan development (Heckhausen et al., 2010) suggest that singles who previously desired a partner may disengage from the goal of finding a partner as they get older, and thus feel more satisfied with being single. Specifically, this theory posits that people adjust their goal choices in accordance with changing opportunities throughout life. Arguably, finding a partner is a goal that becomes harder to achieve at later stages of life given age norms around partnering decisions (e.g., average age at first marriage being early 30s across Organisation for Economic Co-operation and Development [OECD] countries; Organisation for Economic Co-operation and Development [OECD], 2019), which indicates declines in available opportunities (i.e., pool of potential partners) after midlife. Indeed, Rapp (2018)

showed that partnership formation becomes increasingly less common in middle and later life (after 40). Subsequently, middle-aged individuals may disengage from the less attainable goal of partnering to instead engage in other, more attainable goals. In line with this idea, Wrosch and Heckhausen (1999) found that separated older individuals reported more social goals unrelated to partnership than did separated younger individuals or older individuals in committed relationships. Further, Scheibe et al. (2007) found a nonlinear link between age and life longings such that partnership was more likely to emerge as the most important life longing among middle-aged adults than among younger or older adults.

Another way of thinking about the role of age in satisfaction with singlehood is to consider its role in single individuals benefitting from nonromantic connections. Research has shown that whether one is single or not becomes less predictive of loneliness at an older (vs. younger) age (Böger & Huxhold, 2020), which suggests the possibility that older singles are relatively well-equipped with other ways to meet their relational needs. Indeed, one study found that older adults who reported not having a partner in a given year reported an increased number of interpersonal connections the next year (Reynolds et al., 2020), suggesting that older singles are drawn to and interact with nonromantic connections in the absence of a partner. Such connections can in turn confer broader well-being benefits for older adults (Huxhold et al., 2014), and more specifically, contribute positively to their feelings about singlehood (Park et al., 2021).

Alternatively, there are also reasons to hypothesize that single life is experienced as *less* satisfying for older adults. For example, as individuals' health and mobility declines, there is an increasing need for help with physical functioning or health-related care. Although this may not necessarily fuel desire for a partner (since there are alternative, more accessible means to receive care), it can potentially shape how one feels about (e.g., regrets) being single considering that a romantic partner often serves as a primary source of practical support (Northcott & Hilari, 2018). Indeed, considerable evidence has accumulated to show that being partnered (married) is associated with better health outcomes, and one compelling reason for this link is precisely that partnered individuals benefit from the practical help and support their partner provides (e.g., Datta et al., 2009; Wu et al., 2012). Thus, at ages where health issues become more common and debilitating (i.e., late adulthood), singlehood that may entail difficulties in meeting one's need for practical or instrumental support can be experienced as less satisfying.

Lastly, there are also perspectives that do not confer clear linear predictions as to how satisfaction with singlehood changes with age. For example, from the perspective that there is a "social clock" dictating when major life events such as marriage occur and that deviating from this schedule may cause stress (Elder, 1975; Neugarten, 1979), one may predict that being single will be less satisfying as one gets closer to an age where being partnered is considered normative (i.e., as one moves out of early adulthood and toward middle adulthood). In support of this idea, Lee et al. (2020) found that the status of having never been married was associated with a higher incidence of mental disorders for individuals older than the mean age at marriage (early 30s in Korea). Similarly, Carlson (2012) showed that never-married individuals experienced poorer mental health, significantly worse than married individuals, as their age exceeded their desired age at marriage. Nevertheless, given that not all partnered individuals stay in their relationships (e.g., widowhood, gray divorce; Stepler, 2017), there arguably also

comes a time in later adulthood when being *single* becomes a more normative status again. Perhaps then, singlehood may be experienced as more satisfying with age during late adulthood. Combined, these ideas raise the possibility of a nonlinear trajectory of satisfaction with singlehood across the lifespan.

Evidence to Date

To the authors' knowledge, there has been one empirical investigation into the role of *aging* (rather than age at a single time point; e.g., Oh et al., 2021)[1] in changing levels of satisfaction with singlehood. Böger and Huxhold's (2020) research used longitudinal data from Germany to examine how satisfaction with singlehood changed over 6 years. Participants in this study were aged between 40 and 85 and their responses in 2008 and 2014 were analyzed. At the cross-sectional level, the researchers found that individuals in older age groups were less satisfied with being single than those in younger age groups, possibly supporting the hypothesis that singlehood becomes less satisfying as one ages. However, an important limitation with cross-sectional analyses is that effects due to a person's age or aging (i.e., life-course effect) are confounded with effects due to the era in which someone matured (i.e., cohort effect). For example, lower levels of satisfaction with singlehood observed at an older age might reflect differences due to aging (i.e., individuals become less satisfied with singlehood as they age) or due to cohort membership (i.e., singles from previous cohorts are less satisfied with singlehood than those from more recent cohorts).

Cohort effects may indeed be a compelling possibility in this case considering how the partnership-related norms have changed over generations. For example, delayed first marriages around the world (OECD, 2019) seem to indicate that the age at which singles begin to feel nonnormative may have increased across cohorts (i.e., changes in the "social clock"; Neugarten, 1979), which suggests that compared to those from previous cohorts, singles from more recent cohorts may experience their singlehood as socially normal and thus satisfying until later in life. Supposedly, these changes in marital trends may reflect shifts in values or needs at a societal level (e.g., increased importance placed on individual autonomy or self-actualization; Lesthaeghe, 2010). Further and somewhat relatedly (see Fiori et al., 2020 for an in-depth discussion), the way older individuals perceive and maintain their friendships has also changed across cohorts. For example, with increased life expectancy, older adults in more recent (vs. previous) cohorts may perceive more opportunities to make new friends and engage with others (Fiori et al., 2020; Huxhold, 2019). In support of this idea, Schwadel and Stout (2012) showed that more recent cohorts tended to spend more time with friends who live outside of their neighborhood. To the extent that such nonromantic connections in turn contribute to one's beliefs and feelings about being single (e.g., Park et al., 2021), it seems plausible to expect some cohort effects on global satisfaction with singlehood. Indeed, Böger and Huxhold (2020) found in their longitudinal analyses that, in contrast to their cross-sectional

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[1] Oh et al. (2021) examined age in relation to satisfaction with singlehood, although they did not focus on how changes in age play a role. Specifically, using 10-year data from Germany, they showed that age was negatively associated with satisfaction with singlehood in each wave, but that age at baseline was not associated with changes in satisfaction with singlehood across years.

findings and challenging the idea of a negative life-course effect, singles in all age groups increased in satisfaction with singlehood over 6 years. That is, their data seemed to suggest that rather than people becoming more dissatisfied as they age, singles from more recent cohorts were experiencing greater satisfaction with singlehood than singles from previous cohorts.

While Böger and Huxhold's (2020) study provided important insights into the role of age in accounting for variability in satisfaction with singlehood, because their sample only consisted of adults older than 40 years, their data could not speak to younger adults' levels of satisfaction with singlehood. This has implications for detecting a nonlinear effect of age (which was explored but no evidence was found) given that if midlife were precisely the turning point at which age starts to be differently associated with satisfaction with singlehood, the data may not be able to reveal such nonlinearity. Further, the life-course effect was inferred from comparing participants' satisfaction at two time points assessed over 6 years, which may be a relatively short time-frame and less sensitive to change than data from multiple time points.

Research Overview

In the current research, we examined life-course effects on satisfaction with singlehood in two studies with different strengths and limitations (see the Supplemental Material for a direct comparison of the two studies). In Study 1, we examined the relation between age and satisfaction with singlehood in a large cross-sectional data set. This approach allowed us to replicate the cross-sectional findings of Böger and Huxhold (2020) with a broader age range and utilizing a validated multi-item measurement (vs. single-item measure used in the previous research). Despite its limited ability to speak to life-course effects, we believe a robust examination of the age effect in this cross-sectional data set can provide useful information about how older versus younger singles today (in 2021) experience singlehood, which may be particularly important as many contemporary singlehood studies rely on similar cross-sectional data sets to discuss age effects (e.g., Apostolou et al., 2020). Further, Study 1 also allowed us to examine an additional outcome variable, desire for a romantic partner, in relation to age. To the extent that greater satisfaction with being single reflects disengagement from the goal of pursuing a partnership, our data regarding desire for a romantic partner can help us interpret any age differences we find in satisfaction with singlehood.

In Study 2, we tried to capture life-course effects more precisely by using 12-year longitudinal data. Extending Böger and Huxhold's (2020) work in which one follow-up assessment of satisfaction with singlehood was examined, we analyzed all available reports from participants (in a broad age range) when they were single in the study period. Of course, such a longitudinal examination cannot bypass limitations due to sampling (i.e., a potential systematic bias affecting who stays single and thus contributes multiple reports to the data set), a point we revisit in the discussion. Nevertheless, by utilizing multiple assessments from an individual and accounting for a possible cohort effect, we hoped to better address the question of whether there are aging-related changes in satisfaction with singlehood.

In both Studies 1 and 2, we explored whether any age effects we observe differ by gender or marital history—that is, is the link between age and satisfaction with singlehood different for men versus women or for those who have ever versus never married? For

example, it is possible that age-related declines in satisfaction with singlehood may be relatively weaker for women as they have larger social networks compared to men (even) at older ages (McLaughlin et al., 2010). On the other hand, while it is hard to speculate how marital history and age might interactively play a role in changes in satisfaction with singlehood, some evidence suggests that singlehood experiences may be particularly difficult in later life for previously married singles compared to never-married singles. For example, older individuals who were divorced or widowed tend to report greater strains of singlehood such as difficulty leading an active social life (Pudrovska et al., 2006). Indeed, life events such as marriage or divorce, which indicates taking on or exiting a social role (Wundrack et al., 2021), can have an impact on people's personalities (but see Bleidorn et al., 2018; Denissen et al., 2019) that people may carry with them into singlehood. For example, to the extent that divorce is associated with decreases in extraversion (Allemand et al., 2015), it is possible that divorced and widowed singles may be less interested in or less capable of creating an active social life as those who are never married.

Study 1

Method

Transparency and Openness

The deidentified data for Study 1 can be found at the Open Science Framework link reported in the author note. Information about access to Study 2 data can be found at https://www.lissdata.nl/access-data. Study materials as well as analytic codes can also be found in the aforementioned link. Our research was not preregistered.

Participants and Procedures

Our analyses in Study 1 were based on five data sets that had been collected in the authors' lab for other studies. A total of 3,304 participants' (1,669 men, 1,623 women, 12 other) data were available for analysis, which G*Power (Faul et al., 2007) suggested provides adequate power (>99%) to detect a small effect ($f^2 = .02$) at $\alpha = .05$ in our regression model. All our samples were recruited from Prolific Academic, an online crowdsourcing platform, which in previous research has been shown to provide high-quality data (Peer et al., 2017; note though that the data do not represent a population-based sample). In collecting each of the samples, we limited participation to only those who had not participated in any of our lab's previous studies, ensuring no overlapping participants. Participants were required to be older than 18 (in two of the samples) or 20 (in three of the samples) and not currently involved in a romantic relationship (i.e., currently single regardless of their marital or other relationship histories). For two of the samples, the recruitment also ensured that age was distributed equally across four age ranges: 20s, 30s, 40s, and 50s (50+ in one sample). Please see the Supplemental Material for detailed participant characteristics in each sample. On average, participants were 35.37 years old ($SD = 12.40$; range = 18–75). In four of the samples in which ethnicity was asked ($n = 2,558$), the majority ($n = 1,998$) identified as Caucasian (at least partially as multiple responses were allowed). In the only sample in which information on participants' cultural background was obtained, more than half the participants reported they primarily grew up in the United Kingdom ($n = 330$) or United States

(n = 197). Most also currently lived in the United Kingdom (n = 347) or United States (n = 201).

In three of our samples, participants were asked about their marital history (never married, divorced, or widowed) and in four of the samples, if they had ever been in a romantic relationship (yes or no). Among participants whose marital history information was available (n = 2,056), most were never married (n = 1,802) with some reporting having been divorced (n = 218) or widowed (n = 36). Among those for whom information on dating history was available (n = 3,055), most (n = 2,317) reported having been in a romantic relationship. All participants completed an online survey including the following scales.

Measures

Satisfaction With Singlehood. Participants responded to Lehmann et al.'s (2015) scale consisting of five items such as "In general, how satisfied are you with your current status?" (αs > .89). Participants were instructed to answer these questions with reference to their relationship status (being single or being in a relationship). The psychometric properties and validity of this measure have been established in previous research (Adamczyk, 2019; Lehmann et al., 2015). All items were assessed using 4-point scales ranging from 1 (*not at all*) to 4 (*to a great extent*).

Desire for a Partner. Desire for a partner was assessed using five items such as "I want to have a romantic partner" (αs > .91). The validity of this scale has been established in previous studies in our lab in which it showed moderate to high associations with variables such as fear of being single (negative associations; Spielmann et al., 2013) and commitment readiness (positive associations; Hadden et al., 2018). Of note, these studies have also shown that the desire captured in this scale is more strongly related to interest in a *serious* romantic relationship than a *casual* relationship. All items were rated on 7-point scales ranging from 1 (*strongly disagree)* to 7 (*strongly agree*). Full descriptive statistics and reliabilities for each variable in each sample are presented in the Supplemental Material.

Analytic Plan

Following the integrative data analysis (IDA) approach (Curran & Hussong, 2009), we pooled raw data from the five samples, creating a unified data set that includes participants over a broad age range. An important prerequisite for utilizing this framework for testing hypotheses is creating commensurate scale scores. Although both satisfaction with singlehood and desire for a partner were assessed using an identical scale across the samples, to account for potential sample differences in measurement properties and create comparable scores for each construct, we conducted moderated nonlinear factor analysis (MNLFA; Bauer, 2017; Curran et al., 2014). MNLFA combines traditional factor analysis and item response theory and allows us to develop factor score estimates that account for differences in impact (factor mean and variance) and differential item functioning (DIF; factor loadings and intercepts) across covariates. We used both sample membership and gender as covariates. Our final model accounting for significant impact and DIF effects did reveal several differences across samples and gender (e.g., women were on average higher on satisfaction with singlehood and lower on desire for a partner compared to men). Factor score estimates generated from this model which accounts for such differences were used for the

subsequent analyses. Please refer to Gottfredson et al. (2019) for details on the steps taken to reach the final model.

We first tested linear and nonlinear relationships between age and satisfaction with singlehood in a regression model with age (mean-centered) and its quadratic term as predictors. In light of the call to be careful around misleadingly inferring a U-shaped association from such models (Simonsohn, 2018), we also fitted a regression model using an interrupted regression approach (i.e., the two-lines test). Separate regression lines were estimated for low and high x values (age), allowing us to adequately test for a U-shaped relationship. Specifically, if the relationship between age and satisfaction with singlehood is indeed U-shaped, we should find the average slope to be significantly negative for lower values of age and significantly positive for higher values of age (i.e., satisfaction with singlehood decreases with age up to a point after which it starts increasing with age). A break point (the point at which low vs. high values are separated) was identified using the Robin Hood algorithm.

All models controlled for gender as well as the sample membership (Curran & Hussong, 2009) and an additional model was also estimated in a subset of data (that had information on marital history) with marital history as a covariate. All analyses were conducted in R (R Core Team, 2019) and Mplus Version 8 (Muthén & Muthén, 1998–2017). We used the *aMNLFA* package (Gottfredson et al., 2019) to generate syntax for the MNFLA analyses and Simonsohn's (2018) R codes for the two-lines test.

Results

Preliminary Analyses

Across the samples, satisfaction with singlehood was significantly associated with desire for a partner (rs ranging from −.42 to −.67, ps < .001), suggesting that those who were more satisfied with singlehood had less desire for a partner.

Satisfaction With Singlehood

We first fit regression models, predicting satisfaction with singlehood using age as the predictor. As presented in Table 1, in a model without a quadratic term, there was a positive linear effect of age such that satisfaction with singlehood was higher for older individuals. However, with the quadratic term included, only the quadratic coefficient of age was significant, suggesting a nonlinear relationship between age and satisfaction with singlehood (Figure 1; top). The two-lines test suggested that satisfaction with singlehood was not significantly associated with age from young to middle adulthood but increased with age from middle to late adulthood. Specifically, it identified the slope of the first line to be negative but not significant, b = −0.003, z = −0.90, p = .37, and that of the second line to be significantly positive, b = 0.02, z = 4.79, p < .001 (with the break point at the age of 40). Our third model additionally controlling for marital history in a subset of data showed similar results. We also tested, but did not find, evidence for a cubic effect of age.

Desire for a Partner

We conducted the same set of regression analyses with desire for a partner as an outcome. Table 2 shows that although there was some evidence of a small quadratic effect (p = .03; Model 2), this was not significant in a subset of data controlling for marital history. As

Table 1
Regression Models Predicting Satisfaction With Singlehood

Variable	Model 1			Model 2			Model 3 (subset)		
	B	β	95% CI (*B*)	*B*	β	95% CI (*B*)	*B*	β	95% CI (*B*)
Women	0.36***	.19	[0.29, 0.42]	0.36***	.19	[0.30, 0.42]	0.39***	.21	[0.31, 0.47]
Age	0.01*	.07	[0.00, 0.01]	0.00	.02	[−0.00, 0.01]	0.00	.04	[−0.00, 0.01]
Age^2				0.00***	.08	[0.00, 0.00]	0.00**	.07	[0.00, 0.00]
Marital history (Ref: Never-married)									
Divorced							−0.09	.03	[−0.24, 0.05]
Widowed							−0.08	.01	[−0.38, 0.23]

Note. N = 3,304 and N = 2,056 for a subset analysis; Both models control for sample membership (Curran & Hussong, 2009). CI = confidence interval.
* *p* < .05. ** *p* < .01. *** *p* < .001.

illustrated in Figure 1 (bottom), desire for a partner seemed to generally decrease with age.

Exploratory Moderation Analyses

We examined two variables as potential moderators: gender (men vs. women) and marital history (never married vs. divorced vs. widowed). We included interaction terms between age (both linear and quadratic terms) and a moderator variable in the models. There was no evidence for a significant moderating effect.

Study 2

Study 1 suggested that individuals in late adulthood may be more satisfied with singlehood compared to those in early midlife. However, as cross-sectional data cannot precisely speak to the effect of *aging* (i.e., how satisfaction with singlehood changes as people get older), in Study 2, we used longitudinal data with which we can tease apart how satisfaction changes as people age and how people of different cohorts differ from each other.

Method

Participants and Procedure

We used data from the LISS (Longitudinal Internet studies for the Social Sciences) panel administered by CentERdata (Tilburg University, the Netherlands). The panel was aimed to be representative of the Dutch population and was based on a true probability sample of private households drawn from the population register in the Netherlands. People who were invited to participate (by letter, phone call, and/or house visit) and agreed to become members of the LISS panel are asked monthly to complete an online questionnaire about varying topics. Those who were invited but did not have a computer or internet connection were provided rental equipment to provide access to the internet (thus ensuring coverage of the noninternet population). A longitudinal survey (LISS core study) is carried out every year, providing repeated measurements of the same set of variables covering a range of topics (including *family and household*, which was the portion used in our research). The response rates gradually decreased since the study started in 2008, but efforts were made to contact inactive panel members ("sleepers"), resulting in increased response rates since 2010. In general, the attrition rate is about 12% per year (more information can be found at: www.lissdata.nl and Scherpenzeel & Das, 2010).

Our sample consisted of reports from participants who were older than 19 for every year they reported that they did not currently have a partner (i.e., currently single, regardless of their marital or other relationship histories). We also checked participants' annual background survey to ensure that in those years they were considered "single," they did not report being married or in a nonmarital cohabitation. Individuals who had at least two reports in which they were single were included in our analysis.[2] The median number of reports each individual contributed was four. In total, there were 11,282 reports across 11 years reported by 2,244 individuals (888 male, 1,356 female) in 16 cohort groups (78 different birth years from 1918 to 1997, broken into 5-year intervals) that were available for analysis. The distribution of observations across cohorts and periods is illustrated in the Supplemental Material. At their earliest report, participants were on average 51.24 years old (*SD* = 18.08; range = 20–96). More than half of them were never married (*n* = 1,069) and the rest indicated having been divorced (*n* = 618), widowed (*n* = 518), or separated (*n* = 39). Participants' highest level of education was as follows: 236 primary school, 515 junior high school, 302 senior high school, 476 junior college, 507 college, and 206 university. Their average personal net monthly income was 2312.24 Euros (*SD* = 9,682.56; range = 0–248,081). All participants completed a battery of questionnaires online.

Measures

Satisfaction With Being Single. Participants responded to a question, "How satisfied are you with your situation as a single?" using a 11-point scale ranging from 0 (*entirely dissatisfied*) to 10 (*entirely satisfied*). Although no previous research has directly tested psychometric properties of this particular single-item measure of satisfaction with singlehood, other studies (Oh et al., 2021; Park et al., 2021) have used a similarly worded single-item measure of satisfaction with singlehood and shown some evidence for its construct validity (e.g., link with life satisfaction).

Analyses

Our data included reports from individuals at different ages, provided at varying intervals (as only their reports as singles

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[2] To test the robustness of our effects, we also examined whether our conclusions change when analyzing a sample of individuals with at least three (resulting in observation N = 10,190) or four observations (N = 8,792). The results remained largely the same.

Figure 1

Satisfaction With Singlehood (Top) and Desire for a Partner (Bottom) Across Age (Study 1)
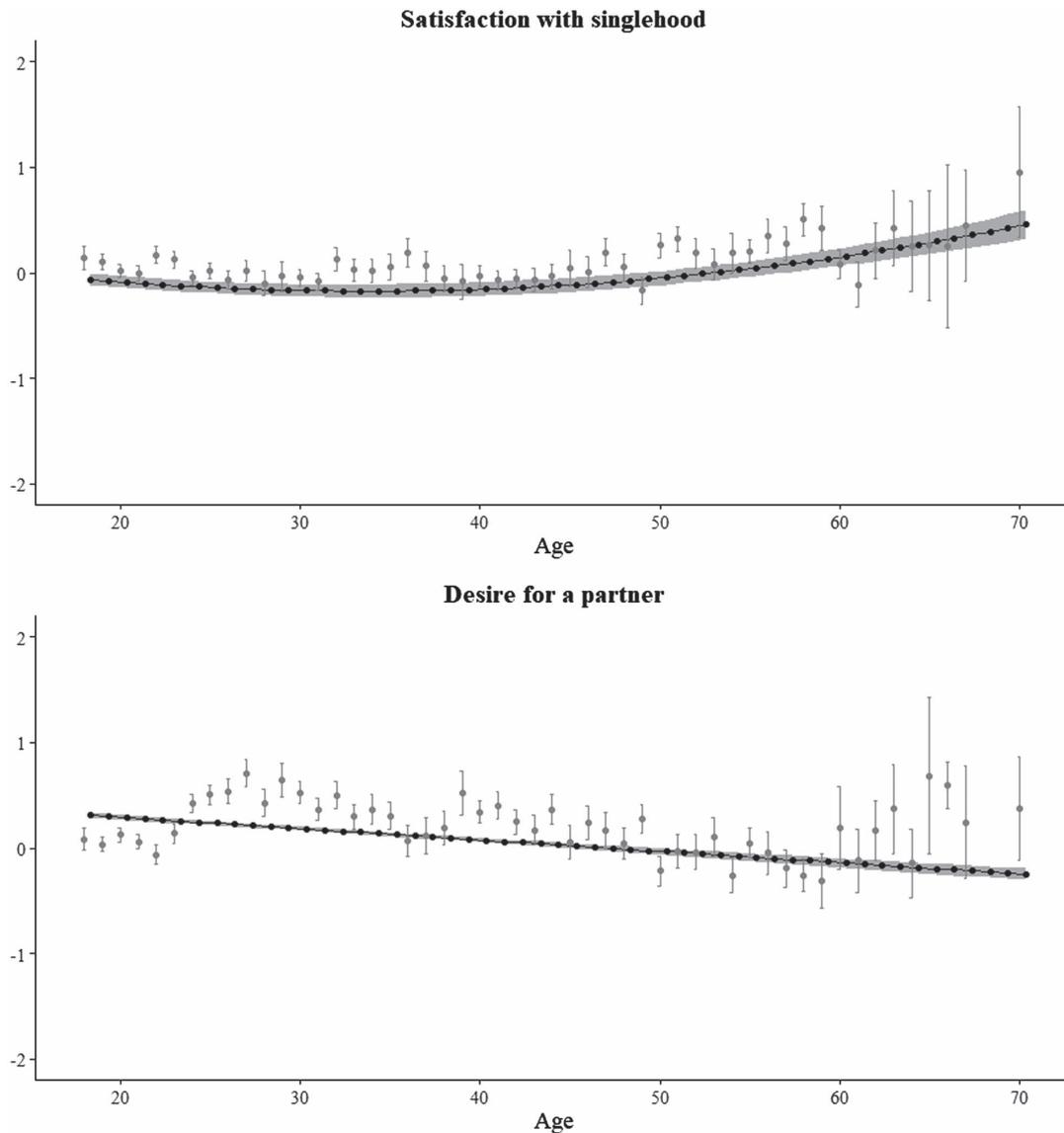
Note. Average levels of the outcome at each age (with at least two observations) are illustrated as gray dots with error bars indicating standard errors.

could be used). With our longitudinal data, there are two different questions we can address: (a) whether people who were on average older when completing the survey are on average more satisfied with singlehood; this is equivalent to asking whether people from earlier-born (vs. later-born) cohorts are on average more satisfied with singlehood given that people born earlier would be older on average when completing the survey (i.e., cohort effect; see below for more descriptions on this), and (b) whether people are more satisfied with singlehood the older they get (i.e., the effect of deviating from their mean age at report or "aging" effect), which was the focus of our study.

We fitted a two-level multilevel model with reports nested within individuals using the *lme4* package (Bates et al., 2015) in R. To

disentangle between- and within-person associations between age and satisfaction with singlehood, we included both the person mean of age (i.e., mean of a given individual's age at report) and grand-mean centered age variable as predictors of satisfaction with singlehood.

With grand-mean centered Level-1 variable (time-varying age) included in the model, slope of the Level-2 variable (person mean of age) is interpreted as the effect of person mean of age controlling for aging (contextual-level-2 effect; Hoffman & Walters, 2022). Note that the person mean of age would perfectly correlate with birth year (cohort) had all individuals started at the same time and contributed data at all time points (i.e., those who were born earlier would be older on average when completing the surveys). In practice, this is

Table 2
Regression Models Predicting Desire for a Partner

Variable	Model 1			Model 2			Model 3 (subset)		
	B	β	95% CI (B)	B	β	95% CI (B)	B	β	95% CI (B)
Women	−0.23**	.10	[−0.29, −0.17]	−0.23**	.10	[−0.29, −0.17]	−0.26**	.11	[−0.34, −0.18]
Age	−0.01*	.12	[−0.01, −0.01]	−0.01**	.10	[−0.01, −0.00]	−0.01**	.13	[−0.02, −0.01]
Age^2				−0.00*	.04	[−0.00, −0.00]	−0.00	.01	[−0.00, 0.00]
Marital history (Ref: Never-married)									
Divorced							0.09	.02	[−0.05, 0.24]
Widowed							−0.17	.02	[−0.47, 0.14]

Note. $N = 3{,}304$ and $N = 2{,}056$ for a subset analysis; Both models control for sample membership (Curran & Hussong, 2009). CI = confidence interval.
* $p < .05.$ ** $p < .01.$

rarely the case (Sliwinski et al., 2010) and indeed, the two variables were correlated at $-.98$ in our data. Although it is arguable that conceptually, person mean of age and birth year tap into slightly different constructs,[3] both capture the between-person age differences and given their correlation, we only included birth year (for its conceptual implication) in the model. Note that including person mean in place of birth year did not significantly change any of the reported results.

We included age effects as polynomials up to the cubic (both at the within-person and between-person levels) and removed the highest-powered terms that were found to be nonsignificant (Model 1). We initially ran a model with random effects of both cohort group and period, allowing intercepts to vary across cohort groups and periods (i.e., creating a cross-classified structure; Bell & Jones, 2015). However, we had to trim at least one of these random effects in response to errors regarding singular fit (Volpert-Esmond et al., 2021). When we calculated the Intraclass Correlation Coefficients (ICCs) for each grouping variable, the clustering of satisfaction with singlehood within each grouping variable was large for person, ICC = .63, but very small for cohort, ICC = .02, and essentially zero for observation year, ICC = .002, suggesting that the latter two clusters captured little additional variance. Thus, the final model only retained person as a grouping variable. Lastly, as in Study 1, we also examined whether sex (Model 2) and marital history (Model 3) moderate the link between age and satisfaction with singlehood by including their interactions with all age terms. Nonsignificant terms were dropped from the model.[4]

Results

As shown in Table 3, we found a significant cubic effect of age across models. Figure 2 illustrates marginal means from Model 1, generated using the *emmeans* package (Lenth, 2020), which shows that satisfaction with singlehood increased with age starting from midlife (around the age of 40) until late adulthood when it stabilized. This cubic effect did not differ for males and females although the significant interaction of sex with the linear age effect seemed to suggest that aging was associated with greater increases in satisfaction for males ($b = 60.42$, $SE = 8.67$, $p < .001$) than females ($b = 42.56$, $SE = 9.22$, $p < .001$). The cubic aging effect also did not differ across marital history status although those who had more reports as divorced or widowed (proportion of reports made as divorced/widowed) were on average lower in satisfaction with singlehood. Finally, independent of the aging effect, there was some evidence

of a cohort effect such that those who were born later (i.e., more recent cohorts) were more satisfied with singlehood on average compared to those belonging to earlier cohorts. However, when controlling for marital history (Model 3), this effect was not significant.

General Discussion

This research sought to examine the relation between age and satisfaction with singlehood. Using cross-sectional data, Study 1 showed that while there were no age-related differences in satisfaction with singlehood among singles in early and middle adulthood, singles in mid to late adulthood appeared to be more satisfied the older they were. In Study 2 in which panel data were used and potential cohort effects were accounted for, age-related increases in satisfaction with singlehood were observed during mid to late adulthood (around 40s–80s). Combined, our results seem to suggest that single people past the stage of young adulthood typically feel more satisfied with single status the older they get.

While our results are consistent with Böger and Huxhold's (2020) work which showed that individuals in all age groups (40s–70s) increased in satisfaction with singlehood at a 6-year follow-up, there are several ways our research extends this research. First, by using a broader range of age (i.e., including younger adults) and testing nonlinear effects, we showed that this age-related increase in satisfaction with being single is specific to mid to late adulthood.

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[3] The person mean reflects the age when participants completed the survey, capturing life-stage cohorts; its coefficient will be interpreted as to what extent being younger or older is linked with satisfaction with singlehood. On the other hand, birth year captures historical cohorts, and its coefficient will be interpreted as to what extent being born in an earlier or later year is linked with satisfaction with singlehood.

[4] Notably, these analyses do not model the effects of historical moments (i.e., period effects; see Bell, 2020 and Bell & Jones, 2013, for an in-depth discussion of age–period–cohort effects and the identification problem). We focused on the cohort effect in the analyses which, as we have elaborated on in the introduction, we had reasons to suspect compelling effects, whereas evidence was mixed for the presence of a period effect. For example, van Tilburg and Suanet (2019) found some (but not full) support for the idea that single unmarried older adults were socially better off in 2013 than 1993. Specifically, they showed particular social gains (e.g., having a larger network and receiving more emotional support) among the widowed in recent years. At the same time, other work has also shown that the extent to which widowed (vs. married) individuals feel lonely has not changed (when comparing 2004 vs. 2014; Dahlberg et al., 2018). Nevertheless, we also fitted a model additionally including year dummies (to Model 1 in Table 3); this model did not significantly improve the fit or change the reported aging effect.

Table 3

Summary of Multilevel Models Predicting Satisfaction With Singlehood (Fixed Effects Coefficient Estimates)

Variable	Model 1 Estimates	SE	95% CI	Model 2 Estimates	SE	95% CI	Model 3 Estimates	SE	95% CI
Constant	6.70***	0.04	[6.63, 6.78]	6.47***	0.06	[6.34, 6.59]	6.44***	0.08	[5.84, 6.91]
Age	53.65***	8.14	[37.70, 69.62]	42.56***	9.22	[24.49, 60.62]	42.74***	9.19	[24.74, 60.73]
Age^2	10.24**	3.23	[3.90, 16.57]	9.42**	3.23	[3.08, 15.75]	14.05***	3.35	[7.48, 20.60]
Age^3	−11.52***	2.82	[−17.04, −6.00]	−10.93***	2.81	[−16.44, −5.43]	−12.38***	2.79	[−17.85, −6.92]
Birth year	0.01*	0.01	[0.00, 0.02]	0.01*	0.01	[0.00, 0.02]	−0.01	0.01	[−0.02, 0.01]
Female				0.37***	0.08	[0.21, 0.53]	0.46***	0.08	[0.30, 0.62]
Age × Female				17.86*	7.29	[3.57, 32.17]	21.65**	7.18	[7.58, 35.75]
Marital history (Ref: Never-married)									
Divorced (M)							−0.43***	0.10	[−0.63, −0.23]
Widowed (M)							−1.37**	0.13	[−1.52, −1.01]

Note. N = 2,244; Observations = 11,282. Orthogonal polynomials were used. Marital history was a time-varying predictor and both Level 1 (person-mean centered) and Level 2 (grand-mean centered person means) variables were included; the former was not significant and only the latter is presented (M). SE = standard error; CI = confidence interval.
* p < .05. ** p < .01. *** p < .001.

Perhaps it is only after midlife (around 40) when the peak period of partnering opportunities has passed for both genders (Rapp, 2018), single individuals come to terms with being single and becoming better at finding ways to be happy with single life the older they get (e.g., Baumbusch, 2004). Yet, at a later stage of life when practical health issues arise more frequently, there may be a greater inner conflict about not having a partner such that satisfaction with singlehood may not necessarily increase further with age.

Second, rather than relying on a single follow-up report, Study 2 drew on multiwave data that spanned a longer period. Not only does this allow us to more precisely examine within-person age effects, but to some degree, it also attenuates concerns about selection bias. For example, to the extent that singles who are less satisfied with singlehood are more motivated to find a partner, they may be more

likely to enter a relationship and be excluded from the follow-up analyses (as they are no longer single); this suggests the possibility that the increased levels of satisfaction with singlehood at follow-up (as found in Böger & Huxhold, 2020) may to some degree reflect unsatisfied singles having left the sample. Although such systematic sample loss may be hard to eliminate entirely, by drawing on reports from participants *whenever* participants were single, we were able to include data from individuals who *re*entered singlehood later (i.e., who would have been excluded from the sample had we only followed them up once), thereby being more inclusive in our sample.

Lastly, in Study 1, we also tested whether there are age-related changes in desire for a partner, as an attempt to capture one way our effects might be explained. We expected that if age-related increases in satisfaction with singlehood are attributable to reduced desire for

Figure 2

Satisfaction With Singlehood Across Age (Study 2)
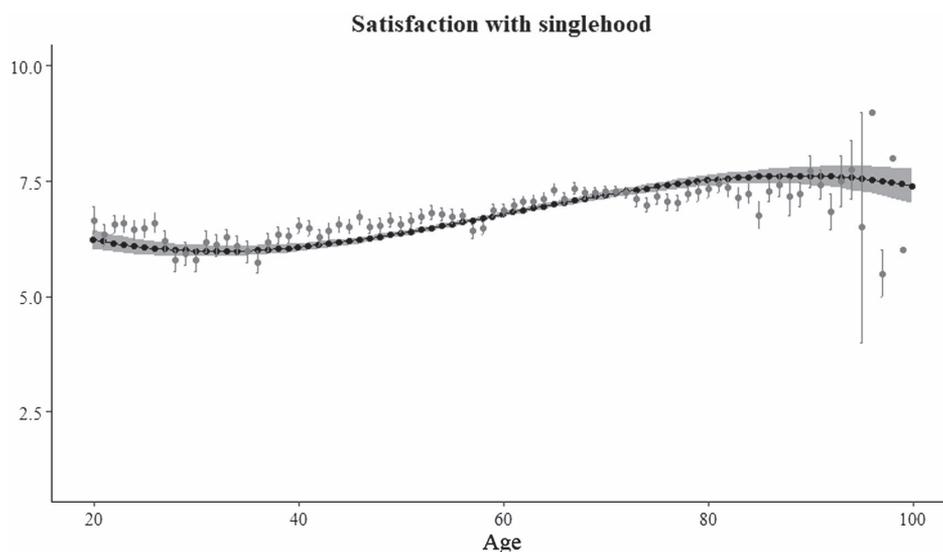
Note. Average levels of the outcome at each age (with at least two observations) are illustrated as gray dots with error bars indicating standard errors.

a partner, there would be co-occurring age-related decreases in desire for a partner. However, our results did not seem to support such an explanation; whereas satisfaction with singlehood started to increase with age after midlife, desire for a partner seemed to steadily decrease. Of course, the analyses in Study 1 did not account for potential cohort effects and the small sample in late adulthood also remains as a limitation in these analyses. Thus, while our results provide some suggestive evidence that increasing satisfaction with singlehood may have more complex causes than decreased desire for a partner, future research will need to more precisely investigate this issue using longitudinal data.

One possible contributor to age-related increases in comfort with singlehood is a social network that older adults maintain that can confer benefits to their well-being. Specifically, older individuals tend to interact with close social ties that are stable and satisfying (Rook & Charles, 2017), and who may be able to provide the type of social rewards a romantic partner would have provided. Such relationships may in turn help them evaluate their life or single life more positively (Park et al., 2021). However, studies have also found that increased levels of weaker ties rather than closer ties are prospectively linked with older adults' improved affective well-being (e.g., decreased depression; Huxhold et al., 2020; Reynolds et al., 2020). One way to reconcile these findings may involve considering different aspects of well-being (e.g., affective, cognitive, and eudaimonic aspects; Stone & Krueger, 2018) that different types of social partners can help improve. In future research, simultaneously examining different well-being contributions of closer and weaker ties may be valuable in understanding younger and older single individuals' experiences in singlehood. Finally, when it comes to exploring mechanisms underlying age-related changes in satisfaction with singlehood, it is likely that some mechanisms are pertaining specifically to singlehood experiences while others are more broadly applicable in explaining age-related differences in satisfaction with various life domains (or life as a whole). Indeed, age-related changes in satisfaction observed in our research may not be specific to the domain of singlehood (e.g., a similar pattern as identified herein was demonstrated in the context of satisfaction with romantic relationships; Bühler et al., 2021). Although our research focusing solely on the domain of singlehood has value in describing the potential life course of singles, future research will benefit from examining age-related changes in satisfaction across multiple domains and exploring both domain-specific and domain-general mechanisms.

Limitations and Future Directions

We note several constraints on the generalizability of our effects. For example, all samples in Study 1 were recruited during the COVID-19 pandemic, which arguably could have impacted how singles evaluate their lives overall (e.g., via increased loneliness; Hoffart et al., 2020). Although Study 2 data were collected pre-pandemic, they were entirely based on a Dutch sample, which again limits the generalizability of our effects. Of course, the historical/temporal specificity of the findings is not solely about the pandemic and should be generally kept in mind as people's feelings about singlehood are likely to continuously change over time. Indeed, Study 2 revealed some evidence for a cohort effect, in the direction consistent with previous research (i.e., greater

satisfaction with singlehood among more recent cohorts; Böger & Huxhold, 2020). Notably, however, this effect disappeared in a model with marital status controlled for, possibly suggesting that it was driven by having a greater proportion of divorced or widowed individuals (who are less satisfied with singlehood) among the previous cohorts. Overall, we believe there is a need to replicate and test generalizability of our effects in different parts of the world and in the absence of a strong situational force such as the pandemic, as well as a value in revisiting this question in the future as the generations change.

There are also important caveats to note in interpreting our results. First, we should be mindful of the possibility that participants' responses on our primary outcome, satisfaction with singlehood, may be driven by motivated reasoning to justify their relationship status (as is the case for individuals in romantic relationships; e.g., Lemay & Clark, 2015). For example, research has shown that singles who expect their single status not to change tend to report perceiving singlehood as an ideal state (Laurin et al., 2013). While such reports may indeed reflect authentic idealization of singlehood, they may also be driven by motivation to defensively rationalize their status.

Further, an important caveat in interpreting results from panel data (i.e., Study 2) concerns nonresponse bias. That is, our data consisted of reports a given individual contributed when they were single and also were willing to complete the survey. Whether such reports are representative of individuals' singlehood experiences needs to be tested—for example, to the extent that healthier individuals are more likely to participate in a follow-up study (Radler & Ryff, 2010), our data may be biased by (older) singles being more likely to participate when they are relatively healthy, and thus more satisfied with singlehood.

Finally, although our exploratory analyses did not reveal any consistent evidence for the moderating role of gender (sex) or marital history in our data, future research may benefit from examining whether other psychological variables (e.g., perceived availability of partners or more generally, the degree to which singlehood is seen as voluntary; Adamczyk, 2017) can moderate the link between age and satisfaction with singlehood. In doing so, we emphasize the importance of using a validated measure of satisfaction with singlehood (Lehmann et al., 2015) as in Study 1 given that the psychometric property of the single-item measure used in Study 2 has not been directly established. Further, we only assessed desire for a partner in Study 1 and arguably with items that tap more into desire for a serious relationship than a casual one. Future research examining how desire for both casual and serious relationships change with age can help us better understand single individuals' changing romantic goal pursuits.

In conclusion, the present research provides some evidence that singlehood may be experienced as more satisfying with age from midlife, adding support to the idea that singles are a heterogeneous group (Pepping et al., 2018) and contributing to our understanding of varying experiences of singlehood in the contemporary society. The present findings suggest that there may be positive aspects of singlehood that are salient to older individuals. Understanding what makes older singles satisfied with singlehood (rather than focusing on what makes them dissatisfied) may be a promising approach to gain insights into how to promote well-being of the rising single population.

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