AMERICAN PSYCHOLOGICAL ASSOCIATION

Journal of Personality and Social Psychology:
Personality Processes and Individual Differences

© 2023 American Psychological Association
ISSN: 0022-3514

https://doi.org/10.1037/pspp0000461

The Link Between Personality, Global, and Domain-Specific Satisfaction Across the Adult Lifespan

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Meta-analytic evidence has shown that personality is one of the strongest correlates of global and domain-specific satisfaction. The main goal of the present study was to examine whether the associations between personality traits and satisfaction differ across the adult lifespan. We used bivariate latent growth curve models and local structural equation modeling to study correlations between levels and change of Big Five personality traits and satisfaction with life, satisfaction with work, and satisfaction with social contacts. Data came from a large representative longitudinal Dutch sample (N = 9,110; age range 16–95). Across age, emotional stability showed the strongest associations with both global and domain-specific satisfaction. After emotional stability, conscientiousness was the strongest correlate of work satisfaction (WS), and extraversion and agreeableness were the strongest correlates of social satisfaction (SS). Longitudinal changes in personality and satisfaction across the 11 years covered in this study were moderately correlated, suggesting codevelopment between these constructs. Most correlational patterns were stable across the lifespan, indicating that personality traits are similarly relevant for satisfaction across different phases in adult life. We discuss the theoretical implications for the foundations that may underlie the link between personality and satisfaction in various life phases.

Keywords: personality, life satisfaction, age differences, correlated change, local structural equation modeling

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People with certain personality profiles tend to be happier than others. Specifically, people who score high on the Big Five traits emotional stability, extraversion, conscientiousness, and agreeableness are generally more satisfied with their lives than people who score low on these traits (for meta-analyses, see Anglim et al., 2020; Deneve & Cooper, 1998; Judge et al., 2002; Steel et al., 2008). These robust correlations appear to provide a solid foundation on which scholars can develop their understanding of the mechanisms underlying the personality–satisfaction link. Yet, there is one issue that potentially undermines this conclusion: Both personality traits and life satisfaction (LS) are malleable constructs that change across the lifespan in normative ways (e.g., Baird et al., 2010; Bleidorn et al., 2022; Roberts et al., 2006), and little is known about the ways in which these age-graded changes may affect the links between personality traits and life satisfaction. Indeed, different patterns of thoughts, feelings, and behaviors may be more or less ideal for the mastery of developmental tasks associated with different life phases (e.g., Baltes, 1987; Caspi et al., 2005; Elder et al., 2003; Hutteman et al., 2014), suggesting that the personality levels associated with higher life satisfaction at younger ages may not be similarly relevant for life satisfaction in later life. For instance, higher levels of extraversion may be particularly central for satisfaction in adolescence and young adulthood, when people typically build a social network and find a partner, but may decrease in relevance when the focus changes more toward maintaining social relationships in middle and older adulthood (Harris & Vazire, 2016).

The goal of the present study was to examine the extent to which well-established associations between the Big Five personality traits and domains of satisfaction are moderated by age. In addition to general life satisfaction, we focused on two domains that are salient across a broad age range and can be seen as core indicators of a satisfying life (McCrae & Costa, 1991): satisfaction with work and satisfaction with social contacts.

Editor's Note. Laura King served as the action editor for this article.—REL

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Data came from the Longitudinal Internet Studies for the Social sciences (LISS) panel study. After signing the data statement, data from the LISS panel are freely accessible to use for noncommercial research: https://www.lissdata.nl/access-data. Analyses code Supplemental Materials are available in an Open Science Framework repository and can be accessed via https://osf.io/4c8jw/.

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Various theories have discussed whether and how the link between personality and well-being may change across the lifespan (Baltes, 1987; Caspi et al., 2005; Elder et al., 2003; Roberts & Wood, 2006; Shanahan et al., 2014). However, only a few studies have examined age differences in these associations, typically comparing the correlations between personality and well-being across a few broad age groups (Bui, 2017; Hill et al., 2012; Siedlecki et al., 2014). We aimed to contribute to this literature by studying these associations using a large and nationally representative Dutch sample with a broad age coverage and up to 12 repeated measures of personality traits and LS. We studied nonlinear differences in the associations between personality and satisfaction across the adult lifespan using local structural equation modeling (LSEM; Hildebrandt et al., 2009, 2016; Olaru et al., 2019). The multiwave longitudinal data allowed us to go beyond cross-sectional correlations to address questions about the codevelopment between personality traits, global, and domain-specific life satisfaction (i.e., correlated change; Allemand & Martin, 2016; Olaru & Allemand, 2021). For example, does an increase in conscientiousness cooccur with an increase in work satisfaction (WS)? And is this association equally strong across the entire work life? Through these analyses, we aimed to provide a more fine-grained portrait of the connection between personality traits and satisfaction across the lifespan. Such a portrait could help refine theories on why personality and satisfaction are linked, and function as a starting point for future research on this association during specific life phases.

Below, we first review theoretical perspectives and empirical research on the link between personality and global life satisfaction, social satisfaction (SS), and WS. Then we explain how this link might be moderated by age. Finally, we explain how our study contributes to theory and research on age differences in the link between personality traits and satisfaction.

Direct and Indirect Associations Between Personality Traits and Satisfaction

Theoretical perspectives on personality traits and satisfaction usually distinguish between direct and indirect links between these constructs (Diener, 1984; Heller et al., 2004; McCrae & Costa, 1991; Røysamb et al., 2018). The stable, direct connection is emphasized by trait-driven models (e.g., Heller et al., 2004), which argue that relatively stable individual differences in personality affect our life satisfaction because they determine our general perspective of the world. In contrast, indirect, transactional models suggest that personality and life satisfaction are linked through interactions with the environment. People interact with their environment based on broad dispositions including their personality traits. For example, people tend to select and create environments that are compatible with their personality traits (Caspi et al., 2005). These environments may, in turn, have an impact on their domain and life satisfaction, and on the personality traits that led to these environments in the first place (Kandler et al., 2012).

Direct processes are plausible for all Big Five traits, but might be particularly strong for emotional stability, because low scores on this affective trait are linked to a general negative view of the world (Costa & McCrae, 1980; McCrae & Costa, 1991; Røysamb et al., 2018). The indirect link might be stronger for conscientiousness and agreeableness. Agreeable individuals are more likely to be empathetic, warm, and compassionate in their approach to other people, which may help them establish close and meaningful social relationships. Conscientiousness individuals are self-controlled, efficient, and industrious, which contributes to being successful and satisfied in a school and work context. In this way, agreeableness and conscientiousness contribute to the selection and maintenance of life circumstances that, in turn, influence life satisfaction (McCrae & Costa, 1991). Extraversion may have both a direct and indirect effects on life satisfaction. Direct effects of extraversion could be driven by a more positive world view and positive affect (Costa & McCrae, 1980; McCrae & Costa, 1991; Røysamb et al., 2018), whereas indirect processes could take place through the effects of extraversion on social interactions, for example by contributing to the formation of a larger social network, which could lead to higher satisfaction (Harris & Vazire, 2016).

Similar to life satisfaction, both direct and indirect processes may explain the link between personality traits and domain satisfaction. Yet, compared to general life satisfaction, indirect processes are likely stronger, because domain satisfaction involves an evaluation of experiences and objective conditions in a specific context (Heller et al., 2004). For example, personality traits may influence the formation, maintenance, and dissolution of social relationships (e.g., friendships; Harris & Vazire, 2016), and these experiences may together shape someone's social satisfaction. Consistent with this, many studies have shown that personality traits predict social events, such as relationship formation and the transition to parenthood, and that experiences related to these new social roles can lead to changes in relationship satisfaction (Karney & Bradbury, 1995). In a similar vein, personality traits predict experiences and events related to WS, such as selection into certain jobs, the maintenance of a good work-life balance, and job performance (Denissen et al., 2014; Reitz et al., 2022; Zell & Lesick, 2022).

Personality Traits and Life Satisfaction

Replicating previous findings (Deneve & Cooper, 1998; Steel et al., 2008), a recent meta-analysis found that emotional stability ($\rho = .46$, Anglim et al., 2020) was most strongly associated with life satisfaction. Because emotional stability has a strong affective component, this stronger correlation may suggest the importance of direct processes. Yet, extraversion ($\rho = .38$), conscientiousness ($\rho = .31$), and agreeableness ($\rho = .24$) also showed robust links with life satisfaction (Anglim et al., 2020). Additionally, cross-sectional twin studies have suggested that the correlation between personality traits and life satisfaction can be explained by both common genetic factors and common environmental influences. The correlations can additionally be explained by gene–environment correlations and gene–environment interactions (Hahn et al., 2013; Røysamb et al., 2018; Weiss et al., 2008). For example, people who are genetically predisposed to be extraverted may be more likely to select—and be selected into—environments that reinforce both their extraversion and life satisfaction. Taken together, these empirical findings indicate that a combination of direct and indirect processes likely explains the personality–life satisfaction link.

Moving beyond cross-sectional correlations, longitudinal studies on adult samples followed for two or more assessment waves have found reciprocal links between personality traits and life satisfaction up to 8 years (Boyce et al., 2013; Hounkpatin et al., 2018; Magee et al., 2013; Soto, 2015; Specht et al., 2011). These studies found an association between initial levels of personality traits and subsequent

changes in life satisfaction, and vice versa (e.g., Hounkpatin et al., 2018; Soto, 2015; Specht et al., 2011). Furthermore, personality trait changes prospectively predicted life satisfaction change, and life satisfaction change prospectively predicted personality trait changes (Hounkpatin et al., 2018; Soto, 2015). These findings suggest that the personality–life satisfaction link is not simply due to stable trait influences on life satisfaction, but that personality and life satisfaction influence each other over time.

Personality Traits and Social Satisfaction

Most research on Big Five personality traits and relationship satisfaction has been done in the domain of romantic relationships. This research has consistently shown that emotional stability, conscientiousness, and agreeableness are predictors of romantic relationship satisfaction (for a meta-analysis, see Malouff et al., 2010). For friendship satisfaction, two cross-sectional studies on college samples have suggested that extraversion and agreeableness are just as important or even more important than emotional stability (Festa et al., 2012; Wilson et al., 2015). Regarding satisfaction with friendships, less consistent effects have emerged for links with conscientiousness and openness to experience (Harris & Vazire, 2016).

Longitudinal studies on the codevelopment between social relationship constructs and Big Five personality traits have indicated that constructs related to social well-being codevelop with the Big Five personality traits. For example, in a large representative sample of middle to older American adults (age range 30–97 years), positive changes in perceived support from children, family, friends, and spouses correlated with positive, adaptive changes in all Big Five personality traits (Hill et al., 2018). In a German sample of young adults followed for three measurement occasions across 8 (Neyer & Lehnart, 2007) and 15 years (Mund & Neyer, 2014), some evidence was found for codevelopment between social well-being and Big Five personality traits, especially emotional stability.

Personality Traits and WS

Correlations between the Big Five personality traits and job satisfaction tend to be slightly lower compared to links with global life satisfaction (Judge et al., 2002). In their meta-analysis, Judge et al. (2002) found the strongest correlation between emotional stability and job satisfaction ($\rho = .29$), followed by conscientiousness ($\rho = .26$), and extraversion ($\rho = .25$). Similar to life satisfaction, agreeableness ($\rho = .17$), and openness ($\rho = .02$) showed smaller correlations with job satisfaction. A more recent meta-analysis found very similar associations and showed that the link between emotional stability, conscientiousness, extraversion, agreeableness, and job satisfaction held across time intervals up to 7 years (Bruk-Lee et al., 2009).

To the best of our knowledge, no longitudinal studies have examined correlated change between WS and Big Five personality traits. Yet, longitudinal studies on Big Five traits and other work-related constructs, such as social investment at work (Hudson et al., 2012) and work attitudes (Wille et al., 2014), have suggested bidirectional relationships over time (Woods et al., 2013).

The aforementioned empirical studies indicate that Big Five personality traits and both general and domain satisfaction predict each other over time. Because changes in personality traits and well-being are not only explained by the environment but also by genetic factors (Bleidorn et al., 2014; Nes et al., 2006), studies on the longitudinal link between personality traits and satisfaction cannot provide hard evidence of indirect processes. For example, biologically based intrinsic maturation in young adulthood may affect changes in personality traits and satisfaction in a similar way, which could partly explain why the correlation between these constructs increases over time. Yet, as people traverse adulthood, indirect processes are likely to become more important for explaining codevelopment between personality traits and satisfaction (for a similar discussion on personality development, see Briley & Tucker-Drob, 2014). Therefore, it is crucial to take a lifespan perspective and study how the personality–satisfaction link changes across age.

Theoretical Perspectives on Age Moderation of the Personality–Satisfaction Link

Transactional models and more general lifespan perspectives on psychological and personality development (Baltes, 1987; Caspi et al., 2005; Elder et al., 2003; Roberts & Wood, 2006; Shanahan et al., 2014) argue that age might moderate the link between personality traits and satisfaction across adulthood. Across the lifespan, transactional processes may result in an increase in the associations between personality traits and satisfaction. For example, certain personality characteristics may initiate a chain of more positive or negative life circumstances that might extend across the life course (Denissen et al., 2019, Ferraro & Shippee, 2009; O'Rand, 2006), which could lead to changes in life and domain satisfaction. At the same time, the personality traits that select people into certain environments, such as the work environment, can also increase in response to these experiences (Denissen et al., 2014; Roberts et al., 2003). These accumulating effects may cause personality traits to become more strongly related to satisfaction across adult life.

In addition to accumulating effects, other mechanisms may cause the correlation between personality traits and satisfaction to stabilize or decrease with age. In research on personality and health, age has been described as a "leveler" of initial individual differences (i.e., the age-as-leveler hypothesis; Shanahan et al., 2014). For the personality–satisfaction link, the leveling effect of age might already occur after young adulthood (i.e., after age 40). Young adulthood is likely marked by unique transactions between personality traits and the environment compared to later life phases, which would lead to increasing correlations between levels, and particularly strong correlated changes of personality traits and well-being in this life phase. In middle adulthood, a more stable link between personality traits and satisfaction might be explained by an increasing stability of social roles and self-knowledge that characterize this life stage (Hutteman et al., 2014; Roberts & Wood, 2006). Furthermore, middle-aged adults may be better able than younger adults to select into environments that help to maintain their current trait and satisfaction levels (Briley & Tucker-Drob, 2014; Roberts & Nickel, 2017). In line with this, longitudinal research suggests that individual differences in personality development are most pronounced in young adulthood and decrease during middle and old adulthood (Schwaba & Bleidorn, 2018).

The developmental tasks (e.g., Elder et al., 2003; Havighurst, 1972; Hutteman et al., 2014) associated with certain life phases involve expectations about trait-specific age patterns for work and social satisfaction. With respect to the social domain, young adulthood is characterized by tasks such as establishing social networks and finding a partner. Therefore, extraversion might be particularly

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relevant for satisfaction in this life phase. In middle and old adulthood, maintaining these relationships takes a more central role, with increasing age being associated with stronger losses of social relationships (e.g., children moving out; death of parents, partner or friends; reduced social interaction due to decreasing health). As such, traits associated with a better maintenance of social relationships (e.g., emotional stability, conscientiousness, and agreeableness being associated with a more adaptive conflict style and lower divorce rates; Harris & Vazire, 2016; Roberts et al., 2007) may become increasingly relevant to social satisfaction across age.

With respect to work, young adulthood is characterized by the need to transition into work life and find a profession that suits oneself, whereas middle adulthood is defined by maintaining work performance and taking on new responsibilities (e.g., leadership roles). On average, younger adults change more between jobs or professions to find work that fits their personality compared to older adults (e.g., Barrick et al., 2013; Kristof-Brown et al., 2005). Therefore, associations between Big Five personality traits and WS may be less strong in young compared to middle-aged adults. Because middle-aged adults have a more stable job life and higher social responsibilities at work, traits like conscientiousness (e.g., associated with job performance; Judge et al., 2013) or extraversion (e.g., associated with leadership; Judge et al., 2002) might become increasingly important for WS.

Evidence for Age Moderation of the Personality–Satisfaction Link

The few studies that have examined the moderating role of age in the link between personality and life satisfaction have found mixed results. In a large cross-sectional U.S. sample, Siedlecki et al. (2014) found no differences in the links between personality and life satisfaction across young, middle-aged, and older adults. In contrast, in two-wave longitudinal data from a large Australian sample, age did moderate the link between personality and life satisfaction over a 4-year period (Magee et al., 2013). Specifically, consistent with the age-as-leveler hypothesis, the link between change in neuroticism and change in life satisfaction was strongest in the youngest birth cohort (age 20–34 years) and insignificant in the oldest birth cohort (age 65–79 years). Similar patterns occurred for extraversion and agreeableness, whereas changes in openness and conscientiousness were unrelated to change in life satisfaction in all age groups.

Even fewer longitudinal studies have examined age effects on the links between personality traits and domain-specific life satisfaction. Focusing on social well-being, Hill et al. (2012) found similar associations with personality traits in younger (up to 45 years) and older (over 45 years) adults in a longitudinal sample of U.S. adults (age range 25–74 years). In the work domain, however, several cross-sectional studies suggested that the relationship between personality traits and WS may be stronger in younger than older adults (Bui, 2017; Topino et al., 2021). For example, a study of Italian jobholders (Topino et al., 2021) found significant positive correlations between conscientiousness and job satisfaction for people in their early thirties but null effects for individuals above 50 years old. Notably, the correlations between the other Big Five traits and job satisfaction were not moderated by age (Topino et al., 2021). Using a larger representative British sample, Bui (2017) examined how correlations between the Big Five personality traits and job satisfaction differed between three age groups. The results indicated that job satisfaction was significantly related to higher emotional stability, higher conscientiousness, higher agreeableness, and lower openness in young age (i.e., below 36 years old), but these correlations weakened in middle age. The only correlation that remained significant in participants older than 50 years was the positive correlation with emotional stability.

Taken together, theory and research suggest that the link between personality and life satisfaction may wax and wane across the adult lifespan. Accumulating processes may lead to an increasing link, while leveling and other mechanisms may weaken the link in middle and old adulthood. Age differences in the personality–satisfaction link are possible for all Big Five personality traits and satisfaction domains. However, consistent with trait-driven and transactional processes, the moderating role of age might be stronger for domain satisfaction compared to life satisfaction. For the trait domains, we expect the moderating effects to be particularly strong for conscientiousness and agreeableness compared to emotional stability, with extraversion falling in between due to a potential combination of both direct (i.e., positive affect) and indirect (i.e., social interactions; stronger self-presentation) effects.

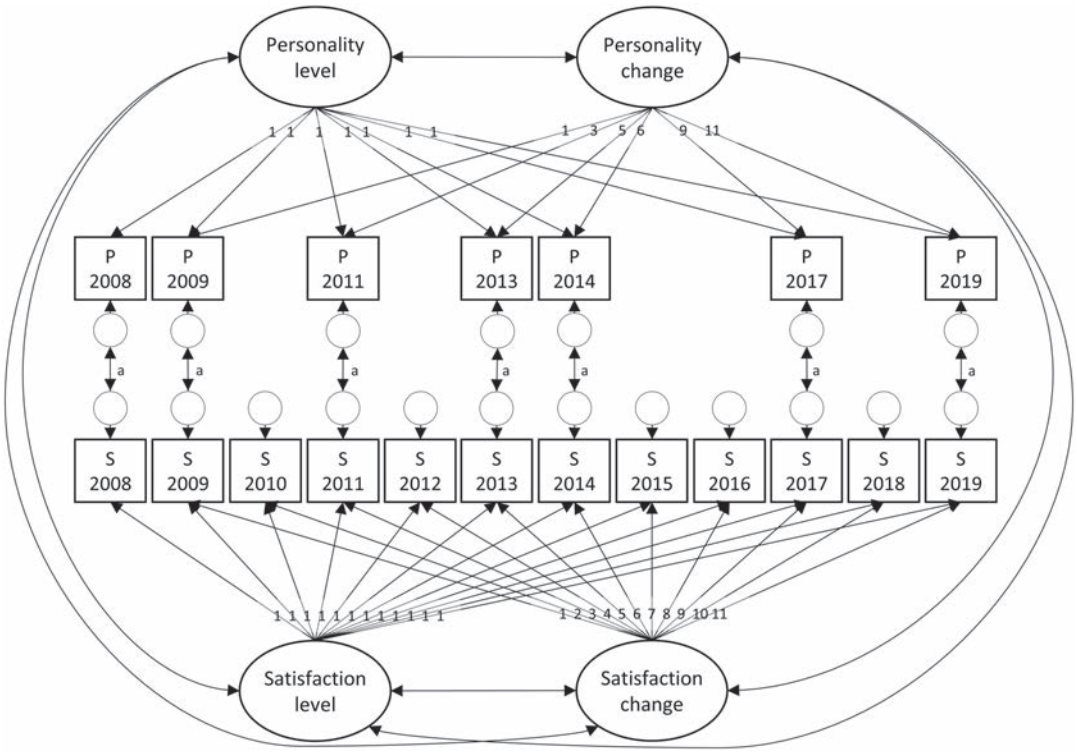
The Present Study

The purpose of the present study was to examine how the association between personality traits and different domains of satisfaction waxes and wanes across the lifespan. An extant literature has demonstrated that personality differences are associated with global and domain-specific satisfaction in adulthood, both cross-sectionally and over time. Yet, few studies have examined the role of age in the link between personality traits and satisfaction across the lifespan. Such lifespan analyses are required to capture long-term processes that can cause codevelopment in personality traits and satisfaction across multiple years and at different ages.

The present study addressed these issues through a rigorous examination of the longitudinal links between personality traits and three domains of satisfaction across a continuous age variable. We used data from the Longitudinal Internet Studies for the Social Sciences (LISS) panel study, which is based on a probability sample of households drawn from the population register by Statistics Netherlands (for more information, see Scherpenzeel, 2011). The LISS includes personality trait and satisfaction questionnaires with good psychometric properties, measured at up to 12 occasions with yearly intervals between waves (for individual participants, the intervals ranged between 1 and 3 years, see below). We used bivariate latent growth curve models (LGCM; Figure 1) to distinguish between cross-sectional correlations and correlated change, as well as measurement-specific associations. To moderate the associations across age without requiring an artificial age group categorization, we used LSEM (Hildebrandt et al., 2016). LSEM is a nonparametric person sampling approach that allows for the estimation of the models at each age point (measured in years) by weighting participants depending on their distance to the target age. In this way, LSEM provides a high powered and finer-grained study of nonlinear differential patterns across age compared to multigroup approaches that group people in a few and broad age-categories. By combining high-quality longitudinal data with an innovative modeling approach, we provided a more comprehensive overview of the possible nonlinear patterns (i.e., age-graded increases, and stabilizing or weakening effects after early adulthood) predicted

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Figure 1
Bivariate Latent Change Score Model



Note. Squares represent observed variables; circles represent latent variables. Single-headed arrows indicate loadings; double-headed arrows indicate correlations. Parameter labels indicate loading constraints (1–11) or equality constraints on the measurement occasion correlations (a). For the Global Life Satisfaction scale, no measure was available in 2016.

by lifespan perspectives on psychological development. This can help gain insight into the relevance of personality traits for global and domain-specific satisfaction across different life phases.

Method

Sample

The present study made use of publicly available de-identified data. Therefore, the present study's analyses were considered exempt by the ethics review board of the School of Behavioral and Social Sciences of Tilburg University. We addressed our research question using data from the LISS panel. The LISS panel consists of a large representative longitudinal sample of Dutch participants (16–95 years of age at first assessment). We used data from 2008 to 2019. Multiple recruitment waves resulted in four major cohorts that started in 2008, 2010, 2012, and 2014 respectively. In the 2008 cohort, personality traits were measured for up to seven measurement waves (2008, 2009, 2011, 2013, 2014, 2017, 2018, and 2019). Global life satisfaction, social satisfaction, and WS were measured in each year from 2008 to 2019, with the exception of 2016 for life satisfaction. WS was only measured for respondents that were jobholders at the time of the assessment. Personality traits and life satisfaction were measured together in May and June (personality core study). The only exceptions are 2014 and 2015, when the personality core study was assessed in November and December. SS and WS were measured in February and March (social integration and leisure core study) and April and May (work and schooling core study), respectively.

Here, we included data from participants with at least two measurements of the personality traits and satisfaction domains. This resulted in three combined personality–satisfaction samples of (a) life satisfaction: N = 9,110 ($M_{age2008}$[1] = 43.88; $SD_{age2008}$ = 18.07; women = 4,985), (b) social satisfaction N = 8,889 ($M_{age2008}$ = 44.14; $SD_{age2008}$ = 18.01; women = 4,875) and (c) WS: N = 5,928 ($M_{age2008}$ = 38.06; $SD_{age2008}$ = 14.24; women = 3,162). At the baseline assessment in 2008, 54% of the participants were married, 20% lived alone, 48% stated that paid employment was their primary occupation, and 51% had children that still lived in the household. With respect the highest level of education achieved, 6% of the participants reported primary education, 24% intermediate secondary education (i.e., Dutch *voorbereidend middelbaar beroepsonderwijs*), 9% higher secondary education or preparatory university education (i.e., Dutch *hoger algemeen voortgezet onderwijs/voorbereidend wetenschappelijk onderwijs*), 22% intermediate vocational education (i.e., Dutch *middelbaar beroepsonderwijs*), 24% higher vocational education (i.e., Dutch *hoger beroepsonderwijs*), and 10% university education. A detailed overview of

[1] To make age comparable between participants that joined at different measurement occasions, we computed the age they had in 2008 based on the birth year they provided (e.g., a participant that joined in 2014 at the age of 30 would be considered to be 24 for the age moderation approach).

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Table 1
Overview of Number of Participants Across Age

Age in 2008	up to 20	21–25	26–30	31–35	36–40	41–45	46–50	51–55	56–60	61–65	66–70	71–75	76–80	over 80
LS	1,224	532	630	705	773	803	840	835	877	834	490	300	187	80
SS	1,163	508	606	688	750	787	821	824	868	828	488	295	185	78
WS	876	448	551	624	684	698	712	637	494	151	36	10	4	3

Note. LS = life satisfaction; SS = social satisfaction; WS = work satisfaction. Age in 2008 was based on all participants with at least two measurement occasions, and it was extrapolated for participants that joined after 2008. As such, the youngest age group also contains participants with an extrapolated age below 16 because they joined at a later time point (e.g., a participant that joined in 2017 at the age of 20 would be 11 in 2008).

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participants' demographics and correlations with personality traits and satisfaction for each wave is given in Open Science Framework (OSF) Table S1. Table 1 shows a detailed overview of the age coverage of the sample, which was substantial up to an age of 75 (personality traits, life satisfaction, and social satisfaction) or 60 (WS). On average, participants responded to four out of seven personality waves, six out of 11 life satisfaction waves, and seven or six out of 12 SS or WS waves, respectively (see Table 2). The number of participants per wave and combination of waves is presented in Table 3. Participants generally participated in several waves and the overlap for each pair of waves was high ($N > 2{,}000$ for personality traits, LS, and social satisfaction; $N > 1{,}000$ for personality traits and WS).

Measures

Personality

The Big Five personality traits were measured with the 50-item version of the Big-Five Factor Markers (Goldberg, 1992), using a 5-point scale, ranging from 1 (*very inaccurate*) to 5 (*very accurate*). The Big-Five Factor Markers was administered to the 2008 cohort again in 2009, 2011, 2013, 2014, 2017, and 2019. We used all seven measurement waves for the current analysis.

Life Satisfaction

Life satisfaction was measured using the Satisfaction with Life Scale, which consists of five items (Diener et al., 1985). Responses were indicated on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale was administered annually from 2008 to 2019, excluding 2016. For the current analysis, we used data from all 11 measurement waves.

Social Satisfaction

Social satisfaction was measured with a single item ("How satisfied are you with your social contacts?") in each year from 2008 to 2019. Responses were indicated on an 11-point scale, ranging from 0 (*not at all satisfied*) to 10 (*completely satisfied*). We used data from all 12 measurement occasions.

Work Satisfaction

WS was measured in each year from 2008 to 2019 with five items, (a) "We would first like to know how satisfied you are with your wages or salary or profit earnings." (b) "How satisfied are you with your working hours?" (c) "How satisfied are you with the type of work that you do?" (d) "How satisfied are you with the general atmosphere among your colleagues?" (e) "How satisfied are you with your current work?" Respondents only answered these questions if they were jobholders at the time of the assessment. Responses on each item were indicated on an 11-point scale, ranging from 0 (*not at all satisfied*) to 10 (*completely satisfied*). Again, we used all 12 measurement occasions for the current analysis. We used the average response across all five items as an indicator for WS.

Analyses

We first tested for measurement invariance across time (i.e., longitudinal) and age (i.e., cross-sectional) for each latent personality trait, as well as LS and WS (social satisfaction was only measured with one item). We then used bivariate LGCM (McArdle, 2009) based on the scale scores to study correlations between the levels and change in the personality traits and LS, SS or WS. We used LSEM (Hildebrandt et al., 2009, 2016) to study how the associations varied across age. We provide a more detailed description of each of these steps below.

Model Estimation and Measurement Invariance

To test for measurement invariance across time, we first estimated longitudinal correlated factor models for each personality trait, LS and WS separately. For example, we specified a seven-factor

Table 2
Number of Waves Per Participant

N waves	2	3	4	5	6	7	8	9	10	11	12
Big Five	2,893	1,690	1,033	967	728	1,799	—	—	—	—	—
LS	877	1,472	942	1,133	579	701	491	697	536	1,682	—
SS	840	1,216	874	813	871	521	650	444	649	577	1,434
WS	987	895	633	549	581	374	395	302	349	306	557

Note. LS = life satisfaction; SS = social satisfaction; WS = work satisfaction. Presented is the number of participants depending on the number of waves they responded to. The maximum number of available waves was seven for personality data and eleven for life satisfaction data.

Table 3
Sample Size Per Measurement Occasion and Across Measurement Occasions

		Personality wave											
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Life s. wave	*N*	*5,455*	*5,467*	—	*4,994*	—	*4,967*	*5,851*	—	—	*5,474*	—	*4,576*
2008	*5,456*		5,208	—	3,914	—	3,154	3,147	—	—	2,601	—	2,206
2009	*5,471*	5,213		—	3,946	—	3,219	3,186	—	—	2,630	—	2,236
2010	*5,341*	4,345	4,397		—	—	—	—	—	—	—	—	—
2011	*4,996*	3,916	3,952	4,612		—	3,898	3,807	—	—	3,132	—	2,647
2012	*5,387*	3,624	3,671	4,292	4,382		—	—	—	—		—	
2013	*4,972*	3,159	3,221	3,860	3,900	4,614		4,398	—	—	3,541	—	2,937
2014	*5,859*	3,153	3,193	3,775	3,811	4,550	4,405		—	—	4,594	—	3,751
2015	*5,524*	2,994	3,039	3,562	3,599	4,246	4,121	5,249		—	—	—	—
2016	—	—	—	—	—	—	—	—	—		—	—	—
2017	*5,476*	2,603	2,633	3,095	3,135	3,630	3,544	4,601	4,647	—		—	4,378
2018	*4,981*	2,422	2,447	2,872	2,896	3,338	3,247	4,183	4,229	—	4,761		—
2019	*4,584*	2,212	2,243	2,620	2,651	3,034	2,943	3,763	3,823	—	4,387	4,337	
		Social s. wave											
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Work s. wave	*N*	*5,267*	*5,260*	*5,368*	*5,051*	*5,243*	*5,185*	*5,469*	*5,328*	*5,004*	*4,929*	*4,621*	*4,278*
2008	*3,359*		4,983	4,387	3,970	3,547	3,372	3,141	2,879	2,672	2,384	2,260	2,126
2009	*3,378*	3,085		4,431	3,993	3,569	3,390	3,147	2,881	2,685	2,402	2,273	2,134
2010	*3,277*	2,589	2,629		4,600	4,171	3,993	3,706	3,382	3,130	2,786	2,637	2,470
2011	*2,857*	2,170	2,200	2,488		4,283	4,109	3,813	3,470	3,227	2,862	2,715	2,539
2012	*3,043*	1,986	2,026	2,267	2,296		4,650	4,377	3,972	3,668	3,227	3,028	2,826
2013	*2,862*	1,774	1,814	2,055	2,054	2,486		4,527	4,125	3,809	3,344	3,136	2,928
2014	*3,013*	1,564	1,591	1,799	1,825	2,190	2,223		4,647	4,334	3,823	3,566	3,301
2015	*3,028*	1,507	1,519	1,730	1,732	2,094	2,121	2,477		4,625	4,105	3,820	3,543
2016	*2,843*	1,405	1,438	1,614	1,625	1,940	1,957	2,299	2,474		4,145	3,852	3,557
2017	*2,877*	1,272	1,303	1,467	1,472	1,753	1,770	2,125	2,254	2,331		4,256	3,951
2018	*2,585*	1,107	1,144	1,267	1,274	1,503	1,527	1,820	1,913	1,992	2,244		3,975
2019	*2,336*	1,010	1,033	1,145	1,141	1,343	1,352	1,620	1,714	1,773	1,992	2,054	

Note. Presented is the sample size for each measure at each wave, as well as the shared sample size between waves. Values above the diagonal represent pairwise sample sizes for the personality traits (upper table) or social satisfaction (lower table); values below the diagonal represent sample sizes for life satisfaction (upper table) or work satisfaction (lower table). Numbers in italics represent the sample size for each measure at the corresponding wave. Personality was not measured for the 2008 cohort in 2010, 2012, 2015, 2016, and 2018. Life satisfaction was not measured in 2016.

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(i.e., seven available waves) model for openness, with each factor representing openness at the corresponding measurement occasion. Each personality factor was estimated based on the ten corresponding items at each measurement occasion. For LS and WS, we used a model with 11 and 12 factors (i.e., 11 and 12 available waves, respectively) measured by five items each. For all models, we added residual correlations between the same items across measurement waves. Models were estimated in R using the lavaan package (Rosseel, 2012) and full information maximum likelihood estimation to account for missing values. We evaluated overall model fit with a combination of the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR) based on common standards (acceptable/good fit: CFI $\geq$ .90/.95; RMSEA $\leq$ .08/.06; SRMR $\leq$ .08/.06; Bentler, 1990; Hu & Bentler, 1999).

To test for measurement invariance across measurement waves, we compared three nested models with increasingly stronger equality constraints across time points. We first tested for measurement invariance across time, and then subsequently also across age. We compared (a) a model with no parameter constraints across time (i.e., configural invariance) to (b) a model with equal factor loadings across time (i.e., metric invariance) to (c) a model with additionally constrained item intercepts across time (i.e., scalar invariance). We then repeated these steps by adding constraints across age to the model with scalar invariance constraints across time. A decrease in model fit between nested models would suggest that the equality parameters do not hold across time. Measurement invariance was tested by evaluating the increase in model misfit between nested models based on a cutoff of ΔCFI = −.010, ΔRMSEA = .015, and ΔSRMR = .030 (Chen, 2007; Cheung & Rensvold, 2002). If a change in fit was greater than these cutoffs, then measurement invariance over time was not supported. To test for measurement invariance across age, we used LSEM, which we describe in more detail below.

LSEM

To study the effect of age on personality levels and longitudinal change, we used LSEM (Briley et al., 2015; Hildebrandt et al., 2009, 2016; Olaru et al., 2019) with the R package sirt (Robitzsch, 2022). Similar to multigroup models, LSEM is a procedure to examine moderation effects on all model parameters within a structural equation modeling context. In contrast to traditionally used multigroup confirmatory factor analyses, LSEM does not

require an artificial categorization of age (i.e., age groups; for a discussion of associated issues, see Hildebrandt et al., 2009) and maintains the continuous nature of age. As such, it allows for a more precise identification of moderation effects and critical levels of the moderator (e.g., identify age points around which the association between personality traits and life satisfaction changes). To achieve a sufficient sample size for the model estimation at each age point, LSEM estimates several structural equation modelings based on samples weighted by their distance to the target age value. Participants with the target age (e.g., age = 50 years) will be fully weighted for the model estimation, whereas participants with similar age (e.g., 48, 49, 51, 52 etc.) receive slightly lower sampling weights. The weights decrease with increasing distance to the target age point. The weighting function follows a Gaussian kernel function (for more details and illustrations, see Hildebrandt et al., 2009, 2016; Olaru et al., 2019). The underlying rationale is that participants with smaller age differences are more similar to one another than participants with larger age differences. This approach results in sufficient sample sizes for model estimation, even when the number of cases at each moderator value would otherwise be too low. The breadth of the weighting kernel can be increased/decreased by modifying the bandwidth of the weighting function, which increases/decreases the resulting sample size and overlap between weighted samples.

In line with recommendations in the literature (Hildebrandt et al., 2016), we used a bandwidth value of $h = 2$, which provides a good trade-off between smoothing out sampling variations (i.e., "noise") and precision to detect parameter differences across the moderator. We estimated the models ranging from 20 to 70 years of age at the first measurement occasion in steps of 2 years. For WS, we only estimated the models up to 56 years of age at the first measurement occasion to ensure that enough participants were jobholders across the 12 measurement occasions. The borders of the age range were chosen to ensure that the number of participants on both sides of the target age points was still sufficient to estimate the models. Generally, LSEM should not be estimated on the extremes of the moderator (e.g., age of 90 years), as the symmetrical sampling weights would not be able to draw on participants on one side of the moderator (e.g., participants older than 90 years of age). For example, if there are 100 participants between 80 and 89 years of age, but none between 90 and 100 years, the 90-year model would be solely based on the 100 "younger" participants and not correspond to the targeted age. On average, the resulting weighted sample size used for the model estimation in LSEM was $N_{Mw} = 2{,}080.4$ (ranging from $N_w = 1{,}315.9$ to $N_w = 2{,}462.7$) for the life satisfaction models, $N_{Mw} = 2{,}038.9$ (ranging from $N_w = 1{,}307.5$ to $N_w = 2{,}432.5$) for the social satisfaction models, and $N_{Mw} = 1{,}504.7$ (ranging from $N_w = 1{,}136.4$ to $N_w = 1{,}741.1$) for the WS models.

To derive global fit indices in LSEM that can be used for measurement invariance testing similar to a multigroup confirmatory factor analysis, we used the joint estimation procedure implemented in the lsem.estimate-function (Robitzsch, 2022). By default, LSEM estimates models sequentially across age. The joint estimation approach imitates multigroup confirmatory factor analysis by treating each weighted sample as separate groups. We again used the aforementioned model fit cutoffs to test for measurement invariance across age (ΔCFI = −.010, ΔRMSEA = .015, and ΔSRMR = .030; Chen, 2007; Cheung & Rensvold, 2002). To test the moderation effect of age on single model parameters of the LGCM, we used a permutation test (Hildebrandt et al., 2016; Hülür et al., 2011; Schroeders et al., 2015).

Bivariate LGCM

To examine level, change, and measurement occasion-specific correlations between personality and life satisfaction, we used bivariate LGCMs (McArdle, 2009) for each trait—satisfaction domain combination. As indicators for each measurement occasion, we used the *T*-standardized scale scores based on the mean and standard deviation of the first measurement occasion. The level (i.e., intercept) factor was specified by constraining all loadings to 1. The linear change (i.e., slope) factor was specified by constraining the measurement occasion loadings to an increasing order, ranging from $\lambda = 0$ in 2008 to $\lambda = 11$ in 2019. The loadings thus corresponded to years passed since the first measurement occasion, independent of whether waves were missing in between 2008 and 2019. Indicator intercepts were constrained to 0 and factor means were freely estimated.

Whenever personality traits and satisfaction were assessed at the same measurement occasion, we also included occasion-specific residual correlations to ensure that measurement occasion-specific events did not affect the level and change correlations. For the bivariate LGCM, we checked if the occasion-specific covariances could be constrained to equality using the Akaike information criterion (AIC), the Bayesian information criterion (BIC), and χ^2-difference tests between the constrained and unconstrained model (see OSF Table S2). BIC supported constraints for all models, whereas the AIC and χ^2-difference test only did so for 11 out of the 15 models. Because the AIC and χ^2 differences were rather small, and the BIC supported the more parsimonious models, we constrained the covariance to equality across time for all models. The final models are illustrated in Figure 1. We were interested in the level-level, change-change, and occasion-specific correlations (label a in Figure 1) between the personality traits and domains of satisfaction.

Based on previous research on personality traits and life satisfaction, we expected to find correlations that are small (0.1) to moderate (0.3) in size. In a LGCM with 10 measurement occasions, a sample size of 500 is usually sufficient to estimate correlated change (Hertzog et al., 2006), which was achieved for each measurement wave and LSEM age point.

Transparency and Openness

All analyses were run in R Version 4.1.3 (R Core Team, 2022) with the R packages *haven* (Wickham & Miller, 2020), *lavaan* (Rosseel, 2012), *psych* (Revelle, 2020), and *sirt* (Robitzsch, 2022). Analyses code Supplemental Materials are available in an OSF repository and can be accessed via https://osf.io/4c8jw/. This article is partly based on the following preregistration: https://osf.io/3cxuy/, which focused on personality and life outcomes across the lifespan. To make the theoretical framework more coherent, we decided to only focus on outcomes related to satisfaction. Yet, our hypotheses and planned analyses (LSEM) remained largely the same. Previous studies using the same data set (LISS panel) can be found here: https://www.dataarchive.lissdata.nl/publications. After signing the data statement, data from the

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LISS panel are freely accessible to use for noncommercial research: https://www.lissdata.nl/access-data.

Results

Descriptive Statistics and Correlations

Descriptive statistics and correlations for the personality traits, LS, SS, and WS at each wave are presented in OSF Table S1. On average, life satisfaction correlated with social satisfaction by $r = .40$ and with WS by $r = .37$ withinwaves (all $p < .001$). SS and WS were correlated on average by $r = .31$ (all $p < .001$). On average, life satisfaction correlated by $r = .11$ with openness, $r = .21$ with conscientiousness, $r = .23$ with extraversion, $r = .14$ with agreeableness, and $r = .44$ with emotional stability (all $p < .001$). Social satisfaction correlated on average by $r = .07$ with openness, $r = .14$ with conscientiousness, $r = .25$ with extraversion, $r = .19$ with agreeableness, and $r = .31$ with emotional stability (all $p < .001$). And finally, WS correlated on average by $r = .07$ with openness, $r = .14$ with conscientiousness, $r = .25$ with extraversion, $r = .19$ with agreeableness, and $r = .31$ with emotional stability (all $p < .001$). OSF Table S3 shows the correlations across all waves. On average, the retest correlation between subsequent waves was $r = .73$ for life satisfaction, $r = .65$ for social satisfaction, $r = .66$ for WS, and $r = .79$ for the personality trait measures (all $p < .001$).

Model Fit, Measurement Invariance, and Reliability

Model fit for the personality traits, LS, and WS across the different measurement invariance levels is presented in Table 4. Absolute model fit was acceptable for all constructs as well as across all measurement invariance levels. The ΔCFI between nested model did not exceed the threshold of .01 in any model. As such, scalar measurement invariance was established. McDonald's ω (i.e., factor saturation) and Cronbach's α (i.e., internal consistency) were acceptable for all measures (see Table 4, for average across waves).

Level and Change Correlations

The level and change[2] correlations between the personality traits and the satisfaction domains estimated in the bivariate LGCM are presented in Table 5 (for level-change correlations, e.g., extraversion level with life satisfaction change, see OSF Table S4). Among the Big Five, emotional stability showed the strongest associations with all three satisfaction domains (average level $\rho = .41$; average change $\rho = .38$). Extraversion and agreeableness were most strongly associated with SS (E/A level $\rho = .32/.29$; change $\rho = .25/.29$). For WS, conscientiousness was the strongest correlate (level $\rho = .20$; change $\rho = .25$) after emotional stability (level $\rho = .31$; change $\rho = .27$). Level and change correlations were generally similar, with the exception of openness, which had the lowest level correlations (average level $\rho = .07$) but similarly high correlated change as the other trait domains (average openness change $\rho = .20$ compared to average change $\rho = .25$ of the other traits). The occasion-specific correlations were generally close to zero for WS and social satisfaction (average occasion $\rho = .03$), and only small for life satisfaction (average $\rho = .12$). Of all occasion-specific correlations, the correlation between emotional stability and life satisfaction stood out as particularly strong ($\rho = .21$).

Next, we used LSEM to examine whether the parameter estimates of the bivariate LGCM were moderated by age. The resulting correlational age-patterns are depicted in Figure 2. For summaries and exact p values for all moderation effects, please see OSF Table S5. Variances for the level and change factors, as well as the measurement occasion-specific residuals, are presented in OSF Figure S1 and OSF Table S6.

The first column in Figure 2 shows the level-level correlations across age. Most notably, the rank-ordering of the correlations was highly stable across age, with emotional stability followed by extraversion or conscientiousness being the strongest correlate of satisfaction across the entire age range. For global life satisfaction, all level correlations were stable except for a decrease in the openness level correlation from $\rho = .16$ to .06 (permutation test $p = .040$) from 20 to about 40 years of age. For social satisfaction, we only found an increase in the level correlation with conscientiousness from $\rho = .13$ to .24 ($p = .005$). This increase was most pronounced from 20 to 56 years of age at the first measurement occasion, after which the correlation remained stable. The WS personality trait associations were more affected by cross-sectional age differences. In contrast to the "age-as-leveler" hypothesis, we found an increase in the WS-trait level correlations for emotional stability ($\rho = .18$ to .35; $p = .023$), extraversion ($\rho = .02$ to .18; $p < .001$), and agreeableness ($\rho = .01$ to .17; $p = .002$). This increase was continuous across the entire working age range for extraversion and agreeableness, but strongest for emotional stability in young adulthood (20 to 30 years of age at the first measurement wave).

The second column in Figure 2 shows the change-change correlations. These fluctuated descriptively more strongly than the level fluctuations, in particular with respect to the increase in change correlations between personality traits and WS during young adulthood. However, despite these descriptively large effects, the differences across age were not significant for any change correlations except for an increase between WS and emotional stability change from $\rho = .01$ to .33 ($p = .031$) across age at the first measurement occasion. The lack of significant age moderations despite descriptively large age differences was due to the much larger standard errors of the change correlations. For instance, the standard errors for the level correlations between openness—which had the lowest reliability of the Big Five trait measures ($\alpha/\omega = .77/.76$)—and LS/SS/WS were $se_{LS/SS/WS} = 0.05/0.06/0.06$, whereas the change correlations had standard errors of $se_{LS/SS/WS} = 0.14/0.14/0.16$ (measurement occasion-specific correlation standard errors: $se_{LS/SS/WS} = 0.03/0.02/.03$; all values averaged across age models). As such, the confidence intervals of the change correlations still overlapped substantially across age, resulting in no significant age moderations. Whereas power was high when estimating the model on the full available sample (e.g., openness change correlation $se_{LS/SS/WS} = .03/.03/.04$), the reduction of the sample size in LSEM to on average of approximately $N_w = 2{,}000$ (or 1,500 in the case of WS) per age model in combination with average reliability around $\alpha = .83$

[2] By *level* correlations we refer to the correlations between personality and satisfaction intercepts (i.e., level-level). By *change* correlations we refer to the correlations between personality and satisfaction slopes (i.e., change-change).

Table 4
Model Fit, Reliability, and Measurement Invariance Across Time and Age

					Across time			Across age (LSEM)		
Measure	α/ω	MI level	*df*	χ^2 value	CFI	RMSEA	SRMR	CFI	RMSEA	SRMR
OP	.77/.76	Configural	2,114	16,895.1	.917	.028	.066	.909	.037	.070
		Metric	2,168	16,969.1	.917	.027	.066	.908	.037	.070
		Scalar	2,222	17,289.8	.916	.027	.066	.907	.037	.070
CO	.79/.79	Configural	2,114	11,426.4	.944	.022	.053	.934	.030	.050
		Metric	2,168	11,508.7	.944	.022	.053	.934	.030	.052
		Scalar	2,222	11,911.4	.942	.022	.053	.929	.031	.054
EX	.87/.87	Configural	2,114	13,216.1	.951	.024	.048	.938	.034	.053
		Metric	2,168	13,358.6	.951	.024	.049	.937	.034	.055
		Scalar	2,222	13,954.4	.948	.024	.050	.935	.034	.055
AG	.81/.82	Configural	2,114	8,759.5	.960	.019	.033	.944	.028	.037
		Metric	2,168	8,810.5	.960	.018	.033	.943	.028	.039
		Scalar	2,222	9,104.9	.959	.018	.034	.941	.028	.040
ES	.88/.88	Configural	2,114	19,562.6	.925	.030	.052	.910	.040	.056
		Metric	2,168	19715.4	.924	.030	.053	.910	.040	.057
		Scalar	2,222	20,206.1	.923	.030	.053	.909	.040	.057
LS	.89/.88	Configural	1,100	5,611.9	.983	.021	.067	.975	.031	.066
		Metric	1,140	5,707.8	.983	.021	.067	.974	.031	.066
		Scalar	1,180	5,969.1	.982	.021	.068	.974	.031	.066
WS	.82/.81	Configural	1,314	3,500.1	.982	.017	.065	.947	.039	.049
		Metric	1,358	3,623.2	.981	.017	.066	.947	.039	.049
		Scalar	1,402	3,866.3	.979	.017	.066	.947	.039	.049

Note. LSEM = local structural equation modeling (used to test measurement invariance across age); α = Cronbach's α internal consistency; ω = McDonald's factor saturation omega; MI level = measurement invariance level; *df* = degrees of freedom; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual; OP = openness; CO = conscientiousness; EX = extraversion; AG = agreeableness; ES = emotional stability; LS = life satisfaction; WS = work satisfaction; configural = no equality constraints across time/age; metric = factor loading equality constraints across time/age; scalar = factor loading and item intercept equality constraints across time/age. For the age comparison, scalar invariance constraints across time were used in all models.

might have caused these power issues for the age moderation of the change correlation (see Hertzog et al., 2006).

The third column in Figure 2 shows the measurement occasion-specific correlations. As also shown in Table 5, these were small or close to zero with the exception of the occasion-specific correlation between emotional stability and life satisfaction. The occasion-specific correlations were highly stable across age, with no significant age differences.

Table 5
Trait and Satisfaction Correlations Estimated in the Full Sample

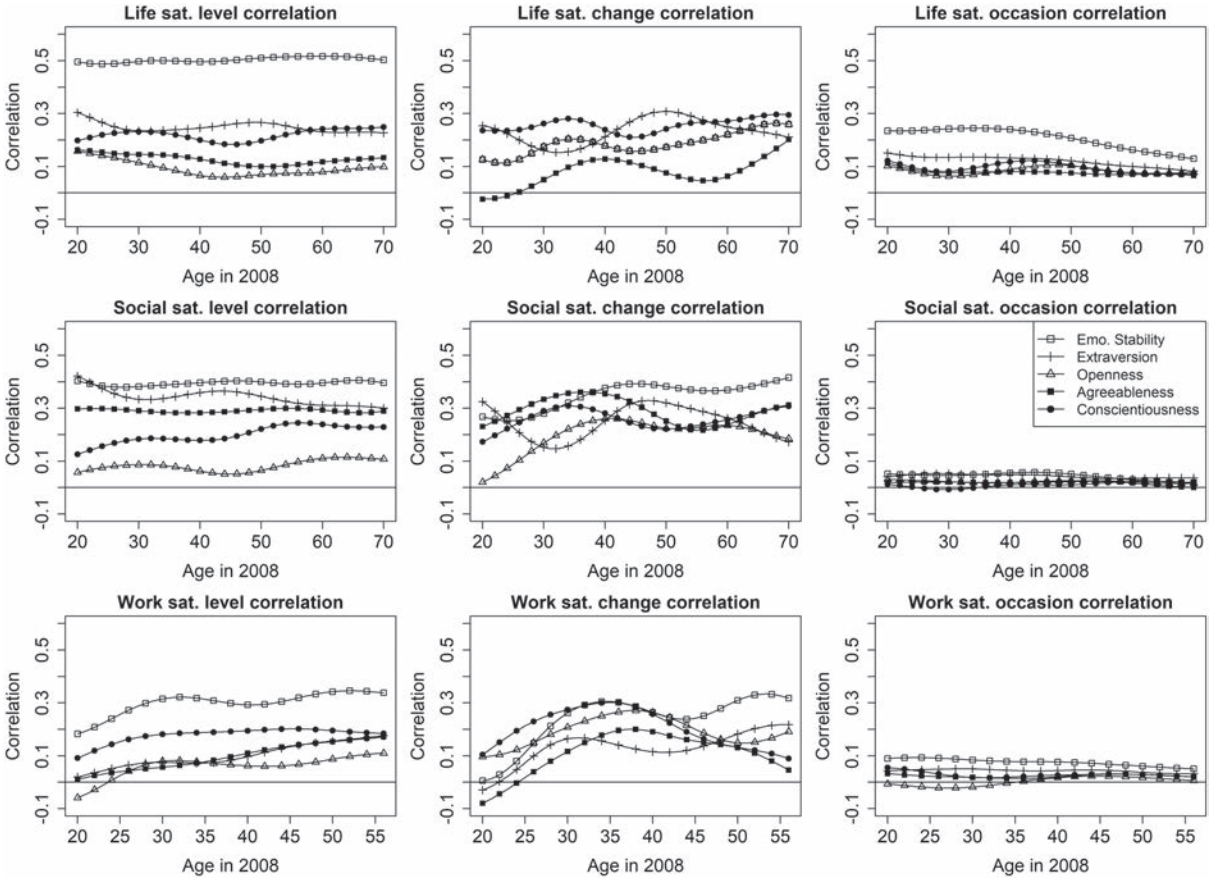
Type	ρ	OP	CO	EX	AG	ES	*M*
Level	LS	.08	.23	.24	.13	.51	.24
	(*p*)	(*<.001*)	(*<.001*)	(*<.001*)	(*<.001*)	(*<.001*)	
	SS	.06	.19	.34	.29	.39	.25
	(*p*)	(*<.001*)	(*<.001*)	(*<.001*)	(*<.001*)	(*<.001*)	
	WS	.06	.21	.09	.12	.32	.16
	(*p*)	(*.002*)	(*<.001*)	(*<.001*)	(*<.001*)	(*<.001*)	
	M	.07	.21	.22	.18	.41	.22
Change	LS	.21	.29	.23	.09	.52	.27
	(*p*)	(*<.001*)	(*<.001*)	(*<.001*)	(*.004*)	(*<.001*)	
	SS	.18	.23	.27	.28	.37	.27
	(*p*)	(*<.001*)	(*<.001*)	(*<.001*)	(*<.001*)	(*<.001*)	
	WS	.20	.19	.11	.08	.24	.16
	(*p*)	(*<.001*)	(*<.001*)	(*.003*)	(*.045*)	(*<.001*)	
	M	.20	.24	.20	.15	.38	.23
Occasion	LS	.09	.10	.12	.08	.21	.12
	(*p*)	(*<.001*)	(*<.001*)	(*<.001*)	(*<.001*)	(*<.001*)	
	SS	.02	.01	.04	.02	.05	.03
	(*p*)	(*<.001*)	(*.059*)	(*<.001*)	(*.006*)	(*<.001*)	
	WS	.00	.03	.04	.03	.07	.03
	(*p*)	(*.585*)	(*<.001*)	(*<.001*)	(*.001*)	(*<.001*)	
	M	.04	.05	.07	.04	.11	.06

Note. OP = openness; CO = conscientiousness; EX = extraversion; AG = agreeableness; ES = emotional stability (i.e., reversed neuroticism); LS = life satisfaction; SS = social contact satisfaction; WS = work satisfaction; *M* = (unweighted) mean correlations across trait or satisfaction domain. Exact *p* values are printed in parentheses and italics below the correlations.

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Figure 2

Trait Domain—Satisfaction Level, Change, and Measurement Occasion Correlations Across Age



Note. Presented are the level (i.e., intercept–intercept), change (i.e., slope–slope), and measurement occasion-specific (i.e., average residual–residual) correlations of the bivariate latent growth curve models (see Figure 1) estimated across age using local structural equation modeling.

Discussion

We examined age-graded differences in the relation between personality traits and life, work, and social satisfaction. We computed bivariate LGCMs to distinguish between the covariations of the stable and changing components of the Big Five traits and satisfaction across adulthood. We used LSEM to investigate how these associations were moderated by age. The results showed that most of the level-level and change-change correlations between the Big Five traits and satisfaction were highly stable across the adult lifespan, with only some increases in the correlations with WS. In line with previous research on satisfaction and the Big Five personality traits (Anglim et al., 2020; Judge et al., 2002), emotional stability showed the strongest associations with all three satisfaction domains. Beyond emotional stability, conscientiousness was the strongest correlate for WS, and extraversion and agreeableness were most strongly associated with SS. One remarkable finding of this study was that the correlations between change in satisfaction and personality traits were highly similar to the stable level correlations. Of the 45 trait–satisfaction correlations examined in this study (including measurement occasion correlations), only six were moderated by age. Most of these moderations indicated accumulating effects, especially for WS.

Correlated Change Between Personality Traits and Satisfaction

One of the main findings of our study was that changes in personality correlated with changes in life, work, and social satisfaction across the lifespan. The use of data spanning 11 years with yearly measures of satisfaction and annual to triennial measures of the personality traits support the robustness of these findings.

Correlated change can be caused by a third variable affecting both personality traits and satisfaction simultaneously, or by reciprocal effects between personality and satisfaction (Allemand & Martin, 2016). For example, intrinsic biological maturation in young adulthood might lead to an improved emotion regulation, which triggers both increases in emotional stability and life and domain satisfaction. However, as people get older, environmental influences and person–environment transactions may play an increasing role in explaining correlated change in personality traits and life satisfaction (Briley & Tucker-Drob, 2014). Across the lifespan, people increasingly select into environments that may then impact the way they live their lives, and changes in behaviors, thoughts, or emotions might eventually lead to similar changes in satisfaction and personality. For example, joining a social club might lead to increases in both extraversion and social satisfaction. Apart from the effect of third

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variables, correlated change can represent bidirectional effects between personality and satisfaction (Mroczek et al., 2020). In response to new environments, variations in satisfaction may reflect reinforcement or punishment of personality-related behaviors, thoughts, or emotions, which may result in personality change (Wrzus & Roberts, 2017). For example, positive work experiences may increase commitment to work and result in an increase in conscientious behaviors. In contrast, feeling unsatisfied in a romantic relationship could lead to more negative personality changes, such as decreases in emotional stability. If changes in behaviors, thoughts, or emotions in response to these experiences accumulate over time, this would be reflected in codevelopment between personality and general satisfaction levels across multiple years.

Personality Traits and Life Satisfaction

Across personality traits and satisfaction domains, we found the strongest association between life satisfaction and emotional stability. The correlation between the stable levels of these measures was $\rho = .51$, similar in size to the correlation reported in meta-analytic findings (Anglim et al., 2020). Also consistent with the meta-analytic results, we found the next largest correlations with extraversion ($\rho = .24$), conscientiousness ($\rho = .23$), and agreeableness ($\rho = .13$). This provides further evidence for the relevance of emotional stability for general life satisfaction through direct trait-driven perception or evaluation processes (Heller et al., 2004). In contrast, the traits that should exert a more indirect effect (i.e., conscientiousness and agreeableness) had a smaller association with general life satisfaction. Despite our assumption that extraversion would have both a direct (i.e., positive affect) and indirect effects (e.g., larger social networks), the association was similar in magnitude to the association between conscientiousness and life satisfaction.

Expanding on previous research, we found that the correlations between change in these measures were just as large as the correlations between levels. The only exception was openness, for which the change correlations ($\rho = .21$) were stronger than the level correlations ($\rho = .08$). This suggests that despite the small cross-sectional association between openness and life satisfaction, people who increased in openness also increased in life satisfaction across the 11 years covered in this study. The relatively strong change correlations between openness and life satisfaction may be explained by indirect processes (e.g., Heller et al., 2004). For example, according to the broaden-and-build theory (Fredrickson, 2004), positive emotions such as joy and content encourage exploration and a broadening of thought and action repertoires (see also Isen, 2000). As such, people who have experienced increases in their life satisfaction may have also increased their engagement in novel behaviors or creative solutions to the demands of life situations, which may have led to increased openness levels (Schwaba et al., 2018, 2019). Another explanation for the correlated change between openness and life satisfaction may be the influence of a common third variable that led to changes in both variables, such as a major life event (e.g., moving to a new city, graduation from college; Allemand & Martin, 2016) that triggered co-occurring changes in both openness and life satisfaction.

We accounted for occasion-specific correlations to ensure that the change correlations reflect associations between long-term changes in personality and life satisfaction rather than temporary fluctuations. The occasion-specific correlations were particularly strong between personality and global life satisfaction, most notably for life satisfaction and emotional stability ($\rho = .21$). This suggests that in years in which participants' emotional stability was higher than their average level (and higher than the linear change might account for), they reported higher life satisfaction—or reported higher emotional stability in years in which their life satisfaction was high. An explanation for these correlations can be that people rated themselves as more emotionally stable because they are more satisfied with life when filling out the survey, either because of recent positive or negative events, or their mood at the moment of assessment. Taken together, we replicated meta-analytic findings on the cross-sectional association between personality traits and life satisfaction and showed that these associations also hold with respect to longitudinal change.

We assumed that associations driven by direct effects (i.e., emotional stability and partly extraversion; Emmons & Diener, 1985; Heller et al., 2004; McCrae & Costa, 1991; Røysamb et al., 2018) would be more stable across the lifespan than indirect effects (i.e., conscientiousness and agreeableness). However, we found that all level and change correlations between personality traits were highly stable across the lifespan, suggesting that the trait domains are equally relevant to global life satisfaction across different stages of life. We only found one exception, namely a decreasing association between openness and life satisfaction levels from $\rho = .16$ at 20 years to $\rho = .06$ at 45 years of age at the first measurement occasion. People high on openness are receptive to ideas and experiences and have a curious attitude toward the world. Therefore, openness might be particularly closely connected to global life satisfaction at a younger age, with those young adults who explore more lifestyles, ideas, and learn more new skills (Schwaba et al., 2018) also experiencing higher life satisfaction. Notably, the correlation between levels of openness to experience and life satisfaction was generally small across all ages. These results should therefore be interpreted with caution until replicated in future research.

Personality Traits and Social Satisfaction

Social satisfaction was most strongly associated with emotional stability ($\rho = .39$), extraversion ($\rho = .34$), and agreeableness ($\rho = .29$). This is consistent with the literature showing that these traits are linked to friendship quality (Festa et al., 2012; Selfhout et al., 2010; Wilson et al., 2015) and indicate that extraversion plays a relatively bigger role for general social satisfaction compared to romantic relationship satisfaction (Malouff et al., 2010). Again, the change correlations were similar to the level correlations, indicating codevelopment of personality traits and social satisfaction.

For social satisfaction, the level association with conscientiousness was the only association that was significantly moderated by age, increasing from $\rho = .13$ at 20 years of age at the first measurement occasion toward $\rho = .24$ at 60 years of age. This increasing association between conscientiousness and social satisfaction may be due to age-associated differences in the social networks or relevance of the traits for social interactions. While conscientiousness does not seem to affect the formation of friendships or romantic relationships, it is positively associated with perceived friendship and romantic relationship quality as well as fewer conflicts and a more adaptive conflict style (for a literature overview, see Harris & Vazire, 2016). Higher conscientiousness is furthermore associated with a lower

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likelihood of divorce (Roberts et al., 2007; Solomon & Jackson, 2014). Apart from industriousness and orderliness, conscientiousness is generally also defined by higher self-control and responsibility (Jackson et al., 2009; MacCann et al., 2009; Roberts et al., 2014). As such, highly conscientious people may be more likely to keep promises or fulfill social obligations, as well as manage anger or other negative emotions and conflicts better than people lower in conscientiousness (Finkel & Campbell, 2001). The increased relevance of the maintenance of social and romantic relationships in middle and old compared to young adulthood (Hutteman et al., 2014) might thus explain why social satisfaction is more strongly associated with conscientiousness with increasing age.

Apart from the increasing level association with conscientiousness, all other correlations between the Big Five traits and social satisfaction were stable across the lifespan. These results are similar to a previous longitudinal study on the level and change correlations between Big Five traits and social well-being by Hill et al. (2012), who found stable codevelopment between personality traits and social satisfaction for adults below and above 45 years of age.

Personality Traits and Work Satisfaction

Consistent with meta-analytic evidence (Judge et al., 2002), we found the strongest correlations between emotional stability (ρ = .32) and conscientiousness (ρ = .21) with WS ($\rho \leq .12$ for the other trait domains). Extending previous work, we also found these two trait domains to show the strongest codevelopment with WS across the 11 years of the study. Similar to global life satisfaction, the effect of emotional stability was the strongest, emphasizing the relevance of this trait-driven perception or evaluation effect on WS. However, the relative strength of the association of WS with conscientiousness also emphasizes the prevalent role of conscientiousness in predicting work experiences (Denissen et al., 2014; Dudley et al., 2006; Judge et al., 2013).

Compared to life satisfaction and social satisfaction, we found stronger evidence for the moderating role of age in the link between personality and WS. Specifically, we found age-associated increases in the cross-sectional associations between WS and emotional stability (ρ = .18 to .35), extraversion (ρ = .02 to .18), and agreeableness (ρ = .01 to .17). The slope correlation between emotional stability and WS also increased across age at the first measurement occasion (ρ = .01 to .33).

The increasing link between personality and WS might reflect stronger indirect processes (Caspi & Roberts, 2001; Ferraro & Shippee, 2009; O'Rand, 2006; Roberts & Wood, 2006) in the work domain compared to the social domain and general life domain. Contrary to our expectations, the link between emotional stability and WS increased across age, also suggesting an indirect link in this context. For example, people with higher emotional stability might be more likely to replace their current unsatisfactory jobs by applying for jobs that seem more challenging or risky but come with higher wages and more fulfilling roles. Similarly, people with higher levels of emotional stability, extraversion, or agreeableness might be more likely to be selected into jobs with higher professional or personnel responsibilities, leading to increases in WS compared to individuals that advance more slowly in their career. Lower levels of adaptive traits may limit opportunities for climbing up the occupational ladder and increase chances of job loss, leading to lower job satisfaction and possibly negative changes in these traits (e.g., decreases in emotional stability). The consequences of these processes may become particularly visible in midlife, when people need to maintain occupational attainment and satisfactory performance, compared to early adulthood, when people are still transitioning into job life (Hutteman et al., 2014). In contrast, conscientiousness seemed to be equally important for satisfaction in all phases of working life, as shown by the lack of an age moderation effect on this correlation.

The accumulating effects are in contrast with cross-sectional studies that showed stronger correlations between Big Five traits and job satisfaction in young compared to older adults (Bui, 2017; Topino et al., 2021). However, these previous findings were based on categorical age groups (Bui, 2017) or a small sample size (Topino et al., 2021), as well as only one measurement occasion within each group. Our study has provided a more detailed examination of the moderating role of age by combining a rich longitudinal data set with a continuous age moderation in LSEM, possibly picking up on accumulating effects that might be missed when examining cross-sectional differences in broad age groups or small samples.

Age Differences in the Personality—Satisfaction Associations

Taken together, the associations between personality traits and general life and social satisfaction were remarkably stable across age. These findings are in contrast to the "age-as-leveler" hypothesis, which would assume these correlations to stabilize or weaken with age. The personality traits remained equally relevant to life, social, or WS across the adult lifespan, or became even more interconnected in some cases for WS. The stability of the association between personality and life satisfaction, social satisfaction, and to a lesser extent WS can potentially be explained by a direct genetic link (Hahn et al., 2013; Ilies & Judge, 2003; Røysamb et al., 2018; Weiss et al., 2008). Yet, stable correlations between satisfaction and personality might be increasingly explained by stable environments across the lifespan. In a similar vein, rank-order stability in personality traits is increasingly explained by nonshared environmental influences and gene–environment transactions (Briley & Tucker-Drob, 2014; Kandler et al., 2010). The present study was not able to distinguish between genetic and environmental influences, and both stability and change in the link between personality traits and satisfaction can be affected by genetic and environmental factors (for a review, see Bleidorn et al., 2014). Future longitudinal behavioral genetic research is needed to study how the proportion of genetic and environmental influences on the personality–satisfaction link changes across the lifespan.

Limitations and Future Directions

The main contribution of our study was to systematically examine the link between personality traits and satisfaction across the lifespan. Our study was the first to combine a large longitudinal data set and the use of LSEM to test correlated levels and codevelopment across a broad age range. Because we used a large nationally representative sample with up to 12 repeated measures, and LSEM for a continuous instead of categorical age moderation, we assume these patterns to be robust and less affected by sampling error than studies with fewer time points and age group comparisons. Despite these strengths, our

study has limitations that need to be taken into account when interpreting the results and may guide future research.

A first limitation is the somewhat limited focus on merely cognitive components of well-being. While the use of three broad satisfaction measurements captured people's cognitive evaluation of the lives across broad and relevant domains, there are more aspects to subjective well-being that were not captured in this study (e.g., positive and negative affect). One other commonly studied cognitive well-being domain is satisfaction with health, which was unfortunately not part of the annual measures in the LISS panel. Future research could use a similar approach to study how the Big Five personality traits correlate with other measures of subjective well-being, and with objective measures of quality of life—such as functional capacities or grip strength. Based on theories on the link between personality and health (e.g., O'Rand, 2006), we may expect similar accumulating effects as for WS.

Second, although the sample included people who were 16 to 95 years old at the beginning of the study, power considerations limited our approach to reliable estimations across a smaller age range (i.e., 20 to 70 years at the first measurement occasion). An ideal study would follow people across the entire life span. We found no indication of the hypothesized weakening effect in older adulthood, but it might be that weakening correlations between personality traits and satisfaction occur for populations who are older than 70 years (see, e.g., Wagner et al., 2016).

Third, we did not look into possible directional effects or specific age-graded environmental factors that may explain stability and change in the link between personality traits and satisfaction across the lifespan. Future research is needed to study the relative importance of variables that tend to change with age (e.g., income, employment status, marital status, and health) in explaining the personality–satisfaction link. Importantly, our expectations for age patterns focused on the general long-term moderating effect of age across many years; we did not make predictions regarding directionality and possible environmental factors that may affect the association. To study this, future research in specific life domains or across shorter time spans is needed. For example, our finding of accumulating links between personality traits and work satisfaction could be further examined by testing the exact timing of changes in work satisfaction and personality during job transitions (e.g., first job, promotion; Reitz et al., 2020, 2022), and how initial changes may predict longer term codevelopment when people are more stable in their work role.

Conclusion

Our study provides a comprehensive overview of the longitudinal associations between personality traits and three domains of satisfaction, as well as the moderating role of age on these associations. Through the methodological approaches used in this study, we were able to distinguish between correlations of the stable components, linear change, and measurement occasion-specific fluctuations. In line with previous studies, we found emotional stability to be most strongly related with all satisfaction domains, followed by extraversion and agreeableness for social satisfaction, and conscientiousness for WS. We found that change correlations between personality and satisfaction were similar in strength when compared to the level correlations, with the exception of openness, which showed stronger correlated change. We showed that the associations between personality traits and the three satisfaction domains are mostly stable across the adult lifespan—with some exceptions regarding WS. Through the large sample size, several measurement occasions, and use of LSEM as a nonparametric moderation approach, this provides strong evidence for the consistent relevance of personality traits for global and domain-specific satisfaction across the adult lifespan, despite differences in social roles or demands across the different life phases.

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Received April 22, 2022
Revision received October 31, 2022
Accepted December 29, 2022 ■

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