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Beyond Big Five trait domains: Stability and change in personality facets across midlife and old age

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Abstract

Objective: Accumulated evidence indicates both stable and malleable parts of inter-individual differences in the broad Big Five domains. Less is known, however, about stability and change at the more diversified facet level. With the current study, we fill this gap by investigating personality stability and change across midlife and old age.

Method: We apply local structural equation measurement models and second-order growth curve models to four waves of data obtained with the full NEO Personality Inventory (NEO-PI-R) collected over 11 years from 1667 adults (M_{age} = 62.69 years, SD_{age} = 15.62, 55% female) who participated in the Seattle Longitudinal Study.

Results: Measurement invariance analyses indicated that the psychometric properties of the NEO-PI-R facets are comparable across time and age. Results revealed substantial rank-order stabilities across all facets, yet the exact pattern varied strongly between facets of the same trait and across traits. Mean-level change of facets from midlife to old age largely mirrored the mean-level change observed for the broader traits.

Conclusion: We discuss conceptual implications and argue that in the face of overall stability across midlife and old age, changes in the rank-ordering of people reveals a much more complex and diverse pattern of development than analyses at the trait level suggest.

KEYWORDS

Big Five, facets, local structural equation modeling, mean-level change, rank-order stabilities

1 | INTRODUCTION

Whether and how personality characteristics change across the adult life span has been debated for decades (Bleidorn et al., 2020; Costa et al., 2018; Roberts & DelVecchio, 2000; Roberts et al., 2006). Evidence has now accumulated that inter-individual differences in the way people act, think, and feel (Roberts, 2009)—mainly conceptualized as the Big Five domains (neuroticism, extraversion, openness, agreeableness, conscientiousness)—are in part stable and

in part malleable (Anusic & Schimmack, 2016; Wagner et al., 2019). Given the relevance of personality for important individual, interpersonal, and societal outcomes such as health, conflicts between romantic partners, occupational success, political attitudes, and criminal behavior (Ozer & Benet-Martinez, 2006; Roberts et al., 2007; Soto, 2019), researchers are striving to better understand how inter-individual differences in personality are changing with age or time.

Extant research has distinguished between two types of stability and change: *rank-ordering* and *mean-levels*. Stability of the relative rank order of people on the Big Five personality domains appears to be characterized by an inverted U-shape that reaches a high point (though not at perfect stability) in midlife (Anusic & Schimmack, 2016; Ferguson, 2010; Milojev & Sibley, 2017; Wagner et al., 2019), the so-called "cumulative continuity principle" of personality development (Roberts & Caspi, 2003; Roberts & Nickel, 2017). In contrast, changes in mean-levels suggest age-related gains in maturity as the mean-levels of undesirable personality trait domains (e.g., neuroticism) decline and the mean-levels of productive traits (e.g., agreeableness, conscientiousness) increase. In contrast, this pattern of change is reversed in late-life when mean levels of several productive traits (e.g., conscientiousness, openness) decrease and undesirable traits (e.g., neuroticism) increase (Graham, Weston, Gerstorf, et al., 2020; Wagner et al., 2016). Beyond these general characterizations based on measurement of the very broad Big Five trait domain-level, not much is known about how change (rank-order or mean-level) manifests at the more diversified facet-level. Knowledge about facet-level change trajectories is, however, especially useful for understanding the specific content of personality development. For example, when people show increases in trait-level conscientiousness, are they becoming both more orderly and more achievement-orientated or are trait-level increases in conscientiousness primarily driven by increases in just one or the other of the personality facets? As facets were created to display specific variance, they hold information incremental to the general trait domain level (Costa & McCrae, 2008). This knowledge helps to sharpen our theoretical understanding about the generalizability of proposed developmental principles across facets (e.g., Roberts & Nickel, 2017).

This study extends the existing knowledge of age-related change in facet-level personality by applying local structural equation modeling (LSEM; Hildebrandt et al., 2009, 2016) to full NEO Personality Inventory (NEO-PI-R) data obtained on up to four occasions over 11 years in the Seattle Longitudinal Study from 1667 people born between 1902 through 1976 (Schaie, 2013).

1.1 | What do we know about stability and change of personality facets?

Stability and change of personality characteristics across the whole life span have been traced back to a multitude of different sources that can be roughly divided into genetic/personal and environmental/situational sources and their interplay (for an overview, see Wagner et al., 2020). Lifespan developmental theory (e.g., Baltes et al., 2006) describes development as multidimensional dynamics of shifts in gains and losses as individuals proceed through childhood, adolescence, adulthood, and old age (e.g., Gerstorf et al., 2019; Hülür et al., 2015). Research on personality development has shown that traits appear to maturate in young and middle adulthood (Graham, Weston, Gerstorf, et al., 2020; Roberts et al., 2006) and are also changing in older ages (Mroczek & Spiro, 2003; Mueller et al., 2018; Wagner et al., 2016). These descriptions of personality development, however, are almost entirely based on measurement of very broad, trait domain-level personality. Previous research has not yet been overly successful in identifying the genetic/environmental markers or particular experiences that are linked to personality development at the trait-level (Bleidorn et al., 2018; de Moor et al., 2012). At the trait domain level, life experiences and changing life conditions are expected to contribute to changes in the broad set of behavioral and emotional patterns that are summarized in (or blurred into) five personality trait domains (Wilt & Revelle, 2015). In contrast, measurement and study of change at the facet-level can reveal how life experiences and changing life conditions contribute to personality changes in much more fine-grained ways.

To illustrate, although theory suggests that becoming a parent is associated with increases in conscientiousness, empirical findings are equivocal, with mostly null effects or even a reversed pattern (Specht et al., 2011; van Scheppingen et al., 2016). Study of the more differentiated facets of conscientiousness might instead indicate that becoming a parent is primarily related to increases in *dutifulness*, in the sense of taking care of a newborn, combined with decreases in *orderliness* and *achievement-striving* because parental duties tie up resources that in turn cannot be invested into the household or pursuing one's career. As a result, the co-existing facet-level increases and decreases may be being washed out at the trait level. A similar pattern could hold true for changes in old age: Evidence from several studies suggests that age-related losses in the physical health domain are related to mean-level decreases and rank-order instabilities in extraversion (Mueller et al., 2018; Stephan et al., 2014; Wagner et al., 2016), but other studies have not found evidence of those changes (Berg & Johansson, 2014; Sutin et al., 2013). Similar to the above scenario, it is possible that some facets

of extraversion are more strongly affected by age-related physical losses than other facets. For example, experience of frailty might lead to decreases in a facet such as *activity*, but not in facets of *warmth* or *gregariousness*. Thus, a closer look into facet-specific patterns of stabilities and changes might help us better understand the intricacies of personality stability and change in general.

Facet-level analyses of change are, however, quite demanding because these require longitudinal/repeated measurement of personality using a psychometrically sound (i.e., measurement invariant) and comprehensive personality inventory. Given that most longitudinal (panel) studies on personality stability and change have used short inventories (that only measure broad trait-level personality), opportunities to estimate facet-level change in personality are limited. In the following, we summarize existing evidence for personality stability and change at the facet level.

1.2 | Rank-order stability and change in personality facets

Peaking rank-order stability in midlife and often lower stabilities in old age has been established using measures of broad personality trait domains (Anusic & Schimmack, 2016; Ferguson, 2010; Milojev & Sibley, 2017; Roberts & DelVecchio, 2000; Wagner et al., 2019). In contrast, it is not known how the rank-order stability of facet-level personality changes with age because so far not a single longitudinal study has investigated rank-order stabilities across larger age ranges of the adult life span beyond young adulthood. Some expectations, though, might be derived from the few studies of facet-level rank-order stability of personality across childhood and adolescence, among college students, and across early adulthood. The two studies focusing on rank-order stabilities in children and adolescents have used child-specific personality inventories that were rated by the children's mothers (Brandes et al., 2021; de Haan et al., 2017). Year-to-year rank-order stabilities in children from ages 9 through 13 were higher than expected (r = .57 to .72) and not substantially lower than in young adulthood, which speaks against the cumulative continuity principle. At the same time, Brandes et al. (2021) found differences in rank-order stabilities with the extraversion facet *sociability* (r = .72) being more stable than the *positive emotions* (r = .62) and *being considerate* facets (r = .61). Looking across a time interval of 1.5 years in young children (2–4.5 years) and adolescents (6–17 years), de Haan et al. (2017) found comparable rank-order stabilities for facets and traits (rs ranged from .50 to .87) with partly lower stabilities in the agreeableness facets of *irritability* and *egocentrism*.

Looking at 3- and 4-year stabilities in American and Belgian college students, Klimstra et al. (2018) also found comparable rank-order stabilities of traits and facets using the NEO-FFI. Roughly the same pattern was observed in young to middle adulthood, with comparable rank-order stabilities of traits and facets (Deventer et al., 2018; Mund & Neyer, 2014). One exception was found for the neuroticism facet of *negative affect*, with slightly lower stabilities (r = .41) across 15 years than the broader trait-level neuroticism (r = .56). Based on these results, we expect to find substantial rank-order stabilities also at the facet level. Following the cumulative continuity principle, stabilities should increase through middle adulthood. Given that there is no study examining rank-order stability of facets beyond young adult samples, this study aimed at filling this gap.

1.3 | Mean-level stability and change in personality facets

For the broad trait domains, the relatively pronounced mean-level changes from young adulthood to midlife are often consistent with conceptual perspectives of increasing maturity (Graham, Weston, Gerstorf, et al., 2020; Roberts et al., 2006) and in old age with concepts of loss (Kandler et al., 2015; Wagner et al., 2016). So far, only two longitudinal studies have examined mean-level changes in facets covering large spans of adulthood. Using a facet-sensitive inventory—the NEO PI-R—Terracciano et al. (2005) analyzed mean-level changes across 11 waves from 1989 to 2004 in an adult lifespan US sample aged 20–96 years with most people being older than 60 years. The authors applied multi-level modeling using manifest personality sum scores and found a heterogeneous pattern across the different facets of the Big Five trait domains. Among the interesting findings was that the mean-level of all six facets of neuroticism (*anxiety, angry hostility, depression, self-conscientiousness, impulsiveness, vulnerability*) decreased across adulthood and slightly increased in old age.

For all other trait domains in contrast, mean-level changes of the lower-order facets substantially differed in size and direction (Terracciano et al., 2005). Among the conscientiousness facets, for example, *deliberation* showed the strongest mean-level increases up through old age whereas all other facets (*competence, orderliness, dutifulness, achievement striving, self-discipline*), increased in young and middle adulthood but declined in old age (after age 60–70 years). Of the extraversion facets, *activity* showed the most rapid mean-level declines in older ages, whereas *excitement seeking* declined most strongly in early adulthood. The other facets of extraversion (*warmth, gregariousness, assertiveness, positive emotions*)

showed curvilinear gradients with peaks in mean levels around the age of 60. Of the openness facets, mean-levels of *openness for values* declined relatively evenly across the adult lifespan, whereas mean-levels of *openness to feelings* and *actions* showed accelerated declines only in old age. Mean-levels of the other openness facets (*aesthetics, ideas, fantasy*) were highly stable. Finally, of the agreeableness facets, both *compliance* and *straightforwardness* showed strongest and most consistent mean-level increases across adulthood, whereas *trust* evinced steady increases only until the age of 60. Mean-levels of the three other agreeableness facets (*altruism, modesty, tender-mindedness*) were again rather stable.

Besides this first longitudinal facet-level study, Soto and John (2012) investigated mean-level changes in facets across five assessment points over 40 years in a sample of 125 women aged 21 to 61 using 16 facets of the CPI-Big Five. Potentially due to the differences in the structure of the sample examined and the inventories used, results between their study and the Terracciano et al. (2005) report were quite inconsistent. Soto and John (2012) found for the facets examined age-related mean-level decreases only for *depression* (neuroticism) what was also found by Terracciano et al. (2005). Whereas Soto and John (2012) found increases for *self-discipline*, but no changes in *orderliness* (conscientiousness) Terracciano et al. (2005) found curvilinear patterns for both facets. For extraversion, mean-levels of *gregariousness* decreased and *assertiveness* increased in the study from Soto and John (2012), whereas Terracciano et al. (2005) again found curvilinear patterns for both facets. For agreeableness, *compassion* and *humility* increased while Terracciano et al. (2005) found rather stable patterns for altruism and modesty. Openness and its facets showed no longitudinal trends in mean-level at all in contrast to findings from Terracciano et al. (2005) who found a more mixed pattern mainly characterized by decreases particularly in old age. Studying mean-level differences across two waves from both the self- and other perspective, Schwaba et al. (2022) found a mixed pattern of positive and negative change in mean-levels of facets from the same trait domain with some facets following maturational trends of their corresponding trait domain but others did not. Interestingly, change was more pronounced when reported by others than by the person itself. The findings are in line with Terracciano et al. (2005) and Soto and John (2012), for instance, in terms of changes in *gregariousness* but differed in terms of facets in openness, as Schwaba et al. (2022) also found significant decreases in *phantasy* and *feelings*.

Two other longitudinal studies with a different study focus also provide information on mean-level changes in personality facets in young German adults using three repeated personality assessments across a study interval of 15 years (Mund & Neyer, 2014) and 4 years (Deventer et al., 2018). The authors found changes in all traits and facets (except for *activity*; extraversion) that point mostly in the same direction for traits and facets (Deventer et al., 2018; Mund & Neyer, 2014). Only very few exceptions were found for the facets of *positive affect* (extraversion), *goal striving* (conscientiousness), and *unconventionality* (openness) that evinced opposite mean-level change patterns as compared with the corresponding trait. Findings from cross-sectional studies also highlight that the size of age-related differences is not necessarily consistent across facets and trait domains (Jackson et al., 2009; Mõttus & Rozgonjuk, 2019; Soto et al., 2011).

Although first studies hint at differential patterns of stability and change of facets and their related Big Five trait domains, evidence hinges on specific characteristics of the original studies that complicate interpretation and comparability of observed trends. Above and beyond the noted age differences, two major methodological reasons challenge opportunities to detect facet-level change. First, when studying psychological constructs which can hardly be observed directly, the probabilistic nature of associations between measured items and latent psychological constructs calls for the consideration of measurement error (Borsboom, 2008). Nevertheless, previous research (e.g., Soto & John, 2012; Terracciano et al., 2005) had often used manifest scale scores instead of latent measurement models that correct for measurement error. Furthermore, in the application of longitudinal models, measurement invariance is a precondition that ensures differences observed across age and time can be ascribed to actual personality changes and not to changing psychometric properties of the measured constructs (Guenole & Brown, 2014; Schmitt et al., 2011). Although testing for measurement invariance across distinct categories such as groups or assessment points is straightforward, testing for measurement invariance along a continuous variable such as age is more complicated and thus rarely done. The continuous age analyses, though, would provide a more precise and realistic view of differences in measurement properties between people of different ages. New modeling procedures have been proposed that allow for a continuous treatment of variables in measurement invariance testing (Hildebrandt et al., 2009, 2016).

Second, previous research often contrasted stability and change in personality by grouping people into artificial age brackets (e.g., Brandes et al., 2021; de Haan et al., 2017). Recently introduced analytical procedures instead open up promising avenues to study how differences by or changes in age are related to differences or changes in rank-order stabilities and mean-levels (Hildebrandt et al., 2009, 2016; see also Olaru et al., 2019; Wagner et al., 2019).

In sum, existing studies do not draw a consistent pattern of whether and how the direction and size of mean-level changes across facets and broader trait domains converge. As detailed below, the direct comparability of studies though is hampered by differences in the age ranges of the samples investigated, the inventories used, and the modeling strategies applied. Particularly for the phase of midlife, a developmental phase during which changes due to maturation have already taken place, little is known about stability and change in mean-levels of facets.

1.4 | The present study

This study extends and enriches initial knowledge about age-related facet-level stability and change through analysis of unique data collected during four occasions over 11 years from 1667 people born between 1902 through 1976 during their participation in the Seattle Longitudinal Study. The span of the data (age 25 years to age 99 years) and analytical approach (local structural equation modeling; Hildebrandt et al., 2009, 2016) provide for detailed description of changes in both rank-order and mean-level for all of the Big Five personality facets.

Based on findings from initial longitudinal studies (e.g., Brandes et al., 2021; de Haan et al., 2017; Klimstra et al., 2018), we expected to find substantial rank-order stabilities in all personality facets (greater than $r = .50$) comparable to the amount of rank-order stabilities in their respective trait domain across age. Following initial empirical results (Soto & John, 2012; Terracciano et al., 2005), we expected to find mean-level changes for the facets as well. Because of the very inconsistent findings, we refrained, however, from making specific hypotheses for each facet and investigated these associations in a rather exploratory fashion.

2 | METHODS

The SLS data have been published previously in a great variety of research, primarily on adult intelligence development (see Schaie, 2013, for an overview). Data on personality as obtained in the SLS have been used in research on mean-level change trajectories at the trait level (Graham, Weston, Gerstorf, et al., 2020) and the predictive effects of trait-level personality for health outcomes and mortality (Graham, Weston, Gerstorf, et al., 2017; Graham, Weston, Turiano, et al., 2020; Turiano et al., 2020; Weston et al., 2020). No previous studies have used the NEO-PI-R items of the SLS to study age-related differences in facet-level rank-order stabilities or mean-level changes.

2.1 | Participants

The Seattle Longitudinal Study (SLS, Schaie, 2013), a longitudinal study of cognitive and psychosocial development, collected data from age-heterogenous longitudinal samples in the Seattle, Washington metropolitan area in seven-year cycles between 1956 and 2012. Personality using the NEO-PI-R items was assessed in 2001, 2005, 2008, and 2012. In total, $N = 1667$ participants ($M_{age} = 62.69$, $SD_{age} = 15.62$, 25–99, 55% female) provided reports about their personality. Overall, the sample was well-educated with on average 15.55 years ($SD = 2.62$, range 7–20 years) spent in formal education at the first NEO-PI-R assessment in 2001. Of the 1667 participants included in this analysis, $n = 577$ participated once, $n = 254$ provided data at two assessment waves, $n = 246$ at three waves, and another $n = 590$ provided data at all four assessment waves.[1]

Selectivity analyses comparing individuals who completed two or more assessments ($n = 1090$) with those completing only one assessment ($n = 577$) showed that participants who provided longitudinal change information were more conscientious ($d < 0.29$) and open ($d < 0.25$), but did not differ in other personality traits or sex. Our results may thus not necessarily generalize to less positively selected segments of the larger population particularly in terms of conscientiousness and openness.

2.2 | Measures

2.2.1 | Personality facets

Individuals' personality characteristics were repeatedly assessed using the NEO Personality Inventory (NEO-PI-R, Costa & McCrae, 1992), a scale with 240[2] items that are each rated on a 5-point scale from 0 (*strongly disagree*) to 4 (*strongly agree*). The NEO-PI-R assesses five broad trait domains that each consists of 6 narrower facets. Costa and McCrae built the facets in order to maximize differences between facets and at the same time keep nearly the same breadth in each facet. Facets were created to display specific variance so that facets hold information incremental to the general trait domain level (Costa & McCrae, 2008). Each personality facet is measured using 8 items (4 reversed items and 4 non-reversed items). Reliabilities of facets are modest but also vary across facets ranging from 0.61 to 0.84 (see Table S1 in the SOM). Means, standard deviations, and

zero-order correlations of personality facets at the first assessment in 2001 can be found in Tables S1 and S2 in the Supplementary Online Material (SOM).

2.2.2 | Age

Individuals' chronological age at each assessment was measured as the number of years between the assessment date and their birthdate. Figure S1 in the SOM shows age distributions at each assessment wave from 2001 to 2012.

2.3 | Data analysis

The analytical procedures consisted of four main parts. First, as a modeling precondition, we established scalar measurement invariance across time for personality facets. Second, we applied local structural equation modeling (LSEM; Hildebrandt et al., 2009; 2016) in latent measurement models to investigate the age moderation of loadings and intercepts (measurement invariance across age) and, third, the age moderation of personality stability (retest correlations). Fourth, we used local structural equation modeling within second-order latent growth models (Sayer & Cumsille, 2001) to investigate the age moderation on personality mean-level change (slopes) for each personality trait with its underlying facets separately.

2.3.1 | Measurement invariance across time

Starting with a configural longitudinal factor model, we specified increasingly restrictive measurement models across metric invariance (i.e., equality of factor loadings across time) and scalar invariance (i.e., adding equality of item intercepts across time). Following usual practice, we evaluated the model fit of these models regarding their overall fit with CFI > 0.95/0.90, RMSEA < 0.05/0.08, and SRMR < 0.08/0.11 for good/acceptable model fit, respectively (Hu & Bentler, 1999; Schermelleh-Engel et al., 2003) and changes in fit with a change in the CFI greater than 0.010, and a change in the RMSEA greater than 0.015 indicating a statistically significant model fit deterioration (Chen, 2007). Tables S3 through S7 in the SOM show model fits and model comparisons. We additionally tested whether retest correlations differ across the varying assessment intervals of the study (4, 7, and 11-year time spans) by comparing the model fits of freely estimated and constrained models. That is, we tested whether correlations between T1 and T2 are the same as the correlation between T1 and T3, for example. Constraining the models to equal retest correlations across assessment waves did not worsen their fit. These models served as the input for all further analyses using LSEM we introduce next.

2.3.2 | Local structural equation modeling

To answer our research question on age-related stability and change of personality facets, we used LSEM (Hildebrandt et al., 2009, 2016). Rather than dividing the sample into artificially constructed age groups (e.g., age bucket approach), age is introduced into the factor model as a continuous predictor that can moderate the factor loadings, item intercepts, latent retest correlations, and latent slope means. With LSEM, individual observations are weighted across defined focal points (i.e., specific values of the continuous variable age) and structural equation models are estimated for each focal point. The focal points are ideally chosen to be as narrow as possible on the given continuous moderator. Because this choice mainly depends on the available sample size, we defined focal points every third year starting at age 35 until age 80. Due to limited sample sizes at the boundaries of the moderator age, in some models, we had to increase the lower bound of the age range in the joint estimation procedure from age 35 to age 40 years. That is, the full age range of the sample is used within analyses to increase power (25 until 99 years) but due to small samples sizes below 35 years and above 80 years of age, no separate structural equation models can be specified for these age groups. A Gaussian kernel function was applied to weight observations around specified focal points. Observations near to one point on the continuous scale are more similar than those farther away and, therefore, receive the highest weight (which is 1). That is, observations at age 25 receive only very small weights compared to observations at age 35 which receive the highest weight. The weights are normally distributed around each focal point. To illustrate, a window of observations is used around each focal point specifying the structural equation model at this focal point and this window is sliding across the whole age span. That is, LSEM increases the effective sample size by including not only those people of an exact age, but also around the focal age points. In line with recommendations (Hildebrandt et al., 2016), we specified a bandwidth factor of $h = 2$ for smoothing the estimated curve. That is, observations that are farther away from the focal point than 2 times the bandwidth received only very small weights restricting the window of observations used for each focal point.

In order to test whether parameter estimates differ in statistically significant ways across age (focal points), two modeling approaches exists. First, a permutation test enables researchers to search for statistically significant deviations between the average value across the entire

age range of the study, that is, overall rank-order of dutifulness, and each specific focal point, that is, dutifulness rank-order at age 65. Pointwise *p*-values report the age ranges where the estimated retest correlation differs in statistically significant ways from the average retest correlation across the whole sample age span ($p < .05$). That is, the permutation test identifies age moderations of each parameter separately. As the permutation test can handle smaller sample sizes compared to the joint estimation approach, we were able to use LSEM across an age span from 30 to 80 years with focal points specified at every year.

Second, within a newly introduced joint estimation approach (Robitzsch, 2019), parameter estimates can be restricted to be equal across the values of the moderator. That is, each weighted sample is treated as individual group comparable to how groups are treated in multigroup CFA modeling, which allows for the estimation of one parameter of interest for each group. The joint estimation procedure then returns global fit indices (CFA, RMSEA, SRMR) that allow for model comparisons across increasingly restricted models. In some models, we had to increase the lower bound of the age range in the joint estimation procedure from age 35 to age 40 years while the upper bound was again specified at age 80 with focal points specified at every third year.

Of note, however, permutation tests and joint estimation procedures cannot be used in tandem. The advantage of permutation tests—providing detailed information about deviation from the average value at every specified focal point—comes along with one disadvantage: When using permutation tests, no equality constraints in the measurement part of the model across focal points can be specified and thus, results are not based on age-invariant models. Accordingly, results across both test procedures might differ. We decided to report the results of both procedures in our study so as to provide the reader with the full information.

Measurement invariance across age

Based on the models that already established measurement invariance across time, we used LSEM to test whether item loadings and item intercepts were moderated by age. By using the joint estimation approach (Robitzsch, 2019), we compared the global model fits of increasingly restrictive models (configural, metric, scalar) for all personality facets separately. Comparable to the procedure of testing longitudinal invariance, we evaluated our models in their overall model fit and changes in fit criteria following Chen's (Chen, 2007) rules.

Rank-order stabilities across age

In a next step, we moved on to our first substantive research question on age-related differences in rank-order stabilities again using LSEM. Based on the latent measurement invariance model across time and age, we investigated whether the retest correlations were moderated by age. We constrained the retest correlations to equality across focal points (age ranges) using again the joint estimation procedure within LSEM and compared global model fits. We additionally performed permutation tests with 1000 permutations that search for deviations from the average value across the sample age range at each specific focal point. We thus tested for deviations in retest correlations from the average retest correlation across the age range.

Mean-level changes across age

Turning to our second substantive research question, we replaced the re-test correlation part by a growth model, thus specifying second-order latent growth models (Sayer & Cumsille, 2001) based on longitudinal invariance measurement models (see Figure 1 for an illustration). We then tested whether the latent intercepts and latent slopes were moderated by age with LSEM. We specified three types of second-order latent growth models for each facet using the joint estimation approach: In a first model, measurement invariance across time was specified only. In a second model, constraints on item loadings and item intercepts across age (scalar invariance across age) were additionally introduced into the model to test whether parameter estimates differ by age. In a third model, the means of the latent intercept and latent slope factors in the growth part of the model were constrained to equality across age to test for age-related mean-level changes. We again compared the global fit indices derived from the joint estimation procedure between the three models.

All models were identified using the effect-coding method (Little et al., 2006) and specified in R (R Core Team, 2020), using the packages lavaan (Rosseel, 2012) and sirt (Robitzsch, 2019). We applied full information maximum likelihood procedures that used all available data (see Enders, 2010). All hypotheses and the analytic plan were preregistered on Open Science Framework (OSF) before data analyses began (see https://osf.io/8yp95/registrations). We report deviations from the preregistered procedure in the SOM (page 2). Model codes and SOM can also be found on the OSF site of the project (https://osf.io/8yp95/).

3 | RESULTS

In the following, we first present the results of the measurement invariance testing across age. Then, we move on to our substantial research aims and report rank-order stabilities and mean-level changes of personality facets with age.

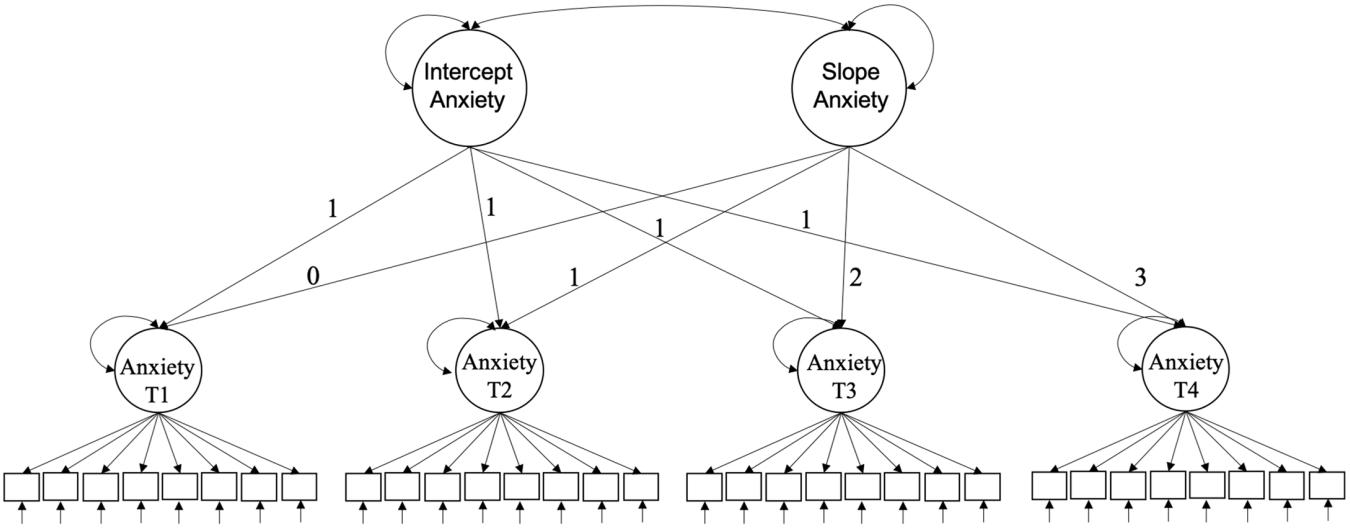

FIGURE 1 Second-order latent growth model to investigate mean-level changes in facets for anxiety (neuroticism) as exemplary personality facet. The key pieces of information from these analyses are whether the means of the intercept and slope factors are moderated by age using LSEM. Rectangles reflect NEO-PI-R items assessed to measure a facet at each assessment wave (T1–T4). For clarity reasons, residual covariances of same-worded items across time are not shown.

3.1 | Measurement invariance across age

Based on the models that already established measurement invariance across time, we tested whether item loadings and item intercepts were moderated by age using LSEM. Tables S8 through S12 in the SOM show that equality constraints on the item loadings and item intercepts across age did not result in a statistically significant deterioration of the model fit according to the established criteria in CFI and RMSEA (Chen, 2007). These results indicate scalar measurement invariance was present and, thus, age-related differences in rank-order stabilities and mean-level changes can be examined.

3.2 | Rank-order stability and change in personality facets

Turning to our first research question on age moderations of rank-order stabilities, Tables S13 through S17 report means, standard deviations, and ranges of retest correlations for facets across the traits. Figure 2 shows 4-year latent retest correlations for all 30 facets (see online supplementary materials for figures with confidence bands). Supporting our hypothesis, all facets showed substantial rank-order stabilities ($r > .75$). At the same time, stabilities were even higher than expected with some facets reaching (almost) perfect stability and some facets showing higher stabilities than their corresponding trait domain. For example, across the age range studied, the facets modesty and altruism (both agreeableness), achievement striving (conscientiousness), vulnerability (neuroticism), and openness to actions (openness) exhibited consistently higher rank-order stabilities than their corresponding trait domain.

We also observed that the pattern of stability and change showed commonalities and differences across facets. Descriptively, almost all facets showed ups and downs in the rank-ordering of people at different ages, with the size of many retest correlations being closely comparable when people were in their early 40s (the beginning of the age range studied here) with those when people were in their late 70s (the end of the age range studied here). Notable exceptions included retest correlations of anxiety, self-consciousness (both neuroticism), aesthetics (openness), and self-discipline (conscientiousness) for which rank-order stabilities were higher in midlife than in old age. Openness to ideas exhibited a more waved pattern with low rank-order stabilities in midlife and higher stabilities in old age. The most variable pattern of age-associated changes in the rank-ordering appeared to be in facets of agreeableness. Retest correlations of trust followed an inverted U-shape, those of modesty and compliance were lower in old age, and straightforwardness was highest when people were in their 40s and 70s and lowest when people were in their 60s.

Results of the permutation tests, showing deviations from the average sample correlations across age (see Tables S13–S17), pointed to several instances of statistically significant age moderations. The decreases in retest correlations of anxiety, self-consciousness, aesthetics, and self-discipline in older ages differed statistically significantly from the average correlations across our sample. In terms of openness for ideas, the permutation test pointed at deviations from the average retest correlation in early adulthood. For agreeableness, permutation tests

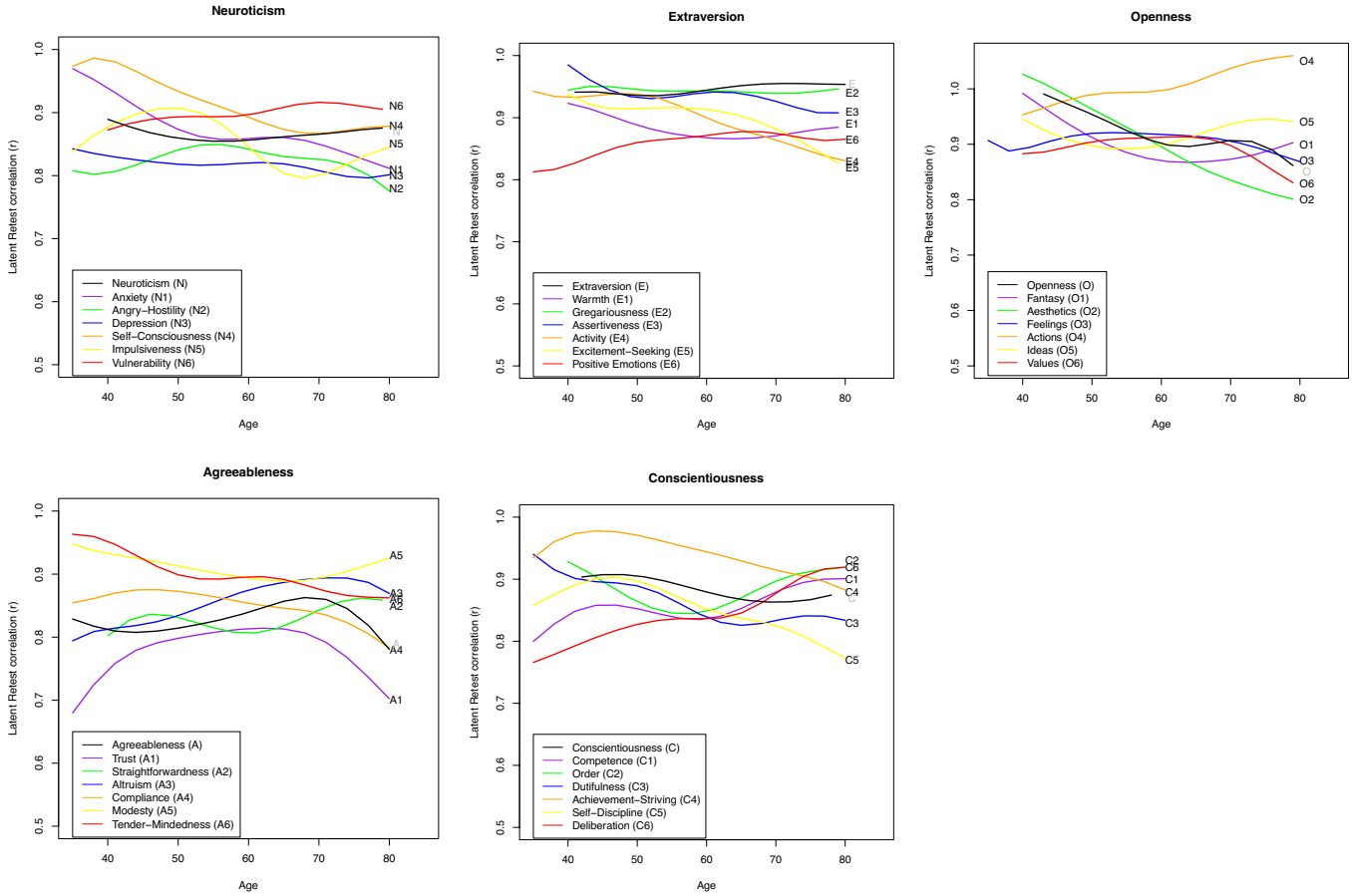

FIGURE 2 Latent retest correlations across age: 4-year stabilities (2001–2005). Colored lines represent facets, black lines represent the trait.

indicated statistically significant deviations from the average correlation for all facets at some ages particularly in younger and older adulthood. Interestingly, despite these pointwise differences, model comparisons based on global model fit indices derived with the joint estimation approach suggested a somewhat different conclusion: Changes in fit indices between the models were only minor for all facets (see Tables S8–S12 in the SOM), indicating that age moderations of retest correlations were only minor. We will discuss these differences further.

In sum, based on Figure 2, rank-order stabilities of facets appear not to be all characterized by the same pattern across age and also differ from stability estimates of the respective trait domain. At the facet level, rank-order stability patterns appear to be much more diverse than the trait pattern.

3.3 | Mean-level stability and change in personality facets

In order to investigate mean-level changes of facets, we compared the global model fits of increasingly more restrictive second-order growth curve models for each facet using joint estimation procedures within LSEM. Model comparisons are shown in Tables S13–S17 in the SOM. Figure 3 shows the estimated mean-level change at each age value of the 30 facets together with their respective trait domains (see online supplementary materials for figures with confidence bands).

As illustrated, all models showed at least acceptable model fit across all implemented constraints with one exception: The CFIs in all three models of vulnerability (neuroticism) and ideas (openness) were slightly below cut-offs (<0.90). Nevertheless, changes in CFIs between more restrictive models were minor (ΔCFI < 0.01). Additionally, in some models negative latent variances occurred within the joint estimation procedure (self-conscientiousness (N4), assertiveness (E3), competence (C1)) that prevented us from testing age moderations of the mean-level trajectories for these facets. Introducing the constraints on item loadings, item intercepts, means of latent intercepts and means of latent slopes did not result in statistically significant model fit deteriorations (ΔCFI < 0.01, ΔRMSEA < 0.015) except for activity (extraversion) with a change in CFI of 0.011 in models that

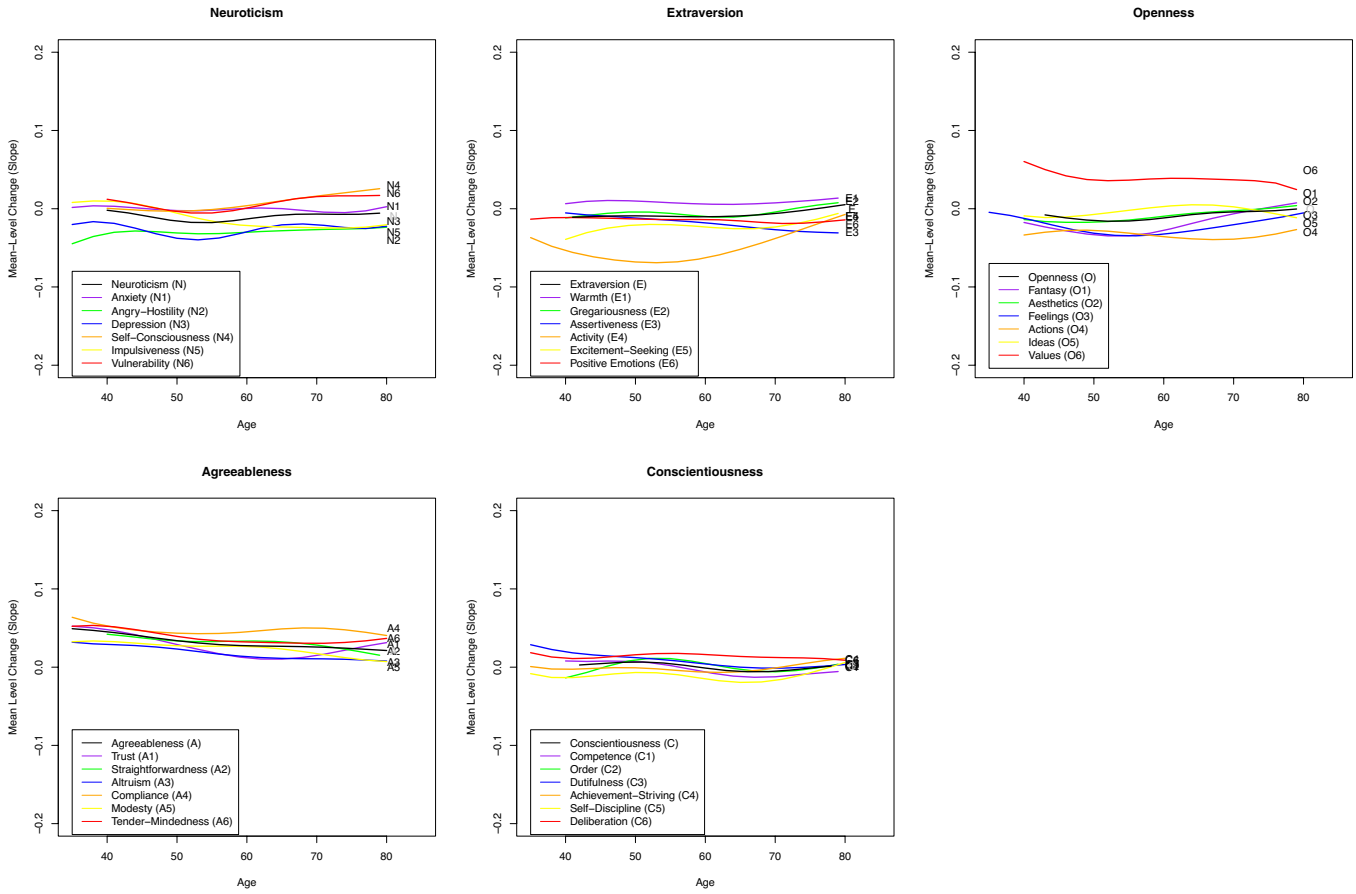

FIGURE 3 Latent means of slopes (mean-level change) across age. Colored lines represent facets, black lines represent the trait. Please note that these plots do not show yearly rates of change but the estimated slope mean at specified focal point.

introduced constraints on the means of latent intercepts and latent slopes. That is, in line with the flat mean-trajectories depicted in Figure 3, none of the facets showed age-differential changes in mean-levels across the covered age range from middle to old adulthood except for activity, which showed lower slope means at younger compared to older ages. Although we found increases and decreases in mean-levels across time also with facets indicated by statistically significant slope means (cf. Figure 3: estimated slope mean for each age value), such changes were found for all studied people irrespective of their age. As in previous studies that focused on the trait-level and in line with the maturation principle, we found statistically significant increases in all facets of agreeableness. Regarding neuroticism, four of the six facets showed statistically significant mean-level changes across time. Whereas the facets angry-hostility and impulsiveness decreased, anxiety and vulnerability increased. For conscientiousness, people became more deliberate and less disciplined across time. The facets of extraversion showed decreases except for warmth, which showed no statistically significant mean-level changes. Finally, the openness facet of values exhibited increases and all other openness facets decreases across time. Additionally, the variances of all facet slopes were statistically significant, indicating that people differ in their rate of changes across time. In sum, mean-level changes across time appear to be in line with previous findings. However, based on Figure 3, facets do not illustrate age-differential patterns across the studied age-range from middle to late adulthood.

4 | DISCUSSION

The current study investigated patterns of age-related stabilities and changes in rank-orders and mean-levels of personality facets from midlife to old age using four waves of data from the Seattle Longitudinal Study. With local structural equation modeling, we were able to treat age as a continuous moderator of stability and change in invariant measurement models across time and age.

Overall, results revealed that facets can be characterized by both stability and change from midlife to old age: Whereas the relative ordering of people changed across the

considered age range, patterns of mean-level change prevailed from midlife to old age for all facets. Nevertheless, we found mean-level changes of facets for all people across time irrespective of their age that differed in direction. Specifying on patterns of relative change, three characteristics stand out: First, rank-order stabilities were overall high mostly exceeding our expectations which were based on studies examining trait domains across adulthood (e.g., Wagner et al., 2019) or facets at younger ages (e.g., Brandes et al., 2021; de Haan et al., 2017). Second, the exact pattern of stability varied strongly between facets both within the same trait and across traits. Third, particularly the facets of agreeableness varied greatly in age-related patterns of rank-order stability while moving through adulthood and old age.

4.1 | Cumulative continuity differs for traits and facets

Previous theoretical notions and empirical research has proposed and oftentimes supported the cumulative continuity principle of personality development predicting rank-order stabilities to increase when people move through adult life, to reach a peak in midlife and to decrease at older ages (Anusic & Schimmack, 2016; Ferguson, 2010; Milojev & Sibley, 2017; Roberts & DelVecchio, 2000; Wagner et al., 2019). The results of our study suggest that this assumption does not hold equally well for all facets. Although stabilities throughout all facets were generally high ($r > .70$), there were nuanced differences across midlife and old age illustrating some communalities but more differences compared to the patterns established for personality traits (e.g., Wagner et al., 2019).

In contrast to most previous studies (e.g., Brandes et al., 2021; de Haan et al., 2017; Deventer et al., 2018; Mund & Neyer, 2014), our study departed from using (artificial) age-groups to test for significant differences in rank-order stabilities from midlife to old age by means of local structuring equation modeling (Hildebrandt et al., 2016). Being able to include age as a continuous moderator is a strong benefit of this approach, but it is also a fairly new statistical procedure which confronted us not only with two potential options of testing statistical age differences, that is, a permutation test and the joint estimation approach (Olaru et al., 2020), but also with different conclusions. Future research should therefore replicate our findings. Given that there is no clear recommendation on how to deal with such discrepancies in results yet, we would like to discuss three potential reasons as of why results of these two approaches differ.

First, both procedures differ slightly in the covered age range and their age-sensitivity. With the permutation test, we were able to test deviations between the average value across the age range of 30 to 80 years with yearly specified focal points. As the joint estimation approach, however, appeared to be more sensitive to sample size, we were able to set focal points from age 35/40 to age 80 every third year. Accordingly, the permutation test could be understood as a more granular approach being characterized by more sensitivity to identify age-differences that might be overlooked with the joint estimation approach.

The second reason points to differences of effect vs. model evaluation: The permutation test shows at which age deviations from the average value of the entire sample occurred. The joint estimation approach, by contrast, provides global fit values for a model including a specific constraint (e.g., equality constraints on rank-order stabilities across all specified focal points) and these global fit values can be compared to an unconstrained model. Accordingly, one could argue that small-sized deviations at specific focal points might be overlooked or rated as less-relevant for the global model fit indices.

Third, the advantage of the increased sensitiveness of the permutation test comes along with one major disadvantage: The requirements of measurement invariance restrictions across age cannot be implemented in the model of the permutation test. Accordingly, it remains an open question if the results are comparable due to differences in measurement properties across age. Specifically, significant deviations between one specific value and the average value across the age range might reflect age-related differences in rank-order stabilities of facets, but they might also reflect different measurement properties of the facet items across age. Given these limitations on both tests, we would like to argue that a combination of both procedures provides the most detailed information about stabilities and changes of personality facets across age.

To discuss the nuanced differences, we found that trust and compliance (both agreeableness), self-discipline and achievement-striving (both conscientiousness), impulsiveness and angry-hostility (both neuroticism), activity and excitement-seeking (both extraversion) largely followed the cumulative continuity principle by showing peaks of stability around the age of 50 and decreasing trends in older ages. The majority of facets showed higher stabilities in midlife compared to older ages also supporting the cumulative continuity principle, however, stabilities of these facets decreased across the whole considered age range and did not peak by the age of 50. In contrast, there were also facets that showed higher stabilities in old as compared to middle adulthood: Stabilities of openness to actions (openness), deliberation and competence (both conscientiousness) increased with increasing age. An exact opposite pattern of the cumulative continuity principle was found for openness to ideas (openness), order

(conscientiousness), and modesty (agreeableness) with lowest stabilities between the age of 50 and 60 and increases thereafter. In line with notions of lifespan developmental theory (e.g., Baltes et al., 2006), the development of personality facets is characterized by a multidimensional dynamic of shifts in gains and losses resulting in trajectories of rank-order stabilities that change direction as people move through adulthood and old age. As shown by the diversity of patterns across facets, the broad trait level captures and integrates a heterogenous set of behaviors, thoughts, feelings, and desires. Our results on facet-specific rank-order stabilities let us assume that they are differently affected by the experiences people make in their lives. The narrower facet level appears to be better able to distill and display these behavioral and emotional differences.

To illustrate, previous studies indicated no age-moderations of the relative ordering of people for the broad trait of conscientiousness (e.g., Wagner et al., 2019) or pointed to slight increases across the life span (Roberts & DelVecchio, 2000). When focusing on self-discipline only, however, stabilities were highest around the age of 45–49 and decreased most strongly after the age of 64. When looking at potential demands that might challenge an individual's self-discipline at a specific phase in life, most people in their mid-forties have their job and family life settled and managed their "career-and-care-crunch" phase (Mehta et al., 2020, p. 436) being confronted with high work and family demands simultaneously. Thus, adults "simply" need to maintain their level of self-discipline. After the age of 64, however, occupational paths may differ between people with some people getting retired whereas others stay employed. Additionally, adults have a stronger focus on leisure and social activities compared to earlier phases in life (Freund, 2020). As a result, rank-orders of self-discipline change. This is in line with assumptions of the role continuity principle (Roberts & Nickel, 2017) that predicts relative changes of people when social roles change. We also found increases in rank-order stabilities of openness to actions with increasing age. This could indicate that the course for an active life with an open approach to new experiences is set in middle adulthood. However, trying new things is seen as a protective factor for participation in the ever-changing world (Staudinger, 2020).

Similarly, strong contrasts emerged for the rank-order stability patterns of two facets of agreeableness: trust and modesty. Trust largely mirrored the pattern of rank-order stabilities in the trait level both with respect to the current and earlier studies (e.g., Wagner et al., 2019). That is, the relative ordering of people in trusting others peaks at midlife but substantially decreases in old age. Modesty, by contrast, showed rising trends in old age. Theory suggests that varying regulatory capacities, different goals, and motivations can result in rank-order instabilities of personality characteristics (Denissen et al., 2013; Specht et al., 2014). Particularly at the end of life, regulatory capacities are challenged differently between people and goals might change due to differences in age-related losses (Kandler et al., 2015; Wagner et al., 2016). This might also help to explain differences in stabilities of trust and modesty in older ages. For instance, differential trends in frailty and need for assistance in older ages might affect the degree to which people have to trust in (the support of) others resulting in changes in the rank-ordering of people compared to vital phases of adulthood. Particularly, due to changing living arrangements and increased divorce rates, people have to rely more on help outside their families (Bühler & Nikitin, 2020). In contrast, in older ages when people are retired and spend more time with the family than with friends (Carstensen et al., 2003; Freund, 2020), these normative network changes might result in more balanced regulation capacities that can explain increases in the rank-order stabilities of modesty. Based on such illustrations, it becomes evident that nuanced differences can "get lost" when looking at the broad trait level, due to the wide behavioral repertoire that is captured in traits. Future research should thus expand the current work by examining facet-level stability differences in other developmentally sensitive phases such as young adulthood and very old age.

4.2 | Substantial stability of facet means from midlife to old age

Testing our second research question, results illustrated the unexpected finding that across the age range from 35 to 80 years, mean-levels of personality facets did not differ between people of different ages. That is, across all facets except activity, mean-level changes of a person being 40 was comparable to the mean-level change of a person being 60 years old. These results are in contrast with earlier reports of mean-level changes in both facets (Soto & John, 2012; Terracciano et al., 2005) and traits (Graham, Weston, Gerstorf, et al., 2020; Roberts et al., 2006). At least three main reasons might explain the differences to previous work.

First, across existing studies different modeling approaches were used to tackle age-related patterns in mean-level changes. The majority of previous work modeled personality facets or traits using manifest indicators (Graham, Weston, Gerstorf, et al., 2020; Roberts et al., 2006, Soto & John, 2012; Terracciano et al., 2005; Wagner et al., 2016). Although this approach has such benefits as high flexibility with longitudinal data structure (e.g., Wu et al., 2009), it is also known to have a number of drawbacks.

First, it is known to be conflated with measurement error. Second, relying on manifest indicators prevents from testing and establishing measurement invariance across age and time. Thus, it cannot be ruled out that observed changes in mean-levels at least in part reflect measurement artifacts across time or between people of different ages (see Ferguson, 2010). With our analytical procedures that had established age- and time-invariant measurement models we were in a position to put our research questions about age-related mean-level changes to a rigorous test.

Besides differences in the comparability of constructs across age and time, we tested whether the latent intercepts and latent slopes specified in a second-order growth curve model were moderated by age with LSEM across our study interval of 11 years. That is, we tested whether changes occur for all people across the studied time interval in a similar way or whether these trajectories differ by age. We found mean-level changes in facets that were in line with previous findings (e.g., Schwaba et al., 2022) suggesting patterns of personality maturation also at the facet level, although this did not generalize to all facets of the same trait domain. Importantly, these changes were not additionally moderated by age of participants in the phase from middle to late adulthood.

Second, across different studies samples differed with respect to the covered age-ranges. In our study, we looked at stability and change across a broad age range including participants from ages of 25 to 99 years. However, given the relatively smaller samples sizes at the boundaries of our age-distribution, we were only able to test for statistically significant age moderations across a reduced age span from 35/40 to 80 years. Looking at both theoretical and empirical arguments, this specific age range has been related to great stability. Specifically, the notions of the maturation principle would suggest that by the age of 35 many profound changes for the majority of the population have already taken place (Roberts & Mroczek, 2008). Furthermore, the critical phase of age-related losses that is oftentimes assumed to characterize an ontogenetic turning point in very old age is not yet part of our sample because it is situated in the fourth age beginning at age 85 (Baltes & Smith, 2003). Thus, our results might be regarded as being situated in this specific developmental phase of "stabilization" with respect to personality mean levels.

Third, previous studies did not disentangle age effects from the effects of time. In line with previous studies investigating the trait and the facet-level (Graham, Weston, Gerstorf, et al., 2020; Roberts et al., 2006; Soto & John, 2012; Terracciano et al., 2005; Wagner et al., 2016), we found mean-level changes in facets across the covered time span of 11 years. However, in contrast to studies that focused on age-related change only, mean-level changes in facets were similar for people of different age. Taking adult social roles in work and family life is expected to increase socially mature behavior resulting in mean-level changes of conscientiousness, agreeableness, and emotional stability in young and middle adulthood (Bleidorn, 2015; Lodi-Smith & Roberts, 2007). Along these lines, we found increases in agreeableness and decreases in some facets of neuroticism and an increase in one facet of conscientiousness. However, our results also point to a more nuanced picture. Whereas maturation effects were often not found for conscientiousness when studied on the broad trait level (e.g., Graham, Weston, Gerstorf, et al., 2020), we found—in line with Terracciano et al. (2005)—mean-level change in two facets of conscientiousness, with decreases in self-discipline and increases in deliberation. These oppositive patterns might wash out effects on the trait-level. The same was true for the four facets of neuroticism and their changes across time: Whereas anxiety and vulnerability increased, angry-hostility and impulsiveness decreased.

At the same time, we want to emphasize that despite the similar mean-level trends in middle adulthood and old age, our results also highlight that stability and change has to be described in different ways in this life phase. In the case of our facet-specific analyses, we see no age-related mean-level change from midlife to old age but we also see substantial age-related changes that are reflected in the relative ordering of people. Thus, researchers should be aware of these different approaches and try to integrate them into their research projects.

Fourth, across the diverse studies scholars used different inventories that might affect the result pattern. Although there is relative consensus between researchers regarding the higher-order structure of personality characteristics on the broad trait level, less agreement exists regarding the lower-order structure of facets. So far, researchers have proposed different numbers and names of facets (Costa & McCrae, 2017; John et al., 2008). Due to the many ways that facets can be characterized, operationalized, and described, interpretations of facet-level change depend on the specific conceptual and operational definitions used in the measurement of those facets and are, thus, an important source of between-study differences.

4.3 | Limitations and outlook

In closing, we note several limitations of our study. First of all, this study uses self-reports to assess personality facets. Such an approach enables us to acquire meaningful insights into peoples' personality self-concepts and inner states (Vazire, 2010), but observer reports can complement personality descriptions by adding an outside perspective that is less prone to socially desirable responding

or hidden spots of the self (Vazire & Carlson, 2011). So far, research was able to illustrate that the self and others report similar developmental trajectories specifically at younger ages, but there were also substantial discrepancies in agreeableness in adolescence (Luan et al., 2017). An initial study showed that facet-specific age-related change was more pronounced when reported by observers than by people themselves (Schwaba et al., 2022). Future research should thus expand this knowledge on how communalities and discrepancies between self and others establish on the narrower facet level.

Second, although our data cover a large age range of adulthood, parameters could only be reliably estimated for ages 35/40 through 80 years. As such, the data cannot inform us about how personality changes during other developmentally interesting periods such as adolescence or very old age. Future research should extend the study of stabilities and changes of personality facets into both younger and older ages. For example, an interesting avenue would be to investigate whether different facets of extraversion are more strongly affected by age-related physical losses than other facets and whether experience of frailty might lead to decreases in some facets but not others. Additionally, our sample was fairly homogenous, in that it included American participants living in the metropolitan area of Washington, Seattle. Although one can imagine that some of the experiences that might affect personality facet stability and change, such as childbirth or retirement, generalize across cultures, replication with other and more diverse samples is needed (Arnett, 2008).

Third, we had a time-lag of several years between our assessments. Personality development theory suggests that personality change occurs in a bottom-up fashion with prolonged manifestations of lower-order personality characteristics that scale-up to long-term changes on broader personality characteristics levels (e.g., Wrzus & Roberts, 2017). Different, but at least yearly time-intervals have been used to study personality stability and change on the facet level with mixed findings in terms of stability and change (e.g., Brandes et al., 2021; Klimstra et al., 2018; Soto & John, 2012; Terracciano et al., 2005). Future research needs to identify the time-scale (yearly, monthly, weekly, daily) on which the underlying change processes actually manifest (Luhmann et al., 2014).

Finally, we found that the rank-ordering of people differed with age. We cannot rule out, however, that age-related changes are due or at least confounded by cohort-related differences (Gerstorf et al., 2020). So far, previous research established cohort-related differences in broad personality trait domains (Brandt et al., 2022; Mroczek & Spiro, 2003; Terracciano et al., 2005), but no facet-specific analyses exist. Future research should investigate which facets might be most prone to cohort effects.

5 | CONCLUSION

Expanding the knowledge about change in personality, we found that personality *facets* show substantial stability both in terms of rank-orders and mean-levels from midlife to old age. Despite this great stability, the relative ordering of people in personality facets also varied substantially across the considered age range. Most importantly, the pattern of rank-order stabilities differed across facets of the same trait and across traits illustrating the diverse behavioral and emotional repertoire that is captured in different facets. Our results thus highlight that facet-specific analyses can bring to light what is hidden at the broad trait domain level. Given that personality characteristics and how these change over time often play a paramount role for a multitude of important life outcomes such as occupational success, health, or well-being (Brandt et al., 2021; Roberts et al., 2007; Soto, 2019), understanding when personality is stable or changing is crucial to identify age periods when risk for detrimental life outcomes may be expressed. Future research should thus further invest to use information on differential change at the facet level to help to better understand antecedents, drivers, and consequences of personality stability and change. Thus, more detailed behavioral and motivational information are needed about which particular aspect of personality change.

AUTHOR CONTRIBUTIONS

Warner Schaie and Sherry L. Willis provided the data, Naemi D. Brandt and Jenny Wagner designed and planned the study. Naemi D. Brandt conducted the data analysis and drafted the manuscript. Naemi D. Brandt designed the figures. All authors discussed the results and contributed to writing the manuscript.

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CONFLICTS OF INTEREST

Authors declare no competing interests.

ETHICS STATEMENT

Ethics approval for the study was granted by the University of Washington (Budget Number: 61-2960, ePAC#:

PAC160797). The requests for access to the data should be made to S. L. Willis (oldage@uw.edu).

PRE-REGISTRATION

https://osf.io/8yp95/registrations.

CODE AND MATERIALS

https://osf.io/8yp95.

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ENDNOTES

[1] Within the SLS, longitudinal assessments were done at 7-year intervals. The NEO-PI-R was included into the study both on and off time to the original longitudinal sample. Thus, for the NEO-PI-R assessments, some people were missing by design.

[2] Originally, the NEO-PI-R covers 240 items. In the SLS, however, one extraversion item of the facet activity is missing at 2001, resulting in 239 items in 2001 and 240 items at all other assessment waves.

REFERENCES

Anusic, I., & Schimmack, U. (2016). Stability and change of personality traits, self-esteem, and well-being: Introducing the meta-analytic stability and change model of retest correlations. *Journal of Personality and Social Psychology*, *110*(5), 766–781. https://doi.org/10.1037/pspp0000066

Arnett, J. J. (2008). The neglected 95%: Why American psychology needs to become less American. *American Psychologist*, *63*(7), 602–614. https://doi.org/10.1037/0003-066X.63.7.602

Bühler, J. L., & Nikitin, J. (2020). Sociohistorical context and adult social development: New directions for 21st century. *American Psychologist*, *75*(4), 457–469. https://doi.org/10.1037/amp0000611

Baltes, P. B., Lindenberger, U., & Staudinger, U. M. (2006). Life span theory in developmental psychology. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Vol. I. Theoretical models of human development* (pp. 569–664). Wiley.

Baltes, P. B., & Smith, J. (2003). New Frontiers in the future of aging: From successful aging of the young old to the dilemmas of the fourth age. *Gerontology*, *49*(2), 123–135. https://doi.org/10.1159/000067946

Berg, A. I., & Johansson, B. (2014). Personality change in the oldest-old: Is it a matter of compromised health and functioning? *Journal of Personality*, *82*, 25–31. https://doi.org/10.1111/jopy.12030

Bleidorn, W. (2015). What accounts for personality maturation in early adulthood? *Current Directions in Psychological Science*, *24*(3), 245–252. https://doi.org/10.1177/0963721414568662

Bleidorn, W., Hopwood, C. J., Back, M. D., Denissen, J. J. A., Hennecke, M., Jokela, M., Kandler, C., Lucas, R. E., Luhmann, M., Orth, U., Roberts, B. W., Wagner, J., Wrzus, C., & Zimmermann, J. (2020). Longitudinal experience-wide association studies—A framework for studying personality change: Personality change. *European Journal of Personality*, *34*, 285–300. https://doi.org/10.1002/per.2247

Bleidorn, W., Hopwood, C. J., & Lucas, R. E. (2018). Life events and personality trait change. *Journal of Personality*, *86*(1), 83–96. https://doi.org/10.1111/jopy.12286

Borsboom, D. (2008). Latent variable theory. *Measurement: Interdisciplinary Research & Perspective*, *6*(1–2), 25–53. https://doi.org/10.1080/15366360802035497

Brandes, C. M., Kushner, S. C., Herzhoff, K., & Tackett, J. L. (2021). Facet-level personality development in the transition to adolescence: Maturity, disruption, and gender differences. *Journal of Personality and Social Psychology*, *121*(5), 1095–1111. https://doi.org/10.1037/pspp0000367

Brandt, N. D., Drewelies, J., Willis, S. L., Schaie, K. W., Ram, N., Gerstorf, D., & Wagner, J. (2022). Acting like a baby boomer? Birth-cohort differences in adults' personality trajectories during the last half a century. *Psychological Science*, *33*(3), 382–396. https://doi.org/10.1177/09567976211037971

Brandt, N. D., Israel, A., Becker, M., & Wagner, J. (2021). The joint power of personality and motivation dynamics for occupational success: Bridging two largely separated fields. *European Journal of Personality*, *35*(4), 480–509. https://doi.org/10.1177/0890207021996965

Carstensen, L. L., Fung, H. H., & Charles, S. T. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion*, *27*, 103–123. https://doi.org/10.1023/A:1024569803230

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(3), 464–504. https://doi.org/10.1080/10705510701301834

Costa, P. T., Jr., & McCrae, R. R. (1992). *NEO PI-R and NEO-FFI professional manual*. Psychological Assessment Resources.

Costa, P. T., & McCrae, R. R. (2008). The revised NEO personality inventory (NEO-PI-R). In G. J. Boyle, G. Matthews, & D. H. Saklofske (Eds.), *The SAGE handbook of personality theory and assessment, Vol 2: Personality measurement and testing* (pp. 179–198). Sage Publications.

Costa, P. T., & McCrae, R. (2017). NEO inventories as instruments of psychological theory. In T. A. Widiger (Ed.), *The Oxford handbook of the five-factor* (pp. 11–38). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199352487.013.10

Costa, P. T., McCrae, R. R., & Löckenhoff, C. E. (2018). Personality across the life span. *Annual Review of Psychology*. https://doi.org/10.1146/annurev-psych-010418-103244

de Haan, A., De Pauw, S., van den Akker, A., Deković, M., & Prinzie, P. (2017). Long-term developmental changes in Children's lower-order Big Five personality facets: Long-term changes in personality facets. *Journal of Personality*, *85*(5), 616–631. https://doi.org/10.1111/jopy.12265

de Moor, M. H. M., Costa, P. T., Terracciano, A., Krueger, R. F., de Geus, E. J. C., Toshiko, T., Penninx, B. W. J. H., Esko, T., Madden, P. A. F., Derringer, J., Amin, N., Willemsen, G., Hottenga, J.-J., Distel, M. A., Uda, M., Sanna, S., Spinhoven, P., Hartman, C. A.,

Sullivan, P., … Boomsma, D. I. (2012). Meta-analysis of genome-wide association studies for personality. *Molecular Psychiatry*, *17*(3), 337–349. https://doi.org/10.1038/mp.2010.128

Denissen, J. J. A., van Aken, M. A. G., Penke, L., & Wood, D. (2013). Self-regulation underlies temperament and personality: An integrative developmental framework. *Child Development Perspectives*, *7*(4), 255–260. https://doi.org/10.1111/cdep.12050

Deventer, J., Wagner, J., Lüdtke, O., & Trautwein, U. (2018). Are personality traits and relationship characteristics reciprocally related? Longitudinal analyses of codevelopment in the transition out of high school and beyond. *Journal of Personality and Social Psychology*, *116*, 331–347. https://doi.org/10.1037/pspp0000191

Enders, C. K. (2010). *Applied missing data analysis*. Guilford Publications.

Ferguson, C. J. (2010). A meta-analysis of normal and disordered personality across the life span. *Journal of Personality and Social Psychology*, *98*(4), 659–667. https://doi.org/10.1037/a0018770

Freund, A. M. (2020). The bucket list effect: Why leisure goals are often deferred until retirement. *American Psychologist*, *75*(4), 499–510. https://doi.org/10.1037/amp0000617

Gerstorf, D., Drewelies, J., Duezel, S., Smith, J., Wahl, H.-W., Schilling, O. K., Kunzmann, U., Siebert, J. S., Katzorreck, M., Eibich, P., Demuth, I., Steinhagen-Thiessen, E., Wagner, G. G., Lindenberger, U., Heckhausen, J., & Ram, N. (2019). Cohort differences in adult-life trajectories of internal and external control beliefs: A tale of more and better maintained internal control and fewer external constraints. *Psychology and Aging*, *34*(8), 1090–1108. https://doi.org/10.1037/pag0000389

Gerstorf, D., Hülür, G., Drewelies, J., Willis, S. L., Schaie, K. W., & Ram, N. (2020). Adult development and aging in historical context. *American Psychologist*, *75*(4), 525–539. https://doi.org/10.1037/amp0000596

Graham, E. K., Rutsohn, J. P., Turiano, N. A., Bendayan, R., Batterham, P. J., Gerstorf, D., Katz, M. J., Reynolds, C. A., Sharp, E. S., Yoneda, T. B., Bastarache, E. D., Elleman, L. G., Zelinski, E. M., Johansson, B., Kuh, D., Barnes, L. L., Bennett, D. A., Deeg, D. J. H., Lipton, R. B., … Mroczek, D. K. (2017). Personality predicts mortality risk: An integrative data analysis of 15 international longitudinal studies. *Journal of Research in Personality*, *70*, 174–186. https://doi.org/10.1016/j.jrp.2017.07.005

Graham, E. K., Weston, S. J., Gerstorf, D., Yoneda, T. B., Booth, T., Beam, C. R., Petkus, A. J., Drewelies, J., Hall, A. N., Bastarache, E. D., Estabrook, R., Katz, M. J., Turiano, N. A., Lindenberger, U., Smith, J., Wagner, G. G., Pedersen, N. L., Allemand, M., Spiro, A., … Mroczek, D. K. (2020). Trajectories of Big Five personality traits: A coordinated analysis of 16 longitudinal samples. *European Journal of Personality*, *34*(3), 301–321. https://doi.org/10.1002/per.2259

Graham, E. K., Weston, S. J., Turiano, N. A., Aschwanden, D., Booth, T., Harrison, F., James, B. D., Lewis, N. A., Makkar, S. R., Mueller, S., Wisniewski, K. M., Yoneda, T., Zhaoyang, R., Spiro, A., Willis, S., Schaie, K. W., Sliwinski, M., Lipton, R. A., Katz, M., … Mroczek, D. K. (2020). Is healthy neuroticism associated with health behaviors? A coordinated integrative data analysis. *Collabra: Psychology*, *6*(1), 32. https://doi.org/10.1525/collabra.266

Guenole, N., & Brown, A. (2014). The consequences of ignoring measurement invariance for path coefficients in structural equation models. *Frontiers in Psychology*, *5*, 980. https://doi.org/10.3389/fpsyg.2014.00980

Hülür, G., Ram, N., Willis, S. L., Schaie, K. W., & Gerstorf, D. (2015). Cognitive dedifferentiation with increasing age and proximity of death: Within-person evidence from the Seattle longitudinal study. *Psychology and Aging*, *30*(2), 311–323. https://doi.org/10.1037/a0039260

Hildebrandt, A., Lüdtke, O., Robitzsch, A., Sommer, C., & Wilhelm, O. (2016). Exploring factor model parameters across continuous variables with local structural equation models. *Multivariate Behavioral Research*, *51*(2–3), 257–258. https://doi.org/10.1080/00273171.2016.1142856

Hildebrandt, A., Wilhelm, O., & Robitzsch, A. (2009). Complementary and competing factor analytic approaches for the investigation of measurement invariance. *Review of Psychology*, *16*(2), 87–102.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Jackson, J. J., Bogg, T., Walton, K. E., Wood, D., Harms, P. D., Lodi-Smith, J., Edmonds, G. W., & Roberts, B. W. (2009). Not all conscientiousness scales change alike: A multimethod, multisample study of age differences in the facets of conscientiousness. *Journal of Personality and Social Psychology*, *96*(2), 446–459. https://doi.org/10.1037/a0014156

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five taxonomy. History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality. Theory and research* (pp. 114–158). Guilford.

Kandler, C., Kornadt, A. E., Hagemeyer, B., & Neyer, F. J. (2015). Patterns and sources of personality development in old age. *Journal of Personality and Social Psychology*, *109*(1), 175–191. https://doi.org/10.1037/pspp0000028

Klimstra, T. A., Noftle, E. E., Luyckx, K., Goossens, L., & Robins, R. W. (2018). Personality development and adjustment in college: A multifaceted, cross-national view. *Journal of Personality and Social Psychology*, *115*(2), 338–361. https://doi.org/10.1037/pspp0000205

Little, T. D., Slegers, D. W., & Card, N. A. (2006). A non-arbitrary method of identifying and scaling latent variables in SEM and MACS models. *Structural Equation Modeling: A Multidisciplinary Journal*, *13*(1), 59–72. https://doi.org/10.1207/s15328007sem1301_3

Lodi-Smith, J., & Roberts, B. W. (2007). Social investment and personality: A meta-analysis of the relationship of personality traits to investment in work, family, religion, and volunteerism. *Personality and Social Psychology Review*, *11*(1), 68–86. https://doi.org/10.1177/1088868306294590

Luan, Z., Hutteman, R., Denissen, J. J. A., Asendorpf, J. B., & van Aken, M. A. G. (2017). Do you see my growth?: Two longitudinal studies on personality development from childhood to young adulthood from multiple perspectives. *Journal of Research in Personality*, *67*, 44–60. https://doi.org/10.1016/j.jrp.2016.03.004

Luhmann, M., Orth, U., Specht, J., Kandler, C., & Lucas, R. E. (2014). Studying changes in life circumstances and personality: It's about time. *European Journal of Personality*, *28*(3), 256–266. https://doi.org/10.1002/per.1951

Mõttus, R., & Rozgonjuk, D. (2019). Development is in the details: Age differences in the Big Five domains, facets, and nuances. *Journal of Personality and Social Psychology*, *120*, 1035–1048. https://doi.org/10.1037/pspp0000276

Mehta, C. M., Arnett, J. J., Palmer, C. G., & Nelson, L. J. (2020). Established adulthood: A new conception of ages 30 to 45. *American Psychologist*, *75*(4), 431–444. https://doi.org/10.1037/amp0000600

Milojev, P., & Sibley, C. G. (2017). Normative personality trait development in adulthood: A 6-year cohort-sequential growth model. *Journal of Personality and Social Psychology*, *112*(3), 510–526. https://doi.org/10.1037/pspp0000121

Mroczek, D. K., & Spiro, A. (2003). Modeling Intraindividual change in personality traits: Findings from the normative aging study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *58*(3), 153–165. https://doi.org/10.1093/geronb/58.3.P153

Mueller, S., Wagner, J., Smith, J., Voelkle, M. C., & Gerstorf, D. (2018). The interplay of personality and functional health in old and very old age: Dynamic within-person interrelations across up to 13 years. *Journal of Personality and Social Psychology*, *115*(6), 1127–1147. https://doi.org/10.1037/pspp0000173

Mund, M., & Neyer, F. J. (2014). Treating personality-relationship transactions with respect: Narrow facets, advanced models, and extended time frames. *Journal of Personality and Social Psychology*, *107*(2), 352–368. https://doi.org/10.1037/a0036719

Olaru, G., Robitzsch, A., Hildebrandt, A., & Schroeders, U. (2020, April 24). Local structural equation modeling for longitudinal data. https://doi.org/10.31234/osf.io/q79c5

Olaru, G., Schroeders, U., Hartung, J., & Wilhelm, O. (2019). Ant Colony optimization and local weighted structural equation modeling. A tutorial on novel item and person sampling procedures for personality research. *European Journal of Personality*, *33*(3), 400–419. https://doi.org/10.1002/per.2195

Ozer, D. J., & Benet-Martinez, V. (2006). Personality and the prediction of consequential outcomes. *Annual Review of Psychology*, *57*, 401–421. https://doi.org/10.1146/annurev.psych.57.102904.190127

R Core Team. (2020). *R: A language and environment for statistical computing* (Version 4.0.2) [Computer software]. https://www.R-project.org/

Roberts, B. W. (2009). Back to the future: Personality and assessment and personality development. *Journal of Research in Personality*, *43*(2), 137–145. https://doi.org/10.1016/j.jrp.2008.12.015

Roberts, B. W., & Caspi, A. (2003). The cumulative continuity model of personality development: Striking a balance between continuity and change in personality traits across the life course. In U. M. Staudinger & U. Lindenberger (Eds.), *Understanding human development* (pp. 183–214). Kluwer Academic.

Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin*, *126*(1), 3–25. https://doi.org/10.1037/0033-2909.126.1.3

Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative vailidity of personality traits. Socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspectives on Psychological Sciences*, *2*(4), 313–345. https://doi.org/10.1111/j.1745-6916.2007.00047.x

Roberts, B. W., & Mroczek, D. (2008). Personality trait change in adulthood. *Current Directions in Psychological Science*, *17*(1), 31–35. https://doi.org/10.1111/j.1467-8721.2008.00543.x

Roberts, B. W., & Nickel, L. B. (2017). A critical evaluation of the neo-Socioanalytic model of personality. In J. Specht (Ed.), *Personality development across the lifespan* (pp. 157–177). Elsevier Academic Press. https://doi.org/10.1016/B978-0-12-804674-6.00011-9

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin*, *132*(1), 1–25. https://doi.org/10.1037/0033-2909.132.1.1

Robitzsch, A. (2019). *sirt: Supplementary item response theory models*. R Package Version, 3, 1–80 [Computer software]. https://CRAN.R-project.org/package=sirt

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1–36.

Sayer, A. G., & Cumsille, P. E. (2001). Second-order latent growth models. In L. M. Collins & A. G. Sayer (Eds.), *New methods for the analysis of change* (pp. 179–200). American Psychological Association. https://doi.org/10.1037/10409-006

Schaie, K. W. (2013). *Developmental influences on adult intelligence: The Seattle longitudinal study* (2nd ed.). Oxford University Press.

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, *8*(2), 23–74.

Schmitt, N., Golubovich, J., & Leong, F. T. L. (2011). Impact of measurement invariance on construct correlations, mean differences, and relations with external correlates: An illustrative example using Big Five and RIASEC measures. *Assessment*, *18*(4), 412–427. https://doi.org/10.1177/1073191110373223

Schwaba, T., Bleidorn, W., Hopwood, C. J., Manuck, S. B., & Wright, A. G. C. (2022). Refining the maturity principle of personality development by examining facets, close others, and comaturation. *Journal of Personality and Social Psychology*, *122*(5), 942–958. https://doi.org/10.1037/pspp0000400

Soto, C. J. (2019). How replicable are links between personality traits and consequential life outcomes? The life outcomes of personality replication project. *Psychological Science*, *30*(5), 711–727. https://doi.org/10.1177/0956797619831612

Soto, C. J., & John, O. P. (2012). Development of Big Five domains and facets in adulthood: Mean-level age trends and broadly versus narrowly acting mechanisms: Big Five domains and facets in adulthood. *Journal of Personality*, *80*(4), 881–914. https://doi.org/10.1111/j.1467-6494.2011.00752.x

Soto, C. J., John, O. P., Gosling, S. D., & Potter, J. (2011). Age differences in personality traits from 10 to 65: Big five domains and facets in a large cross-sectional sample. *Journal of Personality and Social Psychology*, *100*(2), 330–348. https://doi.org/10.1037/a0021717

Specht, J., Bleidorn, W., Denissen, J. J. A., Hennecke, M., Hutteman, R., Kandler, C., Luhmann, M., Orth, U., Reitz, A. K., & Zimmermann, J. (2014). What drives adult personality development? A comparison of theoretical perspectives and empirical evidence. *European Journal of Personality*, *28*(3), 216–230. https://doi.org/10.1002/per.1966

Specht, J., Egloff, B., & Schmukle, S. C. (2011). Stability and change of personality across the life course: The impact of age and

major life events on mean-level and rank-order stability of the Big Five. *Journal of Personality and Social Psychology*, *101*(4), 862–882. https://doi.org/10.1037/a0024950

Staudinger, U. M. (2020). The positive plasticity of adult development: Potential for the 21st century. *American Psychologist*, *75*(4), 540–553. https://doi.org/10.1037/amp0000612

Stephan, Y., Sutin, A. R., & Terracciano, A. (2014). Physical activity and personality development across adulthood and old age: Evidence from two longitudinal studies. *Journal of Research in Personality*, *49*, 1–7. https://doi.org/10.1016/j.jrp.2013.12.003

Sutin, A. R., Zonderman, A. B., Ferrucci, L., & Terracciano, A. (2013). Personality traits and chronic disease: Implications for adult personality development. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *68*(6), 912–920. https://doi.org/10.1093/geronb/gbt036

Terracciano, A., McCrae, R. R., Brant, L. J., & Costa, P. T. (2005). Hierarchical linear modeling analyses of the NEO-PI-R scales in the Baltimore longitudinal study of aging. *Psychology and Aging*, *20*(3), 493–506. https://doi.org/10.1037/0882-7974.20.3.493

Turiano, N. A., Graham, E. K., Weston, S. J., Booth, T., Harrison, F., James, B. D., Lewis, N. A., Makkar, S. R., Mueller, S., Wisniewski, K. M., Zhaoyang, R., Spiro, A., Willis, S., Schaie, K. W., Lipton, R. B., Katz, M., Sliwinski, M., Deary, I., Zelinski, E. M., … Mroczek, D. K. (2020). Is healthy neuroticism associated with mortality? A coordinated integrative data analysis. *Collabra: Psychology*, *6*(1), 33. https://doi.org/10.1525/collabra.268

van Scheppingen, M. A., Jackson, J. J., Specht, J., Hutteman, R., Denissen, J. J. A., & Bleidorn, W. (2016). Personality trait development during the transition to parenthood: A test of social investment theory. *Social Psychological and Personality Science*, *7*(5), 452–462. https://doi.org/10.1177/1948550616630032

Vazire, S. (2010). Who knows what about a person? The self–other knowledge asymmetry (SOKA) model. *Journal of Personality and Social Psychology*, *98*(2), 281–300. https://doi.org/10.1037/a0017908

Vazire, S., & Carlson, E. N. (2011). Others sometimes know us better than we know ourselves. *Current Directions in Psychological Science*, *20*(2), 104–108. https://doi.org/10.1177/0963721411402478

Wagner, J., Lüdtke, O., & Robitzsch, A. (2019). Does personality become more stable with age? Disentangling state and trait effects for the Big Five across the life span using local structural equation modeling. *Journal of Personality and Social Psychology*, *116*(4), 666–680. https://doi.org/10.1037/pspp0000203

Wagner, J., Orth, U., Bleidorn, W., Hopwood, C. J., & Kandler, C. (2020). Toward an integrative model of sources of personality stability and change. *Current Directions in Psychological Science*, *29*, 438–444. https://doi.org/10.1177/0963721420924751

Wagner, J., Ram, N., Smith, J., & Gerstorf, D. (2016). Personality trait development at the end of life: Antecedents and correlates of mean–level trajectories. *Journal of Personality and Social Psychology*, *111*(3), 411–429. https://doi.org/10.1037/pspp0000071

Weston, S. J., Graham, E. K., Turiano, N. A., Aschwanden, D., Booth, T., Harrison, F., James, B. D., Lewis, N. A., Makkar, S. R., Mueller, S., Wisnieski, K. M., Yoneda, T., Zhaoyang, R., Spiro, A., Drewelies, J., Wagner, G. G., Steinhagen-Thiessen, E., Demuth, I., Willis, S., … Mroczek, D. K. (2020). Is healthy neuroticism associated with chronic conditions? A coordinated integrative data analysis. *Collabra: Psychology*, *6*(1), 42. https://doi.org/10.1525/collabra.267

Wilt, J., & Revelle, W. (2015). Affect, behaviour, cognition and desire in the Big Five: An analysis of item content and structure: ABCD scales. *European Journal of Personality*, *29*(4), 478–497. https://doi.org/10.1002/per.2002

Wrzus, C., & Roberts, B. W. (2017). Processes of personality development in adulthood: The TESSERA framework. *Personality and Social Psychology Review*, *21*(3), 253–277. https://doi.org/10.1177/1088868316652279

Wu, W., West, S. G., & Taylor, A. B. (2009). Evaluating model fit for growth curve models: Integration of fit indices from SEM and MLM frameworks. *Psychological Methods*, *14*, 183–201.

SUPPORTING INFORMATION

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