

Buchinger, Laura et al.

**Working Paper**

## Codevelopment of life goals and the Big Five personality traits across adulthood and old age

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# 1209<sup>2024</sup>

**SOEP** papers  
on Multidisciplinary Panel Data Research

## Codevelopment of Life Goals and the Big Five Personality Traits Across Adulthood and Old Age

Laura Buchinger, Theresa M. Entringer, David Richter, Gert G. Wagner, Denis Gerstorf, Wiebke Bleidorn

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## Codevelopment of Life Goals and the Big Five Personality Traits Across Adulthood and Old Age

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### **Abstract**

Since the new millennium, research in the field of personality development has focused on the stability and change of basic personality traits. Motivational aspects of personality and their longitudinal association with basic traits have received comparably little attention. In this preregistered study, we applied bivariate latent growth curve modeling to investigate the codevelopment of nine life goals and the Big Five traits. We tested age, perceived control, gender, educational background, and regional socialization as potential moderators of codevelopment. Data came from the German Socio-Economic Panel study ( $N = 55,040$ , age range: 18-103 years) and span a study period of 13 years. During this period, the Big Five traits and life goals were assessed four times. Our findings suggest that development in broader life goal domains (e.g., self-fulfillment) is more strongly connected to personality development across the life span, whereas changes in specific goals (e.g., having children) are more closely tied to trait changes during young and middle adulthood. The strongest codevelopment was found between Openness and agentic goals with a focus on personal growth followed by codevelopment between Agreeableness and communal goals. Developmental stage and educational background moderated the codevelopment of Conscientiousness and economic achievement as well as family-related goals. Contrary to previous research, we found that Neuroticism codeveloped with communal life goals (i.e., having a happy relationship/marriage). Our findings reinforce theoretical frameworks that highlight the role of changing opportunities, constraints, and developmental tasks across adulthood.

*Keywords:* life goals, Big Five, longitudinal study, lifespan development, corresponsive principle

**Codevelopment of Life Goals and Personality Traits Across Adulthood and Old Age**

Personality traits and life goals are two fundamental building blocks of personality (McAdams & Pals, 2006). The Big Five personality traits (Goldberg, 1990), comprising Agreeableness, Conscientiousness, Extraversion, Openness, and Neuroticism, are relatively enduring tendencies to act, feel, and think. Life goals are motivational strivings that guide individuals' thoughts, feelings, and behaviors over years or decades (Roberts et al., 2004). They are strongly shaped by societal expectations or social scripts and usually follow a normative sequence (e.g., career entry and family formation in early adulthood; e.g., Heckhausen et al., 2019). Importantly, most personality psychologists agree that personality traits and life goals are closely related and critically relevant to fully capture an individual's personality (Jayawickreme et al., 2019; Roberts & Wood, 2006; Wagner et al., 2020). Yet, more often than not, traits and life goals have been studied independently in separate lines of research (Austin & Vancouver, 1996; Emmons, 2003).

This is also true for research on personality development. Over the past two decades, hundreds of studies have examined age-graded changes in the Big Five (for meta-analyses, see Bleidorn et al., 2022; Roberts et al., 2006). These studies found that, on average, individuals become more agreeable, more conscientious, and less neurotic, particularly during young adulthood (Bleidorn, 2015). A mostly separate line of research has examined lifespan changes in life goals (e.g., Ebner et al., 2006; Freund, 2020; Heckhausen et al., 2010, 2019; Nurmi, 1992; Salmela-Aro et al., 2007). These studies indicate that changes in normative life goals, those that are strongly tied to societal expectations or social scripts, align with age-graded changes in developmental opportunities and constraints. For instance, parenthood and career goals are prioritized during early adulthood when opportunities for goal attainment are plentiful, instead of middle or late adulthood when biological and societal constraints and reduced opportunities render attainment difficult or impossible. However,



considerably less research studied the interplay between changes in life goals and personality traits (Atherton et al., 2021; Bleidorn et al., 2010; Lüdtke et al., 2009; Roberts et al., 2004). These studies, which often relied on relatively small and homogenous samples in terms of age and educational background, provided mixed results. As such, we still know little about the codevelopment of these two building blocks of personality across the lifespan (Bleidorn et al., 2010; Roberts & Robins, 2000). To address this question, we analyzed the codevelopment of the Big Five personality traits and nine life goals in a large and heterogeneous sample ( $N = 55,040$ ) across 13 years. In so doing, we aimed to provide a more comprehensive and precise picture of the nature and degree of codevelopment between personality traits and life goals.

### **Theoretical Perspectives on the Codevelopment of Personality Traits and Life Goals**

Although personality traits and life goals are interrelated building blocks of personality (e.g., Roberts & Robins, 2000; Wagner et al., 2020), they are also distinct. Traits refer to the descriptive part of personality. Life goals refer to the motivational part. Previous research found that individual differences in traits and life goals are influenced by both shared and unique genetic and environmental factors (Bleidorn et al., 2010), with both being independent predictors of important life outcomes (e.g., Bauer & McAdams, 2010; Headey, 2008). Together, traits and life goals offer a fairly comprehensive window into a person's general patterns of feelings, thoughts, and behaviors, including the drivers that motivate them (e.g., Little, 1999; McAdams & Pals, 2006). The close links between traits and life goals raise questions about their developmental associations. Do changes in life goals go hand in hand with changes in traits? Several theoretical perspectives highlight the interplay between motivational constructs and personality traits but many of them assume directionality regarding their relationship or a common cause of both (e.g., DeYoung, 2015; Jayawickreme et al., 2019; McCabe & Fleeson, 2012; Quirin et al., 2020; Wrzus & Roberts, 2017). The

question *why* traits and life goals codevelop (although an extremely interesting one) was not the focus of this study, nor can it be answered with this study design. To explain the codevelopment between traits and life goals, three perspectives are of particular relevance: the *self-regulation perspective* (e.g., Denissen et al., 2013; Hennecke et al., 2014), the *unified theory of motivation, personality and development* (Dweck, 2017), and the *corresponsive principle* (Roberts & Wood, 2006).

First, according to the self-regulation perspective, trait-specific behaviors, feelings, and thoughts are performed as strategic means to attain certain desirable goals (Denissen et al., 2013; Hennecke et al., 2014). For instance, someone who tries to take on more responsibility in their job, works harder and more thoroughly (increased Conscientiousness), may do so to advance their career. Empirical support for this perspective comes from the field of volitional personality development which shows that people can purposefully change their personality traits in a desired direction to attain certain goals (e.g., Hudson et al., 2019; 2020; Hudson & Fraley, 2016; Moore et al., 2021; Olaru et al., 2022, Stieger et al., 2021).

Second, similar to the self-regulation perspective, the unified theory of motivation, personality, and development (Dweck, 2017) assumes a feedback loop between goals and personality traits. Specifically, it posits that mental representations of goal-relevant beliefs, emotions, and action tendencies mediate the association between goals and personality traits. These mental representations are based on prior experiences and are updated as the individual makes new experiences. This way, they guide future goal formation and foster characteristic behavioral, cognitive, and emotional patterns—personality traits—which guide goal pursuit. For instance, avoiding conflict-prone contexts, ignoring provocations, and forgiving easily (Agreeableness) may be motivated by the goal to have harmonious relationships. If such behaviors are accompanied by the experience of more positive interactions, the individual may update their goal-relevant beliefs, emotions, and action tendencies. They may conclude

that actively shaping the environment is possible (updated control beliefs) and that the chosen behaviors were effective in doing so (updated action tendencies). The more often the individual then acts this way (avoids conflict, ignores provocations, etc.) to attain their desired goal (to have harmonious relationships), the more habitual this behavior may become, potentially translating into changes at the personality trait level (increased Agreeableness).

Third, the *corresponsive principle* emphasizes the interconnectedness of selection and socialization processes. It predicts that people tend to prioritize life goals that match their personality traits. One way of interpreting the principle is, that also increases in a given personality trait prompt increases in the importance of matching life goals. The pursuit of these life goals should then reinforce the personality traits that led to them (e.g., Roberts et al., 2003; Roberts & Wood, 2006). For instance, a person who experiences increases in Agreeableness may also increase their communal strivings for harmonious relationships that, if achieved, may lead to further increases in Agreeableness. Similarly, increases in Conscientiousness may be linked to an increased striving for career success, with these strivings in turn fostering further increases in Conscientiousness.

As indicated by the aforementioned examples, there are theoretical reasons to expect distinctive links between different trait and goal domains. Broadly, these can be organized along the dimensions of agency (e.g., competence, assertiveness, dominance) and communion (e.g., warmth, relatedness, morality; see Bakan, 1966). Both the Big Five and life goals can be organized in terms of these two content dimensions. Extraversion and Openness contain agentic content, whereas Agreeableness contains communal content.

Conscientiousness contains both agentic and communal content (Abele et al., 2016; Entringer, Gebauer, et al., 2022), whereas Neuroticism is considered a purely evaluative, content-free domain (Furr & Funder, 1998; Gebauer et al., 2015). Life goals concerning status, career success, economic achievement, hedonism, and personal growth contain agentic

content, whereas life goals concerning family, relationships, and altruism contain communal content (Atherton et al., 2021; Bleidorn et al., 2010; Lüdtke et al., 2009; Wehner et al., 2022). Some life goals (e.g., societal involvement and owning a house) contain both communal and agentic content (Headey, 2008).

In summary, the self-regulation perspective, the unified theory of motivation, personality, and development, and the corresposive principle posit close developmental associations between personality traits and life goals. The two content dimensions of agency and communion may help us better understand which personality traits should codevelop with which goals. Specifically, it can be expected that individuals who increase in agentic personality traits are more likely to also experience increases in agentic life goals, while increases in communal traits should go hand in hand with increases in communal goals.

### **Longitudinal Research on the Codevelopment of Personality Traits and Life Goals**

So far, only four longitudinal studies have examined the codevelopment of the Big Five traits and life goals (Atherton et al., 2021; Bleidorn et al., 2010; Lüdtke et al., 2009; Roberts et al., 2004). The first study (Roberts et al., 2004) relied exclusively on students from the University of California at Berkeley ( $N = 298$ ) who provided data in the first and last week of their first semester and at the end of their first, second, third, and fourth year of college. The Big Five were assessed with the NEO-Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Life goals were assessed in the form of normative importance ratings of 26 goals that formed seven broad domains (Economic, Aesthetic, Social, Relationship, Political, Hedonistic, and Religious). Latent growth models were used to investigate codevelopment. The second study (Lüdtke et al., 2009) relied on two waves of data from a larger sample of students in Germany ( $N = 2,141$ ), who were in their final year of high school at the first assessment and were contacted again two years after graduation. They also used the NEO-FFI to assess the Big Five. To assess life goals, the Aspiration Index (Deci & Ryan, 1997;

Klusmann et al., 2005) was used which comprises importance ratings of 32 life goals that assess eight goal domains (Personal Growth, Relationships, Community, Health, Wealth, Fame, Image, and Hedonism). To analyze codevelopment between the Big Five traits and life goals, this study used a generic reciprocal effects model. The third study (Bleidorn et al., 2010) relied on two assessments which were 5.7 years apart of  $N = 329$  middle-aged (mean age at first assessment was 38.7 years) German twin pairs. To assess the Big Five, the Revised NEO Personality Inventory (Costa & McCrae, 1992; NEO PI-R; Ostendorf & Angleitner, 2004) was used. Life goals were assessed with the GOALS questionnaire (Pöhlmann & Brunstein, 1997) which comprises six subscales (Power, Achievement, Variation, Altruism, Affiliation, and Intimacy) which can further be aggregated into one agency and one communion scale. A multivariate Cholesky decomposition model was used to investigate the genetic and environmental sources of codevelopment. Finally, in the most recent study, Atherton et al. (2021) used the same data as Roberts et al. (2004) with one additional wave, 20 years after graduation ( $N = 251$ ). Like Roberts et al. (2004) they used latent growth modelling to assess codevelopment.

All four studies found evidence for codevelopment among personality traits and life goals. Specifically, these studies found Extraversion and Openness to codevelop with agentic life goals such as strivings for economic achievement, growth, or power. Notably, changes in economic achievement goals were more strongly related to changes in Extraversion (Roberts et al., 2004) whereas strivings for personal growth were more strongly related to changes in Openness (Atherton et al., 2021; Lüdtke et al., 2009). Changes in communal life goals, such as strivings for intimacy or social relationships goals, were associated with changes in Agreeableness. Furthermore, in line with extant research demonstrating that Conscientiousness contains both agentic and communal content (Entringer, Gebauer, et al., 2022), these studies found changes in this trait to be associated with changes in both agentic

and communal life goals (e.g., economic achievement and relationship goals; Atherton et al., 2021; Bleidorn et al., 2010; Roberts et al., 2004). Finally, in line with extant research identifying Neuroticism as the only content-free dimension of personality (Furr & Funder, 1998), Bleidorn et al. (2010) found no evidence for the codevelopment of Neuroticism and any life goal. The results of the other studies were inconsistent. Roberts et al. (2004) found weak, negative codevelopment of Neuroticism and political goals ( $r = -.20, p < .05$ ) but this finding did not replicate in Atherton's study which included the 20-year follow-up wave ( $r = .07 [-.18; .45], p > .05$ ). Instead, Atherton et al. (2021) found positive codevelopment between Neuroticism and aesthetic goals ( $r = .32 [.08; .56], p < .05$ ) and Neuroticism and religious goals ( $r = .23 [.02; .45], p < .05$ ). Lüdtke et al. (2009) found a weak prospective effect of Neuroticism at the first assessment on community goals two years later ( $\beta = .08, p < .01$ )<sup>1</sup>.

Regarding the strength of the codevelopment between personality traits and life goals, two studies (Atherton et al., 2021; Roberts et al., 2004) found the largest effect sizes for the codevelopment between Extraversion and agentic life goals ( $.31 \leq \overline{zPE} \leq .55$ ), followed by Agreeableness and communal life goals ( $.21 \leq \overline{zPE} \leq .41$ ), and smaller effect sizes for the codevelopment between Openness and agentic life goals ( $.08 \leq \overline{zPE} \leq .19$ ). Overall, however, there was substantial heterogeneity in the effect sizes across studies (e.g., for the codevelopment of agentic goals related to hedonism and Openness  $.18 \leq \overline{zPE} \leq .70$ ). One reason for the great heterogeneity in effect sizes across studies might be that existing studies examined goals and traits in small to moderately sized samples ( $251 \leq N \leq 2,141, \bar{N} = 837$ ) across drastically varying time intervals (between six months and 20 years). Moreover, with an exception of Bleidorn et al. (2010), the samples were age-homogenous and

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<sup>1</sup> Roberts et al. (2004) and Lüdtke et al. (2009) did not report confidence intervals for the effect estimates.

disproportionately well-educated and wealthy (the median annual salary in Atherton's study was US\$97,000).

In summary, relevant longitudinal research on traits and life goals is rare and not without limitations. Existing studies relied on small samples that were often restricted to a specific age range and educational background. Indeed, three of four studies only included individuals with at least a secondary level of education and none of the existing studies included older adults. Thus, our current knowledge about the codevelopment of the Big Five traits and life goals is limited to young adulthood and midlife and primarily applies to well-educated and wealthy individuals. Conclusions about the codevelopment of personality traits and life goals in late adulthood cannot be drawn. Moreover, these studies typically focused on broader goal domains while research on more specific goal content has yet to be done.

### **The Present Study**

The purpose of the present research was to address the aforementioned limitations by examining the codevelopmental links between the Big Five and nine life goals across multiple assessment waves, covering a study period of 13 years, in a large-scale longitudinal sample ( $N = 55,040$ , age range: 18-103 years) that is representative of the population in Germany.

Two of the nine life goals can be classified as agentic with a focus on economic achievement (i.e., career success, being able to afford things), two can be classified as agentic with a focus on personal growth (i.e., self-fulfillment, seeing the world/travel extensively), and three can be classified as communal life goals (i.e., being there for others, having children, having a happy relationship/marriage). In addition, two of the nine life goals contain content

from both domains (i.e., being socially/politically involved and owning a house<sup>2</sup>). This classification informed the formation of our hypotheses but is not reflected at the analytic level. In doing so, we aimed to extend the literature in three important ways.

First, by examining the associations between the Big Five and nine specific life goals, we aimed to provide a more nuanced perspective on the developmental associations between traits and lower-order life goals. Consistent with theory and previous research, we predicted that (Hypothesis 1) changes in Extraversion and Conscientiousness are correlated with changes in agentic life goals related to economic achievement (i.e., having a successful career, being able to afford things), and that (Hypothesis 2) changes in Openness and Extraversion are correlated with changes in agentic life goals related to personal growth (i.e., self-fulfillment, seeing the world/traveling). Further, we predicted that (Hypothesis 3) changes in communal personality traits (i.e., Agreeableness, Conscientiousness) are correlated with changes in communal life goals (i.e., having a happy relationship, having children, being there for others). Finally, based on previous empirical findings, we expected that (Hypothesis 4) changes in Extraversion are linked to life goals with mixed content (i.e., being socially/politically involved). Given that no known study has examined the links between traits and the goal to own a house, we did not derive hypotheses for this particular life goal.

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<sup>2</sup> Headey (2008) factor-analyzed the life goal items from the SOEP and identified three dimensions that he named success, family, and altruism. The item “owning a house” loaded strongly on the family dimensions, the social/ political involvement item loaded on the altruism factor. He dropped the “owning a house” item on the grounds of face validity. Our own replication with additional data showed that social/political involvement mainly loaded on the success dimension but also on the altruism dimension. Since political involvement has also been classified as predominantly agentic in other studies (Trapnell & Paulhus, 2012), we assumed that it has both agentic and communal content.



Second, by covering the entire adult lifespan, we aimed to shed light on the links between traits and life goals at different life stages. As outlined above, most previous studies focused on adolescence and emerging adulthood (Lüdtke et al., 2009; Roberts et al., 2004). Studying the codevelopment of the Big Five traits and life goals during this developmental phase is important because during this time personality traits and life goals undergo the largest changes (Arnett, 2000; Bleidorn et al., 2022). However, there is evidence that both constructs continue to change during middle and old adulthood (e.g., Bühler et al., 2019; Seifert et al., 2022). Here, we examined the moderating role of age in the developmental links between life goals and traits. Given that both changes in traits and life goals appear to be most pronounced in young adulthood (e.g., Bleidorn, 2015; Salmela-Aro et al., 2007), we also expected that (Hypothesis 5) the codevelopment between traits and goals will be stronger in younger compared to middle-aged and older adults.

Third, this study extends previous research by examining the potential effects of perceived control on the codevelopment between traits and life goals. Individuals with high perceived control (Folkman, 1984; Specht et al., 2013) believe that their own behavior, skills, or other personal attributes have a strong impact on their lives. Participants low in perceived control believe that their life largely depends on external factors such as powerful others, fate, or chance (Rotter, 1966). Numerous studies have shown that high perceived control is associated with stronger goal striving and attainability (Lang & Heckhausen, 2001; Sheldon et al., 2015; Skinner et al., 1990). Hence, we predicted that the codevelopment of the Big Five traits and life goals is stronger for people with high perceived control as compared to people with low perceived control (Hypothesis 6).

Finally, we explored the effects of additional theoretically critical moderator variables. Specifically, we tested if gender, education, and, in particular, cultural socialization moderated codevelopment between traits and life goals. Prior research and theory highlight the role of

sociocultural norms for the development of personality traits and life goals (e.g., Bleidorn et al., 2013; Buchinger et al., 2022; Entringer et al., 2023; Markus & Kitayama, 1991; Twenge et al., 2012). In this context, Germany represents a special case. For over 40 years, from 1949 to 1990, the country was divided into two states with fundamentally different economic and political systems: The Federal Republic of Germany (FRG) in the West and the German Democratic Republic (GDR) in the East. The FRG (or West Germany) was a democratic state with a capitalist economy and individualistic values. The GDR was a soviet-ruled, socialist country with a planned economy, modeled after the Soviet Union. During this time of division not only political ideologies and economic decisions, but also work attitudes, values, and lifestyle preferences differed dramatically between the two countries (Frese et al., 1996; Pfau-Effinger & Smidt, 2011). Several studies suggested that, even today in modern, post-unification Germany, this cultural division is still present (Klüsener & Goldstein, 2016; Rensmann, 2019) and that socialization differences continue to affect people's lives (Scheling & Richter, 2021). Hence, we explored the potential effects of being socialized in former East or West Germany for the codevelopment of the Big Five traits and life goals. Given the lack of previous research, we derived no specific hypotheses for these moderation effects.

## **Method**

### **Transparency and Openness**

We used data from the German Socio-Economic Panel Study (SOEP, 2021 version 36, EU Edition). Ethical permission was granted by the Scientific Advisory Board of the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung, Berlin), Germany. All participants provided informed consent. The SOEP data are available to research institutes and universities for research and teaching purposes from the SOEP Research Data Centre (RDC SOEP). Information about eligibility and the application process can be found at [https://www.diw.de/en/diw\\_01.c.601584.en/data\\_access.html](https://www.diw.de/en/diw_01.c.601584.en/data_access.html).

Descriptive analyses, data preparation, and visualization was done in R, version 4.0.4 (R Core Team, 2020). All measurement invariance tests and (multiple group) latent growth curve models (LGMs) were estimated with Mplus Version 8 (see Muthén & Muthén, 1998-2017).

This study's hypotheses and analysis strategy were preregistered (see <https://osf.io/j5ps2>). The R code for data preparation and visualization of the model results as well as the Mplus input files are provided on the Open Science Framework-project site (<https://osf.io/a8bjz/>).

### **Participants**

The SOEP was launched in 1984 and is an ongoing, annual, large, and diverse multi-cohort study of private households in Germany. See Goebel et al. (2019) for detailed information about sampling strategy, survey design, and assessment procedure. Over time, the SOEP has been continuously revised and extended. Hence, many constructs, including the ones relevant for this study, were introduced to the SOEP many years after the launch of the study and are assessed at varying measurement intervals. For our study, we used data from the 2004, 2005, 2008, 2009, 2010, 2012, 2013, 2015, 2016, and 2017 waves.

Our study included all SOEP participants who completed at least one item of our 14 focal constructs (nine life goals and the five Big Five traits) over the course of the study period (i.e., 2004-2017) – a deviation from our preregistration which would have only included participants who provided life goal and Big Five data in two waves. This more liberal inclusion strategy, combined with Full Information Maximum Likelihood (FIML)-estimator is superior to more conservative strategies (Enders & Bandalos, 2001) and has been applied in previous studies that investigated codevelopment in a similar design (e.g., Hill et al., 2018). In latent growth curve modelling, it allows a more precise estimation of the levels by at the same time not changing the precision of the slope estimates. Although not the main

focus of our study, we saw this as an advantage especially combined with the increased sample size.<sup>3</sup> A total of  $N = 55,040$  participants took part in at least one wave and 52.81% of participants were women (coded with 0, men were coded with 1). The number of respondents ranged from  $n = 39,880$  in 2013 to  $n = 24,763$  in 2005 and mean age ranged from  $M = 45.63$  ( $SD = 17.58$ ) in 2013 to  $M = 50.02$  ( $SD = 19.23$ ) in 2009. On average, participants took part in 3.91 ( $SD = 2.58$ ) waves. Sample characteristics are shown in Supplemental Tables S2 and S3. A correlation matrix of all measurements is available at <https://osf.io/5rd9p>.

## Measures

We included measures of participants' life goals, Big Five traits, perceived control, gender, education, and regional socialization. Comprehensive information on all instruments used in the SOEP can be found in the Scale Manual (Entringer, Griesse, et al., 2022).

### *Life Goals*

Participants were asked to rate the importance of each of the nine life goals on a scale from 1 (very important) to 4 (not at all important). The use of normative importance ratings is in line with existing research (Atherton et al., 2021; Wehner et al., 2022). Three items assessed communal goals (having children, having a happy relationship/marriage, and being there for others), two items assessed agentic goals related to economic achievement (being successful in my career and being able to afford things for myself), two items assessed agentic goals related to self-realization/personal growth (being self-fulfilled and seeing the world/traveling extensively), and two of the assessed goals contain both agentic and

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<sup>3</sup> The preregistered inclusion strategy led to a final sample size of  $N = 24,924$  individuals. As additional robustness check, we also ran all models of the main analysis (unmoderated bivariate LGMs) with this smaller sample. The results largely converged and can be found in the Supplemental Tables S10 and Figures S4–S7.

communal content (being socially/politically involved and owning a house). Prior to the analysis, participants' importance ratings were reverse scored (so that higher scores reflect greater importance) and then centered at the wave-specific person-mean across all nine life goals (ipsatized) to represent priorities rather than individual differences regarding the use of the response scale. This technique was adopted from research on values (Schwartz, 2012) and has been used in prior research on life goals (Buchinger et al., 2022). It also follows theoretical recommendations to represent goals in relation to one another (Austin & Vancouver, 1996). Although the life goal items were first introduced to the SOEP in 1990, we only included the period during which personality trait assessments were also available. This led to an inclusion of the 2004, 2008, 2012, and 2016 waves.

### ***Big Five Traits***

We included personality trait assessments from four waves (2005, 2009, 2013, and 2017). The 15 items of the Big Five Inventory-SOEP (Gerlitz & Schupp, 2005) were taken from the Ten-Item Personality Inventory (TITP; Gosling et al., 2003) and the BFI-25 (John et al., 1991). Each personality dimension was represented by the three items with the highest factor loadings in the original inventory. Example items are: "I see myself as someone who..." "is considerate and kind to almost everyone" (Agreeableness), "is original, comes up with new ideas" (Openness), "tends to be lazy" (Conscientiousness, reverse-keyed), "is talkative" (Extraversion), "is relaxed, handles stress well" (Neuroticism, reverse-keyed). Reliability coefficients were satisfactory given the short scale length ( $\omega = .56 - .70$ ,  $\alpha = .51 - .68$ ). In previous studies, all SOEP-BFI scales evidenced longitudinal measurement invariance (e.g., Specht et al., 2011). See Supplemental Tables S2-S4, for detailed scale characteristics and our own measurement invariance tests including the additional waves since 2011.

### ***Age***

To examine age differences in the codevelopment of life goals and traits, we split our sample into four groups<sup>4</sup> based on participants' age at T1: emerging adulthood ( $\leq 25$ ), young adulthood (26-39), midlife (40-59), and late adulthood ( $\geq 60$ ). These age ranges were chosen since they represent meaningful developmental stages and lead to relatively equal sample sizes in each group. The age distribution of the sample by survey wave is illustrated in the Supplemental Figure S1.

### ***Perceived Control***

Perceived control was assessed in 2005, 2010, and 2015. Following Specht et al. (2013), we aggregated seven items of the Locus of Control Scale (Nolte et al., 1997) into an overall measure of perceived control. Example items are "I have little control over the things that happen in my life" (reverse-keyed) and "How my life goes depends on me." This overall measure evidenced acceptable reliability ( $\omega = .75-.77$ ,  $\alpha = .67-.70$ ) and longitudinal measurement invariance (see Supplemental Tables S1 and S4). Scale means were averaged across waves to represent trait-perceived control. This variable was then split at the median to dichotomize into "high" vs "low" perceived control.

### ***Education***

Participants' highest International Standard Classification of Education (ISCED) score throughout the study period served to code educational background. Scores were split into three categories (low, middle, and high), with "low" representing below upper secondary

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<sup>4</sup> Originally, our moderation analysis approach included a latent interaction term between the continuous moderator (age at T1 and perceived control) and the latent life goal slope, which is then regressed on the personality trait slope. This strategy would have not required categorization; however, the models did not converge.

level of education, “middle” representing upper secondary level, and “high” representing tertiary level.

### ***Regional Socialization***

Participants’ location in 1989, before German reunification, was used to code regional socialization (East vs West).

### **Statistical Models**

To examine the codevelopment (i.e., bivariate change) between life goals and the Big Five traits, we applied multiple-group bivariate latent growth curve modeling with multiple indicators for the Big Five traits and single indicators for life goals (see Figure 1).

First, we ran univariate confirmatory factor analyses (CFA) to test for longitudinal measurement invariance of the Big Five traits across the four assessments. Each trait was indicated by three items. Factor variances were fixed at 1 across all time points and factor means were fixed at 0 for identification. Loadings of all individual indicators were freely estimated but constrained to be equal across points of assessment. The residuals of the same indicators were allowed to correlate across waves, to control for indicator-specific bias due to variance not captured by the latent variable (Cole & Maxwell, 2003). We followed the same procedure to establish longitudinal invariance for perceived control.

Second, we ran multiple-group CFAs to test for measurement invariance of the Big Five traits across groups (age, perceived control, gender, educational background, regional socialization), given strict longitudinal invariance. In the multiple-group models, we also fixed the first loading for identification based on the estimates of the strict longitudinal invariance models. We evaluated changes in comparative fit index ( $\Delta CFI$ ) and changes in McDonald’s noncentrality index ( $\Delta NFI$ ) to decide if measurement invariance was given. These indices have been found to be more accurate in large samples compared with the traditional chi-square difference test (Cheung & Rensvold, 2002; Meade et al., 2008).

Changes less than or equal to .01 for the CFI and less than or equal to .02 for the NFI, respectively indicate adequate fit.

Third, after establishing (partial) strict invariance across time and groups, we ran univariate linear latent growth curve models (LGMs) for the Big Five traits and the nine life goals separately to assess (relative)<sup>5</sup> mean-level change in both constructs. For the sake of completeness, we also computed test-retest correlations to assess the rank-order stability of the Big Five traits and life goals (both for the raw and the ipsatized measure).

Finally, we then combined both developmental trends into one model, applying the same specifications as in the univariate growth models and allowing intercepts and slopes of both constructs to correlate. To test for moderator effects, we fit multiple group LGMs with and without cross-group constraints on the slope-slope correlations. If lifting the constraints led to a better model fit, we assumed group differences. Model comparisons were assessed using the Bayesian Information Criterion (BIC; lower values indicate better model fit when comparing multiple models) and Chi<sup>2</sup>-difference tests based on loglikelihood values and scaling correction factors (Muthén & Muthén, 1998-2017). For the sake of completeness, we also ran all multiple-group models without cross-group constraints on all associations between the trajectories.

We preregistered two strategies for the inclusion of the moderators age and perceived control in our bivariate growth models: The aforementioned multiple-group LGMs with categorical moderators as grouping variables and an alternative strategy with latent

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<sup>5</sup> Since life goal scores were centered at the wave-specific person mean across all goals (ipsatized), they represent the relative importance of a goal in relation to all other goals. Hence, mean-level change cannot be interpreted as usual. Instead, mean-level change represents an average change in the importance of a goal relative to all other goals.



interaction terms between the continuous (latent) moderator variables and latent life goal slopes regressed on the personality trait slope. While we consider the second option to be superior, these types of models often fail to converge. This was also the case in the present study, which is why we proceeded with the first option.

## Results

This section has five parts. First, we provide a brief summary of the measurement invariance tests and the rank-order stabilities. Second, we report the univariate change of both constructs across the study period (i.e., results of the univariate LGMs). Third, we briefly report the associations between the levels of life goals and the Big Five traits. Four, we report the unmoderated correlated change across the study period (i.e., ungrouped bivariate LGMs). Finally, we describe the results of the moderation analyses (i.e., multiple-group bivariate LGMs with age group, perceived control, gender, educational background and regional socialization as grouping variables).

Throughout the results section, we discuss findings based on statistical tests with  $p < .01$  but focus on effect sizes when possible. Given our sample size, it is very likely that even minuscule effects reach significance. Therefore, findings with  $.001 < p < .01$  are interpreted as *suggestive evidence*.

### Measurement Invariance and Rank-Order Stabilities

Model comparisons of the measurement invariance tests across time, age groups, perceived control groups (high vs low), gender, educational background (low, middle, and high), and regional socialization (east vs west) are reported in the Supplemental Tables S4-S9 and on the OSF (see McDonaldsNCI\_comparisons.xlsx on <https://osf.io/53gra>). The Big Five traits and perceived control showed strict longitudinal invariance. Agreeableness, Extraversion, and Neuroticism were strictly invariant across age groups. Conscientiousness and Openness showed partial strict invariance. All Big Five traits were strictly invariant

across perceived control and regional socialization groups. Openness showed partial strict invariance across gender and educational background. All other Big Five traits were strictly invariant across gender and educational background.

Table 1 shows all test-retest correlations and mean-level change effect sizes of the perceived importance of the nine life goals (both raw and ipsatized scores) and the Big Five traits for adjacent survey waves and across the entire study period. Although the investigated nine life goals and the five Big Five traits both showed moderate rank-order stability across the 12-year assessment period, life goals were less stable. Test-retest correlations for the raw life goal measures between first and last assessment ranged from .290 (being there for others) to .560 (having children). Test-retest correlations of the ipsatized measures were comparable, ranging from .318 (being there for others) to .554 (having children). Test-retest correlations of the Big Five traits ranged from .442 (Conscientiousness) to .567 (Extraversion).

### **Univariate Change**

All slope parameters of the series of univariate LGMs are found in Table 2. The results suggest that all investigated life goals and four of the Big Five traits exhibited significant mean-level changes across the study period. Significant mean-level increases were observed for the relative importance of having children, being there for others, traveling, and being socially or politically involved. The relative importance of career success, a happy relationship/marriage, being able to afford things, self-fulfillment, and owning a house decreased on average.

We found an increasing trend in Openness (mean slope = 0.009 [0.008; 0.011],  $p < .001$ ) and Extraversion (mean slope = 0.002 [0.001; 0.004],  $p = .001$ ). Conscientiousness and Neuroticism decreased (mean slope<sub>C</sub> = -0.012 [-0.013; -0.010],  $p < .001$ ; mean slope<sub>N</sub> = -0.008 [-0.009; -0.006],  $p < .001$ ). Agreeableness did not change significantly. Rates of change varied considerably depending on participants' age at T1. For instance, results of the

multiple-group LGMs revealed, that the self-rated importance of a happy relationship/marriage increased for the youngest age group but decreased for the other three. The importance of traveling did not change for the youngest age group but increased for the two middle-aged groups and decreased in the oldest age group. With regards to changes in the Big Five traits, participants in the youngest age group became more agreeable (mean slope = 0.009 [0.005; 0.012],  $p < .001$ ) and conscientious (mean slope = 0.018 [0.015; 0.022],  $p < .001$ ) but showed no change in Extraversion, Openness, or Neuroticism. There were also small but significant interindividual differences in change, both regarding the Big Five traits ( $0.002 \leq \text{slope variance} \leq 0.003$ ) and all nine life goals ( $0.0004 \leq \text{slope variance} \leq 0.002$ ).

### **Level Associations Between Life Goals and the Big Five**

The focus of this study were the pre-registered hypotheses concerning the associations between changes in the importance of life goals and changes in the Big Five traits (slope-slope correlations). However, to allow comparisons with prior, cross-sectional work in this field, we also report the significant level-level associations between life goals and the Big Five traits. Out of 45 level-level associations, 34 were significant (see Table 3 and Figure 2). As shown in Figure 2, perceived importance of career success was positively associated with Conscientiousness, Extraversion, and Openness, and negatively associated with Agreeableness and Neuroticism. Being able to afford things was negatively associated with all Big Five but Neuroticism. Agentic goals with a focus on personal growth (self- fulfillment and travel/see the world) were positively associated with Extraversion and Openness. Perceived importance of self-fulfillment was also negatively associated with Neuroticism and perceived importance of travel/seeing the world was negatively associated with Conscientiousness. Communal goals (having children, having a happy relationship or marriage, and being there for others) were positively associated with Agreeableness and

Neuroticism and negatively associated with Openness. Higher perceived importance to have children and to have a happy relationship were also associated with higher Conscientiousness. Perceived importance of owning a house was negatively associated with Agreeableness, Extraversion, and Openness. Finally, perceived importance of being socially/politically involved was positively associated with Openness and negatively associated with Agreeableness, Conscientiousness and Neuroticism.

### **Unmoderated Correlated Change**

The bivariate LGMs provided evidence for codevelopment between the perceived relative importance of several life goals and the Big Five traits (see Figure 3). In eight out of the 45 investigated goal-trait combinations, the slopes of the two constructs were significantly related. For another eight goal-trait combinations we found suggestive evidence ( $.001 < p < .01$ ).

In line with our expectations, changes in the importance of agentic life goals with a focus on economic achievement were positively associated with changes in Extraversion and Conscientiousness. On average, participants' Conscientiousness ( $r = .145$  [.072; .218],  $p < .001$ ) and Extraversion ( $r = .096$  [.023; .168],  $p = .009$ ) changed in the same direction as their perceived importance of a successful career. Unexpectedly, participants' perceived relative importance of being able to afford something changed in the opposite directions as Extraversion ( $r = -.168$ , [-.279; -.058],  $p = .003$ ) and Agreeableness ( $r = -.256$ , [-.399; -.113],  $p < .001$ ). Changes in the relative importance of being able to afford something and changes in Conscientiousness were unrelated.

As expected, changes in the importance of agentic life goals with a focus on personal growth were positively associated with changes in Openness. We found a weak positive association between changes in the subjective importance of seeing the world/travel and Openness ( $r = .220$  [.119; .321],  $p < .001$ ) as well as a moderate positive association between

changes in the importance of self-fulfillment and changes in Openness ( $r = .366$  [.231; .502],  $p < .001$ ). Out of all investigated slope-slope associations, the one pertaining to self-fulfillment and Openness was the strongest.

Furthermore, we found suggestive evidence for a positive association between changes in the importance of self-fulfillment and changes in Extraversion ( $r = .170$  [.061; .278],  $p = .002$ ). Changes in the importance of self-fulfillment were also negatively associated with changes in Neuroticism ( $r = -.185$  [-.299; -.070],  $p = .002$ ).

As expected, changes in the importance of communal life goals were related to changes in Agreeableness. We found a moderate positive association between changes in the importance of being there for others and changes in Agreeableness ( $r = .300$  [.143; .457],  $p < .001$ ). This means that participants' Agreeableness changed in the same direction as their perceived relative importance of being there for others. There was suggestive evidence for a weak positive association between changes in the relative importance of having children and changes in Agreeableness ( $r = .131$  [.029; .233],  $p = .012$ ) as well as for a weak positive association between changes in the importance of a happy relationship/marriage and changes in Conscientiousness ( $r = .100$  [.018; .182],  $p = .016$ ). Against our expectations, changes in the importance of a happy relationship/marriage were unrelated to changes in Agreeableness.

Unexpectedly, changes in the relative importance of a happy relationship/marriage were positively associated with changes in Neuroticism ( $r = .163$  [.076; .251],  $p < .001$ ) and negatively associated with changes in Openness ( $r = -.205$  [-.300; -.110],  $p < .001$ ). We also found suggestive evidence for a negative association between the importance of a happy relationship/marriage and Extraversion ( $r = -.127$  [-.208; -.046],  $p = .002$ ). In line with our expectations, we found suggestive evidence for a positive association between changes in the importance of social/political involvement and changes in Extraversion ( $r = .167$  [.047; .286],  $p = .006$ ).

In this study we focused on the pre-registered hypotheses concerning the associations between changes in the importance of life goals and changes in the Big Five traits (slope-slope correlations). However, it should be noted that this is only one piece of the puzzle. To obtain a comprehensive understanding of the codevelopmental patterns of life goals and personality traits, both change (slopes) and levels need to be considered. For instance, if an individual perceives work-related goals as extremely important to begin with, growth in Conscientiousness may be more pronounced compared to someone who perceives work-related goals as less important. Similarly, the perceived importance of work-related goals of a highly conscientious individual may increase at a faster rate compared to an individual low in Conscientiousness. In two out of 45 investigated goal-trait combinations, levels of goal importance were significantly related to change in the Big Five traits. For another 12 goal-trait combinations, we found suggestive evidence for an association between levels of goal importance and change in the Big Five traits. In the other direction (correlation of trait-level with goal-slope), we found eight significant associations and suggestive evidence for another four (see Supplemental Figures S2 and S3, for a visualization of these results similar to Figures 2 and 3).

Detailed information on level-slope correlations along with other relevant model-estimated associations is provided in Table 3. However, we only discuss results concerning the slope-slope correlations in detail.

### **Multiple Group Models**

Throughout this section, again, we focus on slope-slope associations. Significant  $\chi^2$ -difference tests indicate that changes in the relative importance of a life goal relate differently to changes in a personality trait depending on participants age group, perceived control, gender, and/or educational background. Table 4 provides an overview of the model comparisons that provide (suggestive) evidence for moderator effects. It should be noted that group differences

may also exist regarding level-level and level-slope associations. Therefore, results of the multiple-group LGMs that allowed all associations between the trajectories to vary between groups are provided in the Supplemental Figures S8-S9 and Tables S11-S24.

### *Age*

The series of model comparisons provided evidence for a moderation effect of age on the slope-slope correlation in ten out of 45 goal-trait combinations (see Table 4). For these 10 models, moderation effects are illustrated in Figure 4. Detailed information on the age-specific codevelopmental patterns is found in Supplemental Tables S11-S14.

Broadly summarized, we found three patterns: first, an (inverted) U-shaped pattern, with similar slope-slope associations during midlife and similar associations during early and late adulthood. This concerned the associations between changes in the importance of having children, career success, and self-fulfillment with changes in Conscientiousness as well as between changes in seeing the world/travel and Conscientiousness and Extraversion (see Figure 4, panels A, C, E, F and G). Changes in the importance of having children and changes in Conscientiousness were weakly associated in the two middle-aged groups ( $r_{26-39} = -.198 [-.369; -.026]$ ,  $p = .024$ ;  $r_{40-59} = -.161 [-.313; -.009]$ ,  $p = .037$ ) but not in the youngest and oldest age groups. This means that, on average, middle-aged participants' perceived importance of having children changed in the opposite direction as their Conscientiousness. For younger ( $\leq 25$  at T1) and older ( $\geq 60$  at T1) participants, this was not the case. We found the same U-shaped pattern for the association between changes in the importance of traveling and changes in Conscientiousness (see Figure 4, Panel F).

An inverted U-shaped pattern emerged for the association between changes in the importance of career success and changes in Conscientiousness. In the middle-aged groups, changes in the importance of career success were moderately associated with changes in Conscientiousness ( $r_{26-39} = .339 [.125; .553]$ ,  $p = .002$ ;  $r_{40-59} = .317 [.186; .448]$ ,  $p < .001$ ). In

the youngest age group, the slopes were only weakly associated ( $r=.154 [-.081; .033]$ ,  $p=.165$ ) and in the oldest age group they were unrelated (see Figure 4, panel C).

The second pattern was characterized by a switch in the direction of the slope-slope associations at some point during midlife. This concerned the associations between changes in the importance of being there for others and Openness as well as between changes in the importance of being able to afford things and Neuroticism (see Figure 4, panels B and D). In the two younger age groups ( $\leq 25$  and 26-39 at T1), we found a weak positive association between changes in the importance of being able to afford things. In the two older groups (40-59 and  $\geq 60$ ), we found a weak positive association. Lastly, we found no consistent results for the associations between changes in the importance of being socially/ politically involved and changes in Conscientiousness, Extraversion, and Openness (see Figure 4, panels H, E, and J).

Changes in the importance of these goals were unrelated to changes in Extraversion and Openness in the group of emerging adults ( $\leq 25$  at T1) and weakly related in the group of middle-aged adults (40-59 at T1) but moderately related in the groups of young (26-39 at T1) and older adults ( $\geq 60$ ). Generally, the slope-slope correlation estimates in the youngest age group compared to the older groups were less precise, indicating greater within-group variation. Estimates and 95% confidence intervals of the unconstrained slope-slope correlations by age group are illustrated in Supplemental Figure S8.

### ***Perceived Control***

We found significant group differences between people with high vs. low perceived control scores, as indicated by the improved model fit when freeing the slope-slope associations (see Table 4). This concerned the associations of being there for others and Agreeableness as well as being able to afford things and Extraversion. Changes in the importance of being there for others correlated moderately with changes in Agreeableness in



participants with high perceived control ( $r = .366$  [.141; .591],  $p = .001$ ) but only weakly in participants with low perceived control ( $r = .273$  [.066; .481],  $p = .010$ ).

Changes in the importance of being able to afford things were moderately associated with changes in Extraversion in the low perceived control group ( $r = -.330$  [-.483; -.177],  $p < .001$ ) but not in the high perceived control group ( $r = .040$  [-.133; .193],  $p = .605$ ). The results of the unconstrained models are provided in Supplemental Tables S15-S16.

### ***Gender***

The results of the multi-group LGMs indicate gender effects on the slope-slope association of having a happy marriage/relationship and Conscientiousness as well as being there for others and Openness. In men, but not women, changes in Conscientiousness were weakly associated with changes in the importance of a happy relationship or marriage ( $r_f = .047$  [-.060; .154],  $p = .389$ ;  $r_m = .187$  [.058; .315],  $p = .004$ ). In women, but not men, changes in Openness were negatively associated with changes in the importance of being there for others ( $r_f = -.203$  [-.372; -.034],  $p = .018$ ;  $r_m = .041$  [-.145; .226],  $p = .666$ ). See Tables S17-18 for the unconstrained model results.

### ***Education***

Changes in the importance of being there for others were weakly to moderately associated with changes in Agreeableness and Extraversion, but only for participants with a secondary level of education or higher. On the other hand, changes in the importance of career success were associated with changes in Conscientiousness in the below secondary level of education group and the tertiary level group. We find a weak to moderate positive association between changes in the importance of travel/seeing the world and changes in Openness in participants with at least a secondary level of education ( $r_{\text{medium}} = .205$  [.083; .328],  $p = .001$ ;  $r_{\text{high}} = .314$  [.096; .532],  $p = .005$ ). Generally, the results of the unconstrained models showed weaker slope-slope associations for most goal-trait combinations in the group

with a low educational background compared to the other two groups (see Supplemental Tables S19-S21).

### ***Regional Socialization***

Allowing the slope-slope correlations to vary between participant with different regional socialization did not improve model fit (see Table 4 and Supplemental Tables S22-S23). This means that the association between changes in the importance of life goals and the Big Five traits does not differ significantly between participants socialized in the former GDR and participants socialized in former West Germany. Suggestive evidence indicated that among people who were socialized in the former GDR changes in Conscientiousness were negatively associated with perceived importance of being able to afford things ( $r = -.214 [-.414; -.014]$ ,  $p = .036$ ) whereas this was not the case among people who were socialized in the former West ( $r = .008 [-.121; .137]$ ,  $p = .903$ ).

### **Discussion**

Do changes in life goals and the Big Five traits go hand in hand, as predicted by self-regulation perspectives (Denissen et al., 2013; Hennecke et al., 2014), the unified theory of motivation, personality and development (Dweck, 2017), and the corresponive principle (Roberts & Wood, 2006)? Our preregistered study tested this hypothesis using large-scale, multi-cohort survey data. Across a 13-year period, we found strong support for codevelopment of these two important building blocks of personality. Effect sizes were small to moderate and, thus comparable to those found in earlier studies (Atherton et al., 2021; Bleidorn et al., 2010; Roberts et al., 2004).

Agentic life goals codeveloped with agentic traits and did so more strongly than communal life goals and traits. Specific life goals (e.g., having children) that are closely tied to societal expectations and normative social scripts, codeveloped less strongly, if at all, compared to broader, less scripted life goals that entail different things for different people

(e.g., self-fulfillment). Developmental stage moderated the strength of codevelopment. Consistent with theories that conceptualize age-graded developmental tasks as the scaffolding for development (e.g., Heckhausen et al., 2010; 2019; Hutteman et al., 2014), we found stronger codevelopment in life stages during which life goals converge with normative developmental tasks (e.g., career success in young and middle adulthood). Except for a few isolated effects, perceived control, educational background, gender, and regional socialization did not play a significant role for codevelopment between personality traits and life goals.

### **Codevelopment of Agentic Life Goals and Agentic Personality Traits**

Supporting the self-regulation perspective, the unified theory of motivation, personality and development, the corresposive principle, and consistent with prior research (Atherton et al., 2021; Roberts et al., 2004), agentic life goals with a focus on economic achievement, specifically career success, codeveloped with Conscientiousness and Extraversion (Hypothesis 1). Both traits are predictors of occupational success (Sutin et al., 2009) and have been associated with a higher probability to list career goals in an open question about important life goals (Reisz et al., 2013). Hence, people who perceive career success as increasingly important may also exhibit more conscientious and extraverted behavior (e.g., work late hours and attend networking events) in order to achieve their goal. Conversely, individuals who experience increases in Conscientiousness and Extraversion may also perceive career goals as increasingly important.

Changes in the importance of being able to afford things were negatively associated with changes in Extraversion and unrelated to changes in Conscientiousness. Although this was unexpected, one possible explanation could be the particular item used in our study (i.e., being able to afford things), which may reflect security rather than dominance strivings. Security strivings have been found to be associated with lower Extraversion and unrelated to Conscientiousness (Rocca et al., 2002). Prior studies that found positive associations between

economic achievement goals and the traits Extraversion and Conscientiousness used items that clearly reflect dominance by including words like prestige, wealth, and status (Atherton et al., 2021; Roberts et al., 2004; Stoll et al., 2020). Being able to afford things may also become more important when people are saving for something or have to cut their spending for other reasons. To cut expenses, they may restrict their social life. This reasoning is supported by prior research linking higher personal saving rates to lower Extraversion (Hirsh, 2015).

Our results suggest that agentic life goals with a focus on personal growth codevelop with Extraversion and Openness (Hypothesis 2), once more, supporting the three theoretical perspectives, and prior research (Atherton et al., 2021; Lüdtke et al., 2009; Roberts et al., 2004; Salmela-Aro et al., 2012). The association between self-fulfillment and Openness was the strongest one, not only in our study but also in past research that relied on student samples (Lüdtke et al., 2009, Salmela-Aro et al., 2012). Our results show that the effect cannot purely be attributed to the characteristics of emerging adulthood but holds in an age-diverse sample.

Together with career success and Conscientiousness, the codevelopment of personal growth goals and Openness seems to be the most robust finding across studies. Unlike career and family goals, not only are personal growth goals relatively free from societal expectations, social scripts, and developmental deadlines, but they also can mean different things to different people. They reflect opportunities for self-exploration and realization of personal interests and desires.

Past research suggests that there is little normative change in Extraversion and Openness across most of the adult lifespan (e.g., Specht et al., 2011) but just as much individual difference in change (Schwaba & Bleidorn, 2018). Personal growth goals may explain some of these individual differences. The strong codevelopment of non-normative, unscripted life goals and traits matches the findings of previous studies that found stronger

evidence for the corresponsive principle in less scripted, non-normative life transitions (Neyer et al., 2014). In the absence of social scripts that guide individuals toward the attainment of a life goal, the role of individual difference is enhanced.

The (suggestive) evidence for positive codevelopment of Openness and Extraversion with personal growth goals, and the negative codevelopment of Neuroticism with personal growth goals is also consistent with the framework of self-determination theory (SDT; Ryan & Deci, 2000). SDT distinguishes between intrinsic life goals, like self-fulfillment or personal growth and extrinsic goals like money or status (e.g., Sheldon & Kasser, 2001b). The pursuit of intrinsic life goals is thought to enable the individual to experience autonomy and act in line with their personal values. Importantly, intrinsic goals are theorized to be central to healthy personality development (Niemiec et al., 2010). The “healthy personality” has been described by high Openness, positive emotions (high Extraversion), and low Neuroticism (Bleidorn et al., 2020), traits that we found to codevelop with personal growth goals. Thus, our findings support SDT in that life goals which can be described as intrinsic, codevelop with “healthy traits”.

### **Codevelopment of Communal Life Goals and Communal Personality Traits**

Of the three communal life goals, having children, having a happy relationship or marriage, and being there for others, only being there for others codeveloped with Agreeableness. None of the communal goals codeveloped with Conscientiousness. Thus, Hypothesis 3 has only weak support. However, the effect size for codevelopment of being there for others and Agreeableness was the second largest in our study after self-fulfillment and Openness. Compared to other communal life goals, being there for others is a relatively broad life goal and not tied to a specific developmental phase, which is reflected in its mean-level stability across the lifespan (Buchinger et al., 2022). The stronger codevelopment of relatively abstract life goals and the Big Five matches the findings of prior research. For

instance, in a mobile sensing study abstract behavioral tendencies correlated more strongly with the Big Five than more concrete behaviors (see Stachl et al., 2020 for a mobile sensing example).

Moreover, the goal to be there for others can concern all types of social ties (e.g., friends, co-workers, acquaintances, or relatives) whereas a happy relationship or marriage only concerns the romantic partner. Importantly, patterns of behavior, emotions, and cognition that are characteristic for Agreeableness may not always serve the goal to have a happy relationship/marriage. For instance, prior research found that Agreeableness was associated with relationship satisfaction regarding friends and relatives, but not regarding romantic partners (e.g., Tov et al., 2016). In this study the positive association between Agreeableness and relationship satisfaction was mediated by less frequent negative exchange. Maintaining harmony through down-regulating the expression of negative emotions may be a good strategy in looser, short-term relationships but may be problematic in closer long-term relationships. Lastly, it is important to note that behavior, emotions, and cognition may also develop independently from life goals. For instance, Agreeableness may decline again towards the end of life (Schwaba & Bleidorn, 2019) but happy relationships and, more generally, social integration remain important or even increase in importance (e.g., Carstensen et al., 2003):

Although none of the predicted associations concerning the importance of having a happy relationship or marriage were supported, we found some unexpected effects. Contrary to previous research (Atherton et al., 2021; Bleidorn et al., 2010; Lüdtke et al., 2009; Roberts et al., 2004), increases in the importance of a happy relationship or marriage were associated with increases in Neuroticism. It seems plausible, that the perceived importance of a happy relationship or marriage increases when individuals are unsatisfied with their current relationship (status) and, thus more aware of the discrepancy between their current and their

desired relationship (status). This discrepancy may be frustrating and stressful, translating into increases in Neuroticism. Conversely, the perceived discrepancy may also be induced by increased Neuroticism which is an important predictor of relationship dissatisfaction and dissolution (e.g., Schaffhuser et al., 2014; Solomon & Jackson, 2014).

In line with prior studies (Schwaba et al., 2019; Specht et al., 2011) that found declines in Openness after romantic commitment, we also found a negative association between change in the perceived importance of a happy relationship and change in Openness. When individuals enter a new relationship, they usually focus on their partner, like to spend time with them—and thus do not focus on exploring new things. Yet, it is also possible that increases in Openness are associated with decreases in the importance of a happy relationship. This is consistent with prior studies which found that higher actor/partner Openness predicted relationship dissatisfaction and dissolutions (Solomon & Jackson, 2014). Prior research also found that open people tend to be less committed in relationships compared to their more conventional peers and delay commitment in favor of romantic exploration (Bleidorn & Schwaba, 2017; van Scheppingen et al., 2016). These findings have often been discussed in the context of a stronger need for exploration and unconventionality expressed by open people which may not be met in conventional monogamous relationships.

Applied to our findings which suggest that an increasing focus on happy relationships is accompanied by increasing Neuroticism and decreasing Openness, it may be that people compromise exploration and unconventionality (decreasing Openness) to save a problematic relationship (increasing Neuroticism). Similarly, it is also possible that people who value their relationships more are also more afraid of losing them (increasing Neuroticism) and therefore focus more on spending time with their partner than doing things outside the relationship (decreasing Openness). It would be interesting for future research to investigate the longitudinal associations of perceived importance of a happy romantic relationship, actual

relationship satisfaction, Neuroticism, and Openness. Furthermore, it would be interesting to study these effects in more diverse forms of relationships. Especially among younger cohorts, relationship forms that allow more exploration have become more common and socially acceptable (Hauptert et al., 2017; Rubel & Burleigh, 2020). Generally, these unpredicted findings require replication before strong conclusions can be drawn. In this context, it is also important to note that previous studies used aggregated measures. For instance, the scale to assess relationship goals used in three of the four previous longitudinal studies aggregates “having a happy relationship/marriage,” “having harmonious family relationships,” “having children,” and “making my parents proud.” Hence, an effect on the item-level may still have been present in these studies.

On average, there was no codevelopment between the goal to have children and the Big Five. This finding fits well into the life event literature, which challenges the idea that personality matures through becoming a parent (Asselmann & Specht, 2021; Denissen et al., 2019; van Scheppingen et al., 2016) and will be discussed in the next section. We also found no evidence for the predicted codevelopment between being socially/politically involved and Extraversion (Hypothesis 4). However, we did find that the associations between these goals and the Big Five were significantly moderated by people’s life stage, as discussed in the next section.

### **Codevelopment of Life Goals and the Big Five Across the Lifespan**

Based on prior research that showed more pronounced changes in the Big Five and life goals during young adulthood (Bleidorn, 2015; Salmela-Aro et al., 2007), we predicted stronger codevelopment in younger age groups (Hypothesis 5). Our results suggested a more complex pattern. Codevelopment of the importance of career success and Conscientiousness was stronger during the active career phase (26-59) than during the training (18-25) and (soon-to-be) retired phases (< 60). As for communal life goals, the importance of having



children codeveloped with decreases in Conscientiousness only in age groups for whom raising young children was more likely to be, or to become, part of their daily lives (26-59). It is important to note that, although the age group differences regarding the strength of codevelopment of the importance to have children and Conscientiousness matched theoretical expectations for young adulthood and midlife, their direction did not. Both the goal to have children and Conscientiousness have communal content (Abele et al., 2016; Entringer, Gebauer, et al., 2022) and are hence expected to change in the same direction but instead they changed in opposite directions. One theoretical perspective that is often discussed in the context of parenthood, is the social investment principle (SIP; Roberts & Woods, 2006). It predicts that personality matures (i.e., among others, increases in Conscientiousness) through normative role transitions. Although our study did not investigate the transition to parenthood directly, our results are consistent with prior research that tested the SIP in the context of parenthood (e.g., Asselmann & Specht, 2021; van Scheppingen et al., 2016). These studies also found no support for maturation or even reverse effects. Stressful role transitions like the transition to parenthood, which have often been associated with negative changes in well-being (for a review, see Nelson et al., 2014) and with low initial role competence, pose a shock to the general developmental trend towards maturation. It has been suggested that maturation should only be expected if individuals feel competent in a new social role (Roberts & Davis, 2016). In this light, the negative codevelopment of perceived importance to have children and Conscientiousness in younger adults (26-59) may reflect the process of having to grow into the parent role, whereas the positive codevelopment in older adults ( $\geq 60$ ) may reflect the high role competence individuals have acquired as (grand-) parents.

Being socially/politically involved and Extraversion codeveloped more strongly in the (soon-to-be) retired phase ( $> 60$ ), where resources are freed and can be allocated to the attainment of new or previously postponed goals (e.g., Freund, 2020; Heckhausen et al.,

2019). These findings confirm theory and research that emphasize the close linkage between the importance of life goals and age-graded developmental tasks (e.g., Heckhausen et al., 2001; 2019). Establishing a career and building a family both reflect developmental tasks that are best achieved during young and middle adulthood. Post retirement, trait-specific behaviors that once served the attainment of career success may now serve to make an impact in one's community. The stronger codevelopment of Extraversion and social/political involvement in late adulthood may also reflect changes in time perspective. Extraversion has been shown to predict positive affect and partially mediate the relationship between goals and positive affect (McCabe & Fleeson, 2012). Socioemotional selectivity theory (SST; Carstensen et al., 1999; 2003) posits that goals which reliably elicit positive emotions and enable meaningful interpersonal connections (e.g., social/political involvement) gain importance as we grow older and time perspective becomes increasingly narrow.

To summarize, our findings suggest stronger codevelopment when life goals reflect age-normative developmental tasks. This is consistent with theories of development that highlight the role of changing time perspective (Carstensen et al., 1999; 2003), and changing opportunities, constraints, and developmental tasks (e.g., Freund & Baltes, 2002; Heckhausen et al., 2019; Hutteman et al., 2014) throughout the adult lifespan. Opportunities for personal agency that were once in the work domain may shift to other domains. Our findings may also reflect age-related differences in generativity, the tendency to care for future generations, which increases through middle and late adulthood (McAdams et al., 1993; Sheldon & Kasser, 2001a).

### **Perceived Control, Sex, Educational Background, and Regional Socialization**

We predicted that the codevelopment of life goals and traits is stronger for people with high perceived control compared to people with low perceived control (Hypothesis 6).

Effects of sex, educational background, and regional socialization were investigated in an explorative fashion. To summarize, we found only little evidence for moderation effects.

First, codevelopment was not stronger in people with high versus low perceived control (Hypothesis 6). An exception concerned the codevelopment of being there for others and Agreeableness, which was stronger in individuals with high compared to low perceived control. This effect may be driven by individuals who experience decreases in Agreeableness and their perceived importance of being there for others. Someone with high perceived control may care less about acting in a socially desirable way. Replications with a continuous, or at least a more detailed, assessment of perceived control are required to consolidate these findings.

Second, sex moderated the codevelopment of the perceived importance of being there for others and Openness. In women, but not men, change in the perceived importance of being there for others was negatively associated with change in Openness. A woman who prioritizes being there for others strongly conforms the traditional gender norm. The well-documented negative association between traditionalism and Openness (e.g., Fischer & Boer, 2015; Parks-Leduc et al., 2015; Vecchione et al., 2019) may be one explanation for this finding. Sex also moderated the codevelopment of the perceived importance of traveling and Conscientiousness. In men, but not women, change in the perceived importance of traveling was negatively associated with change in Conscientiousness.

Third, educational background moderated the codevelopment of Conscientiousness with the perceived importance of career success and having children. The higher an individual's educational background, the stronger the association between increases in the perceived importance of career success and increases in Conscientiousness. This finding may reflect fewer opportunities for career advancements and promotion prospects for individuals with a lower educational background. We found the reverse pattern for having children and

Conscientiousness. This may reflect the higher financial burden and restricted access to support (e.g., childcare) that having children entails for families from lower educational backgrounds, which may result in stress and, thus, decreased Conscientiousness.

Lastly, based on the cultural division that is still present in modern, post-unification Germany (Klüsener & Goldstein, 2016; Rensmann, 2019), we speculated that codevelopment of life goals and the Big Five traits differs between East and West Germany. Our results provided no support for this speculation. All investigated moderation effects require replication in order to allow for solid conclusions.

### **Limitations and Future Research Directions**

In closing, we note four limitations of our study, although there may certainly be many more. First, we operationalized traits as the Big Five, which is the most frequently used trait model of personality. Both broader (e.g., the Big Two; Bakan, 1966) and narrower conceptualizations at the level of facets or even nuances (e.g., Möttus et al., 2017) may lead to more insights about links with broader and narrower goal domains, respectively.

Second, our sample included participants who were at least 18 years old. Adolescence is a critical phase for both personality trait development and the formation of life goals (Arnett, 2000; Bleidorn et al., 2022). Although we found the strongest effects in young and middle adulthood, future research using samples of adolescents and children is needed to complement the picture of lifespan changes in life goals and personality traits.

Third, there are limitations to the assessment instruments. Unlike prior research, our study used single-item measures for the assessment of life goals. This was to avoid adding to the heterogeneity of existing multi-item scales. Thus far, there is no agreement regarding the exact number and composition of life goals domains to be included in multi-item scales (for a critical review, see Kiendl & Hennecke, 2022). The lack of coherent measures may also represent a general barrier to more systematic research on the role of life goals in personality

psychology and should be addressed in future studies. Single-item measures can be as stable and valid as multi-item scales (Allen et al., 2022; Mund et al., 2022). Moreover, we follow recommendations to present findings on the item level, especially in developmental research (Möttus & Rozgonjuk, 2021). Still, our study was limited by the list of life goals available in the SOEP, which compared to prior studies, is short. Somewhat related, the test-retest correlations in our study were small compared to other prior studies, which may be due to the single-item measure and some rough reliabilities of the Big Five measure. Hence, it is possible that our study underestimates the true (co-) development of the Big Five and life goals.

Finally, there are limitations to our analytic strategy. We only estimated linear change and did not include more complex forms of development. Moreover, we did not estimate age-graded development but development across the study period. Our analytic strategy required the moderator variables to be categorical, which entailed the formation of relatively broad, yet developmentally meaningful, age groups and a dichotomization of trait perceived control. This solution was chosen to balance loss of information and parsimony.

## **Conclusion**

This study is a large-scale analysis of the lifespan codevelopment of life goals and the Big Five traits, two important building blocks of personality. Consolidating prior research, we found that changes in agentic life goals and traits go hand in hand, with some doing so across the entire adult lifespan. Our findings regarding communal life goals and traits were more ambiguous—neither in line with the corresponive principle, nor the unified theory of motivation, personality and development, nor the maturation principle. Generally, development in broader life goal domains was more strongly connected to personality development across the lifespan, whereas changes in specific goals were more closely tied to trait changes during the normative phase of development.

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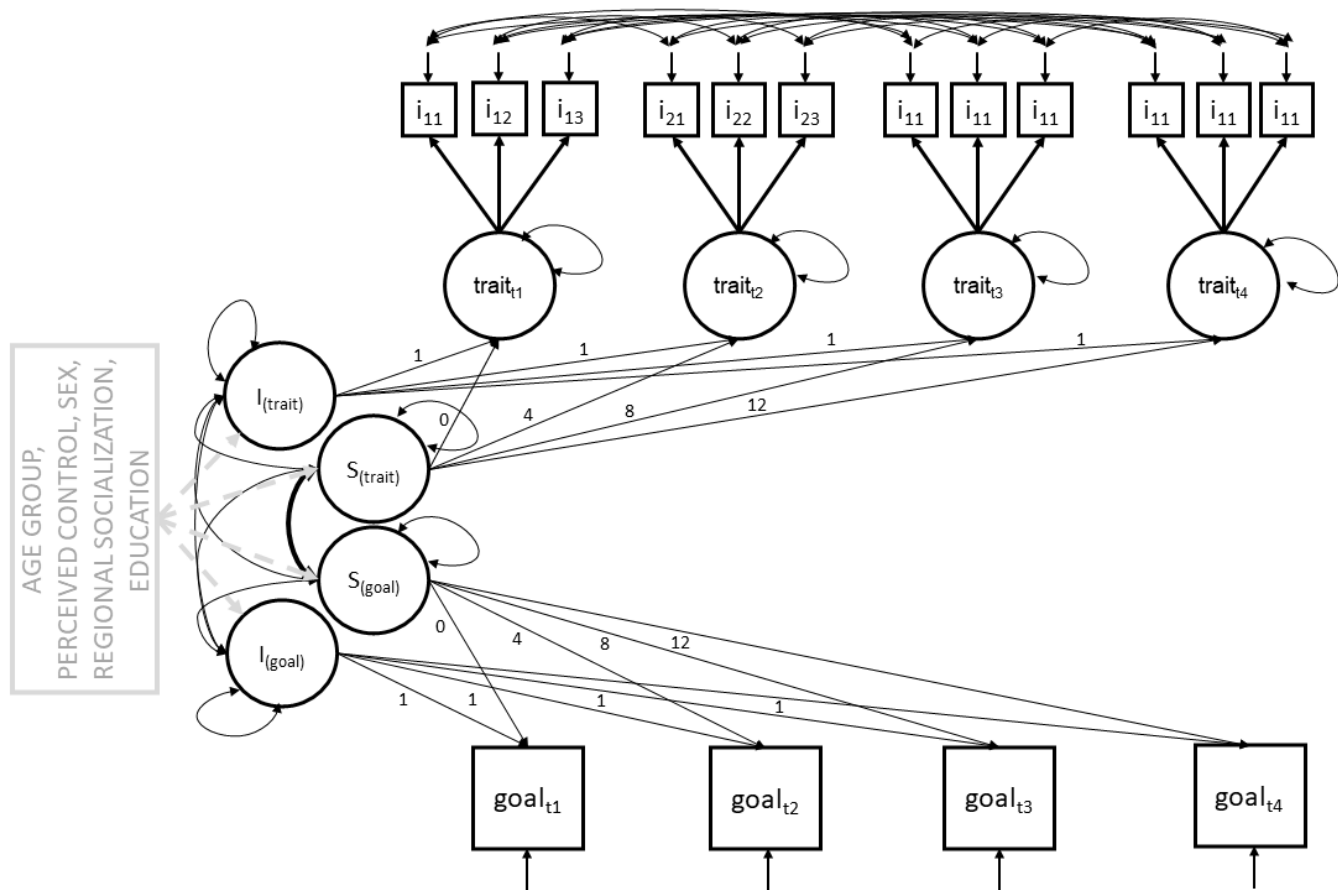
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## Table and Figures

**Figure 1**

*Bivariate Latent Growth Curve Model to Estimate Codevelopment of Life Goals and the Big Five Traits*



*Note.* The bivariate latent growth curve model used to estimate the associations between slopes (S) and intercepts (I) of each one of the five Big Five traits with each one of the nine life goals. Each Big Five trait was measured with three indicators at each point of assessment. Factor loadings, measurement intercepts, and error variances of the same indicator were constrained across the four time points. Residuals of the same indicator were allowed to correlate over time. Each life goal was assessed with a single item. Within each construct the four points of assessment were equally spaced; however, there was a one-year time lag between both time series. Life goal assessments started in 2004, the Big Five trait assessments in 2005.



**Table 1***Test-Retest Correlations and Standardized Mean-Level Change Effect Sizes*

Construct	<i>r</i> (Cohen's <i>d</i> ) year 1 to year 4	<i>r</i> (Cohen's <i>d</i> ) year 4 to year 8	<i>r</i> (Cohen's <i>d</i> ) year 8 to year 12	<i>r</i> (Cohen's <i>d</i> ) year 1 to year 8	<i>r</i> (Cohen's <i>d</i> ) year 1 to year 12	<i>r</i> (Cohen's <i>d</i> ) year 4 to year 12
<b>Big Five Traits</b>						
Agreeableness	.522 (-.14)	.551 (.03)	.571 (-.02)	.482 (-.10)	.453 (-.10)	.503 (.03)
Conscientiousness	.542 (-.10)	.561 (.02)	.580 (-.11)	.480 (-.08)	.442 (-.19)	.512 (-.09)
Extraversion	.637 (-.11)	.664 (.04)	.690 (.03)	.599 (.06)	.567 (.06)	.636 (.03)
Openness	.595 (-.15)	.622 (.11)	.642 (.02)	.553 (.04)	.527 (.04)	.591 (.09)
Neuroticism	.590 (-.10)	.614 (-.04)	.640 (-.02)	.544 (-.13)	.507 (-.13)	.575 (-.03)
<b>Goals (raw)</b>						
Having children	.647 (.06)	.670 (.03)	.703 (.04)	.592 (.03)	.560 (.10)	.633 (.05)
Happy relationship	.494 (-.06)	.513 (-.07)	.561 (-.06)	.382 (-.12)	.396 (-.13)	.475 (-.09)
Being there for others	.361 (-.04)	.395 (.05)	.415 (-.02)	.361 (.02)	.290 (.08)	.343 (.09)
Successful career	.494 (-.16)	.524 (-.11)	.547 (-.14)	.398 (-.22)	.381 (-.30)	.441 (-.21)
Afford things	.397 (-.07)	.429 (-.10)	.469 (-.04)	.373 (-.15)	.339 (-.15)	.386 (-.10)
Owning a house	.622 (-.11)	.673 (-.04)	.683 (-.03)	.546 (-.13)	.528 (-.13)	.624 (-.03)
Self-fulfillment	.466 (-.14)	.471 (.00)	.481 (-.11)	.375 (-.11)	.384 (-.18)	.425 (-.08)
Traveling	.523 (-.14)	.554 (.02)	.599 (-.01)	.481 (-.10)	.440 (-.10)	.514 (.05)
Social/political involvement	.461 (-.25)	.492 (.26)	.528 (.02)	.430 (.01)	.396 (.07)	.473 (.30)
<b>Goals (ipsatized)</b>						
Having children	.648 (.18)	.662 (-.02)	.694 (.09)	.592 (.14)	.554 (.21)	.623 (.06)
Happy relationship	.452 (.06)	.464 (-.07)	.513 (-.02)	.382 (-.02)	.340 (-.05)	.419 (-.08)
Being there for others	.381 (.09)	.428 (.05)	.448 (.02)	.361 (.14)	.318 (.19)	.385 (.10)
Successful career	.464 (-.06)	.481 (-.12)	.490 (-.12)	.398 (-.16)	.325 (-.26)	.387 (-.23)
Afford things	.406 (.05)	.437 (-.10)	.480 (.01)	.367 (-.05)	.358 (-.07)	.392 (-.09)
Owning a house	.609 (-.02)	.654 (-.03)	.661 (.01)	.546 (-.06)	.509 (-.07)	.600 (-.03)
Self-fulfillment	.453 (-.04)	.431 (.01)	.435 (-.08)	.375 (-.02)	.392 (-.11)	.387 (-.09)
Traveling	.525 (-.05)	.542 (.03)	.577 (.04)	.481 (-.02)	.431 (.03)	.492 (.06)
Social/political involvement	.453 (-.17)	.494 (.27)	.528 (.08)	.430 (.09)	.384 (.17)	.468 (.33)

*Note.* Values are not corrected for measurement error. We used the raw scale scores and ipsatized scores for the life goal assessments to compute test-retest correlations and Cohen's *d* effect sizes.

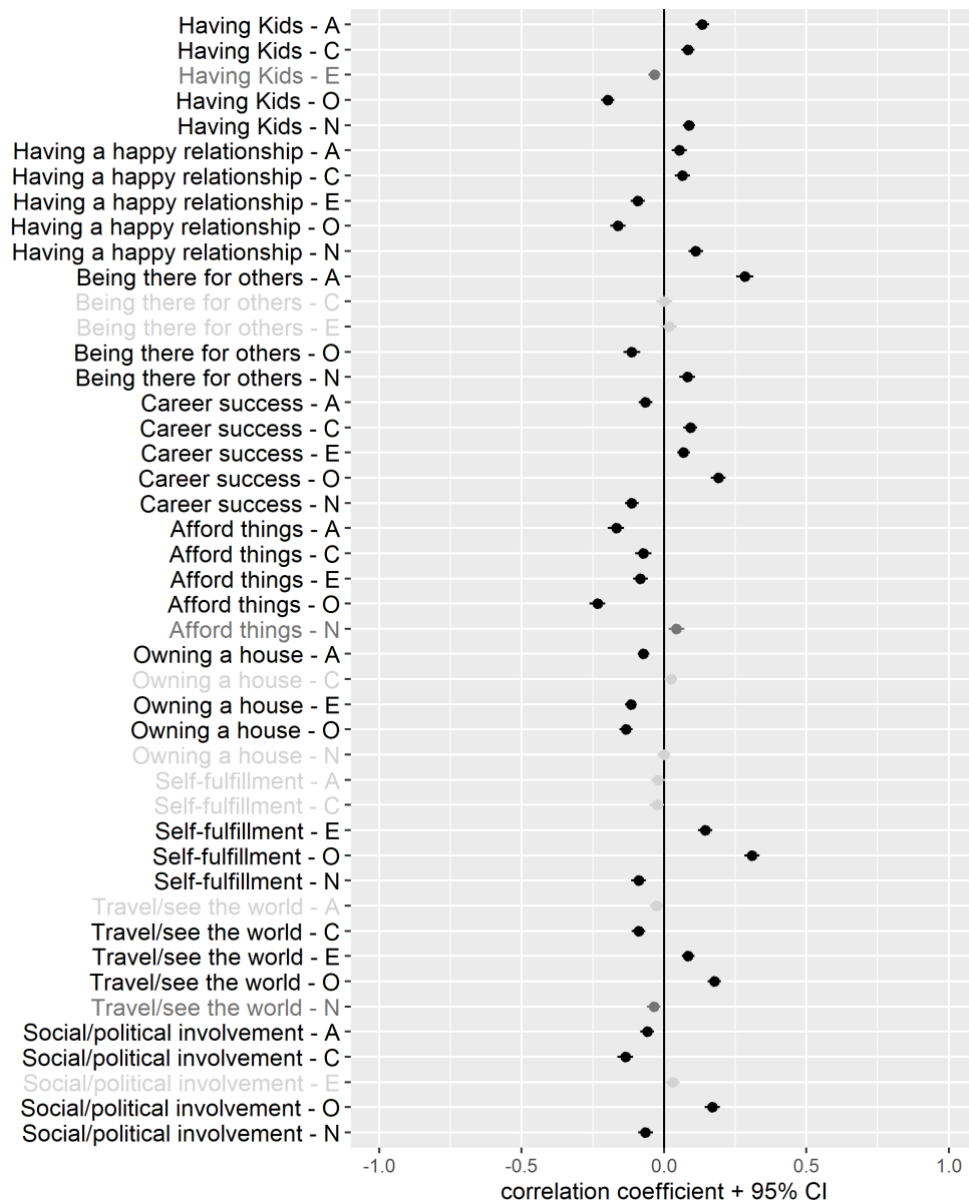
**Table 2***Unstandardized Slope Estimates and 95% Confidence Interval of the Univariate Latent Growth Curve Models*

Construct (sample size)	Full sample	Unstandardized mean slope estimate [95% CI]			
		Emerging adults ( $\leq 25$ )	Young adults (26-39)	Middle aged (40-59)	Older adults ( $\geq 60$ )
<b>Big Five</b> ( $47,243 \leq N \leq 47,270$ )					
Agreeableness	0.001 [0.000; 0.003]	0.009 [0.005; 0.012]	0.003 [0.000; 0.006]	-0.001 [-0.004; 0.001]	-0.002 [-0.006; 0.001]
Conscientiousness	-0.012 [-0.013; -0.010]	0.018 [0.015; 0.022]	-0.006 [-0.008; -0.003]	-0.018 [-0.020; -0.016]	-0.026 [-0.029; -0.022]
Extraversion	0.002 [0.001; 0.004]	0.000 [-0.003; 0.003]	0.004 [0.001; 0.006]	-0.001 [-0.003; 0.002]	-0.003 [-0.006; 0.000]
Openness	0.009 [0.008; 0.011]	0.002 [-0.002; 0.006]	0.008 [0.005; 0.011]	0.007 [0.005; 0.010]	0.002 [0.001; 0.003]
Neuroticism	-0.008 [-0.009; -0.006]	0.004 [0.001; 0.008]	-0.007 [-0.010; -0.004]	-0.011 [-0.013; -0.008]	-0.014 [-0.017; -0.010]
<b>Life Goals</b> ( $45,746 \leq N \leq 46,763$ )					
Having Children	0.010 [0.010; 0.011]	0.033 [0.031; 0.036]	0.013 [0.012; 0.015]	0.001 [0.001; 0.001]	0.011 [0.009; 0.013]
Happy relationship/marriage	-0.006 [-0.006; -0.005]	0.007 [0.005; 0.009]	-0.004 [-0.005; -0.002]	-0.007 [-0.008; -0.005]	-0.010 [-0.012; -0.008]
Being there for others	0.009 [0.008; 0.010]	0.005 [0.004; 0.007]	0.010 [0.008; 0.011]	0.012 [0.011; 0.013]	0.008 [0.006; 0.010]
Career success	-0.011 [-0.012; -0.010]	-0.026 [-0.027; -0.024]	-0.015 [-0.016; -0.013]	-0.023 [-0.024; -0.021]	-0.010 [-0.013; 0.007]
Afford things	-0.009 [-0.010; -0.008]	-0.017 [-0.018; -0.015]	-0.013 [-0.015; -0.012]	-0.006 [-0.007; -0.005]	-0.004 [-0.006; -0.002]
Owning a house	-0.006 [-0.007; -0.005]	0.004 [0.001; 0.007]	-0.002 [-0.004; 0.000]	-0.008 [-0.009; -0.006]	-0.008 [-0.010; -0.006]
Self-fulfillment	-0.002 [-0.003; -0.001]	-0.017 [-0.019; -0.015]	-0.010 [-0.011; -0.008]	-0.002 [-0.003; -0.001]	-0.001 [0.000; 0.001]
Travel/see the world	0.002 [0.001; 0.003]	0.000 [-0.002; 0.003]	0.004 [0.002; 0.006]	0.005 [0.004; 0.007]	-0.008 [-0.010; -0.006]
Social/political involvement	0.012 [0.011; 0.013]	0.008 [0.005; 0.010]	0.014 [0.015; 0.017]	0.018 [0.016; 0.019]	0.015 [0.013; 0.018]

*Note.* For the univariate LGMs we included all individuals who answered the relevant life goal item/provided data regarding the relevant Big Five trait in at least one of the four relevant survey waves. CI = confidence interval; LGM = latent growth curve model.

**Figure 2**

*Model Estimated Level-Level Associations of Life Goals and the Big Five Traits (Full Sample)*



*Note.* This figure summarizes the level-level associations of the 45 bivariate LGMs. On the y-axis: A = Agreeableness; C = Conscientiousness; E = Extraversion; O = Openness; N = Neuroticism. Significant correlations ( $p < .001$ ) are displayed in black. Dark grey represents suggestive evidence for a level-level correlation ( $.001 < p < .01$ ). Associations in light grey were not significant ( $p > .01$ ). CI = confidence interval; LGM = latent growth curve model.

**Table 3***Model Estimated Associations Between Levels and Slopes of Life Goals and Personality Traits in the Full Sample*

Association	$r_{\text{level,level}}$	95%-CI	$p$	$r_{\text{slope,slope}}$	95%-CI	$p$	$r_{\text{level,slope}}$ (trait,goal)	95%-CI	$p$	$r_{\text{level,slope}}$ (goal,trait)	95%-CI	$p$
<b>Having children</b>												
Agreeableness	.135	[.111; .159]	<.001	.131	[.029; .233]	.012	-.027	[-.073; .018]	.241	-.087	[-.144; -.031]	.002
Conscientiousness	.085	[.061; .108]	<.001	.016	[-.066; .097]	.702	-.010	[-.058; .038]	.681	-.038	[-.082; .007]	.094
Extraversion	-.033	[-.054; -.012]	.002	-.025	[-.108; .058]	.562	.017	[-.025; .060]	.428	.037	[-.008; .082]	.110
Openness	-.197	[-.220; -.175]	<.001	-.139	[-.235; -.042]	.005	.033	[-.014; .079]	.173	.072	[.020; .125]	.007
Neuroticism	.088	[.066; .110]	<.001	.053	[-.036; .141]	.241	-.050	[-.095; -.005]	.028	-.074	[-.123; -.024]	.004
<b>Having a happy relationship</b>												
Agreeableness	.054	[.028; .080]	<.001	-.009	[-.103; .084]	.844	-.051	[-.094; -.009]	.019	.010	[-.053; .074]	.753
Conscientiousness	.065	[.037; .092]	<.001	.100	[.018; .182]	.016	-.081	[-.127; -.036]	<.001	-.025	[-.081; .030]	.371
Extraversion	-.092	[-.117; -.068]	<.001	-.127	[-.208; -.046]	.002	.051	[.0110; .091]	.012	.070	[.014; .125]	.014
Openness	-.162	[-.189; -.135]	<.001	-.205	[-.300; -.110]	<.001	.112	[.067; .158]	<.001	.087	[.025; .149]	.006
Neuroticism	.111	[.086; .137]	<.001	.163	[.076; .251]	<.001	-.099	[-.141; -.057]	<.001	-.097	[-.157; -.037]	.001
<b>Being there for others</b>												
Agreeableness	.284	[.253; .314]	<.001	.300	[.143; .457]	<.001	-.041	[-.105; .022]	.201	-.124	[-.200; -.048]	.001
Conscientiousness	.001	[-.027; .029]	.924	-.068	[-.176; .040]	.217	.053	[-.010; .116]	.102	.041	[-.015; .098]	.152
Extraversion	.018	[-.009; .045]	.195	-.006	[-.118; .106]	.913	.050	[-.008; .108]	.089	.019	[-.041; .079]	.541
Openness	-.113	[-.143; -.084]	<.001	-.086	[-.212; .040]	.180	.108	[.043; .172]	.001	.051	[-.014; .117]	.124
Neuroticism	.082	[.054; .109]	<.001	-.003	[-.124; .118]	.962	.033	[-.027; .094]	.281	-.009	[-.072; .055]	.785
<b>Career success</b>												
Agreeableness	-.065	[-.089; -.04]	<.001	.029	[-.057; .115]	.513	.016	[-.023; .055]	.432	.010	[-.048; .069]	.726
Conscientiousness	.093	[.068; .117]	<.001	.145	[.072; .218]	<.001	-.089	[-.130; -.047]	<.001	.051	[.001; .101]	.047
Extraversion	.069	[.046; .091]	<.001	.096	[.023; .168]	.009	-.039	[-.076; -.002]	.037	-.023	[-.073; .028]	.379
Openness	.191	[.165; .217]	<.001	.049	[-.032; .131]	.234	-.106	[-.147; -.065]	<.001	.000	[-.057; .058]	.990
Neuroticism	-.113	[-.137; -.089]	<.001	-.036	[-.115; .043]	.368	.057	[.017; .097]	.005	.053	[-.002; .108]	.057

Table 3 (continued)

Association	$r_{\text{level,level}}$	95%-CI	$p$	$r_{\text{slope,slope}}$	95%-CI	$p$	$r_{\text{level,slope}}$ (trait,goal)	95%-CI	$p$	$r_{\text{level,slope}}$ (goal,trait)	95%-CI	$p$
<b>Afford things</b>												
Agreeableness	-.168	[-.197; -.140]	<.001	-.256	[-.399; -.113]	<.001	.110	[.048; .171]	<.001	.077	[.008; .146]	.028
Conscientiousness	-.073	[-.102; -.045]	<.001	-.051	[-.157; .055]	.344	.043	[-.019; .106]	.176	.032	[-.023; .088]	.257
Extraversion	-.083	[-.109; -.056]	<.001	-.168	[-.279; -.058]	.003	.036	[-.020; .091]	.211	.025	[-.032; .083]	.389
Openness	-.234	[-.262; -.206]	<.001	-.228	[-.357; -.099]	.001	.005	[-.058; .068]	.887	.091	[.027; .155]	.005
Neuroticism	.044	[.017; .071]	.002	-.027	[-.145; .090]	.649	.056	[-.004; .116]	.068	.086	[.024; .149]	.007
<b>Own a house</b>												
Agreeableness	-.072	[-.093; -.051]	<.001	-.074	[-.168; .020]	.121	-.006	[-.049; .036]	.766	.015	[-.037; .067]	.581
Conscientiousness	.025	[.002; .047]	.029	-.087	[-.166; -.008]	.031	.032	[-.015; .079]	.180	-.030	[-.073; .014]	.184
Extraversion	-.116	[-.137; -.096]	<.001	-.168	[-.205; -.086]	<.001	.076	[.034; .117]	<.001	.068	[.021; .114]	.004
Openness	-.134	[-.157; -.111]	<.001	-.092	[-.184; .000]	.050	.040	[-.006; .086]	.088	.007	[-.044; .058]	.794
Neuroticism	.000	[-.022; .022]	.993	-.002	[-.087; .083]	.965	-.046	[-.089; -.002]	.039	-.020	[-.068; .028]	.413
<b>Self-fulfillment</b>												
Agreeableness	-.021	[-.046; .004]	.099	-.120	[-.246; .006]	.063	.020	[-.036; .075]	.491	.074	[.011; .137]	.022
Conscientiousness	-.025	[-.051; .001]	.057	.010	[-.095; .115]	.851	-.020	[-.080; .039]	.497	.091	[.038; .143]	.001
Extraversion	.145	[.120; .170]	<.001	.170	[.061; .278]	.002	-.095	[-.149; -.041]	.001	-.081	[-.135; -.026]	.004
Openness	.308	[.282; .335]	<.001	.366	[.231; .502]	<.001	-.129	[-.189; -.069]	<.001	-.101	[-.163; -.038]	.002
Neuroticism	-.089	[-.115; -.063]	<.001	-.185	[-.299; -.070]	.002	.083	[.027; .140]	.004	.111	[.052; .170]	<.001
<b>Travel/see the world</b>												
Agreeableness	-.027	[-.05; -.004]	.022	.002	[-.099; .103]	.967	-.034	[-.080; .012]	.143	.043	[-.015; .100]	.145
Conscientiousness	-.089	[-.113; -.065]	<.001	-.041	[-.125; .043]	.338	.021	[-.028; .070]	.398	.002	[-.046; .050]	.941
Extraversion	.084	[.062; .107]	<.001	.107	[.020; .193]	.016	-.049	[-.093; -.005]	.028	-.052	[-.101; -.002]	.041
Openness	.177	[.153; .201]	<.001	.220	[.119; .321]	<.001	-.055	[-.104; -.007]	.026	-.115	[-.172; -.059]	<.001
Neuroticism	-.036	[-.061; -.012]	.004	-.008	[-.100; .085]	.873	.004	[-.043; .050]	.877	.016	[-.037; .069]	.550

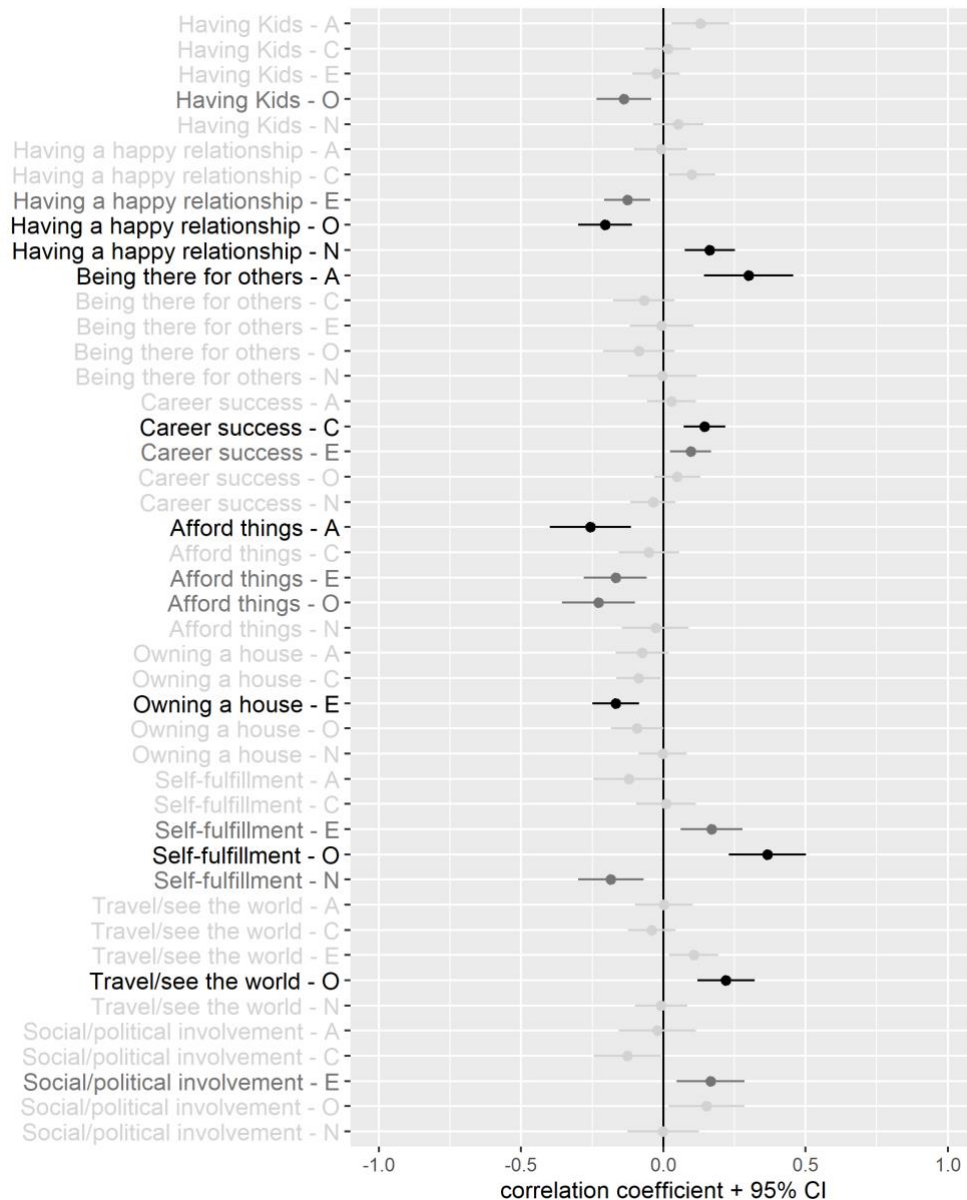
**Table 3** (continued)

<b>Association</b>	$r_{\text{level,level}}$	95%-CI	$p$	$r_{\text{slope,slope}}$	95%-CI	$p$	$r_{\text{level,slope}}$ (trait,goal)	95%-CI	$p$	$r_{\text{level,slope}}$ (goal,trait)	95%-CI	$p$
<b>Social/political involvement</b>												
Agreeableness	-.059	[-.084; -.035]	<.001	-.021	[-.156; .114]	.765	.049	[-.014; .111]	.127	.008	[-.054; .071]	.794
Conscientiousness	-.136	[-.163; -.109]	<.001	-.126	[-.243; -.009]	.034	.088	[.018; .158]	.014	-.041	[-.093; .010]	.116
Extraversion	.031	[.006; .055]	.014	.167	[.047; .286]	.006	-.068	[-.128; -.008]	.026	-.081	[-.135; -.027]	.003
Openness	.169	[.143; .196]	<.001	.152	[.019; .285]	.025	.018	[-.048; .085]	.587	-.075	[-.136; -.015]	.015
Neuroticism	-.065	[-.091; -.039]	<.001	-.001	[-.127; .125]	.985	.024	[-.038; .087]	.447	-.025	[-.083; .034]	.405

*Note.* CI = confidence interval.

**Figure 3**

*Model Estimated Slope-Slope Associations of Life Goals and the Big Five Traits (Full Sample)*



*Note.* This figure summarizes the slope-slope correlation parameters of the 45 bivariate LGMs. On the y-axis: A = Agreeableness; C = Conscientiousness; E = Extraversion; O = Openness; N = Neuroticism. Associations in black represent evidence for codevelopment ( $p < .001$ ). Associations in dark grey represent suggestive evidence for codevelopment ( $.001 < p < .01$ ). Associations in light grey were not significant ( $p > .01$ ). CI = confidence interval; LGM = latent growth curve model.

**Table 4***Model Comparisons That Provide (Suggestive) Evidence for Moderation Effects*

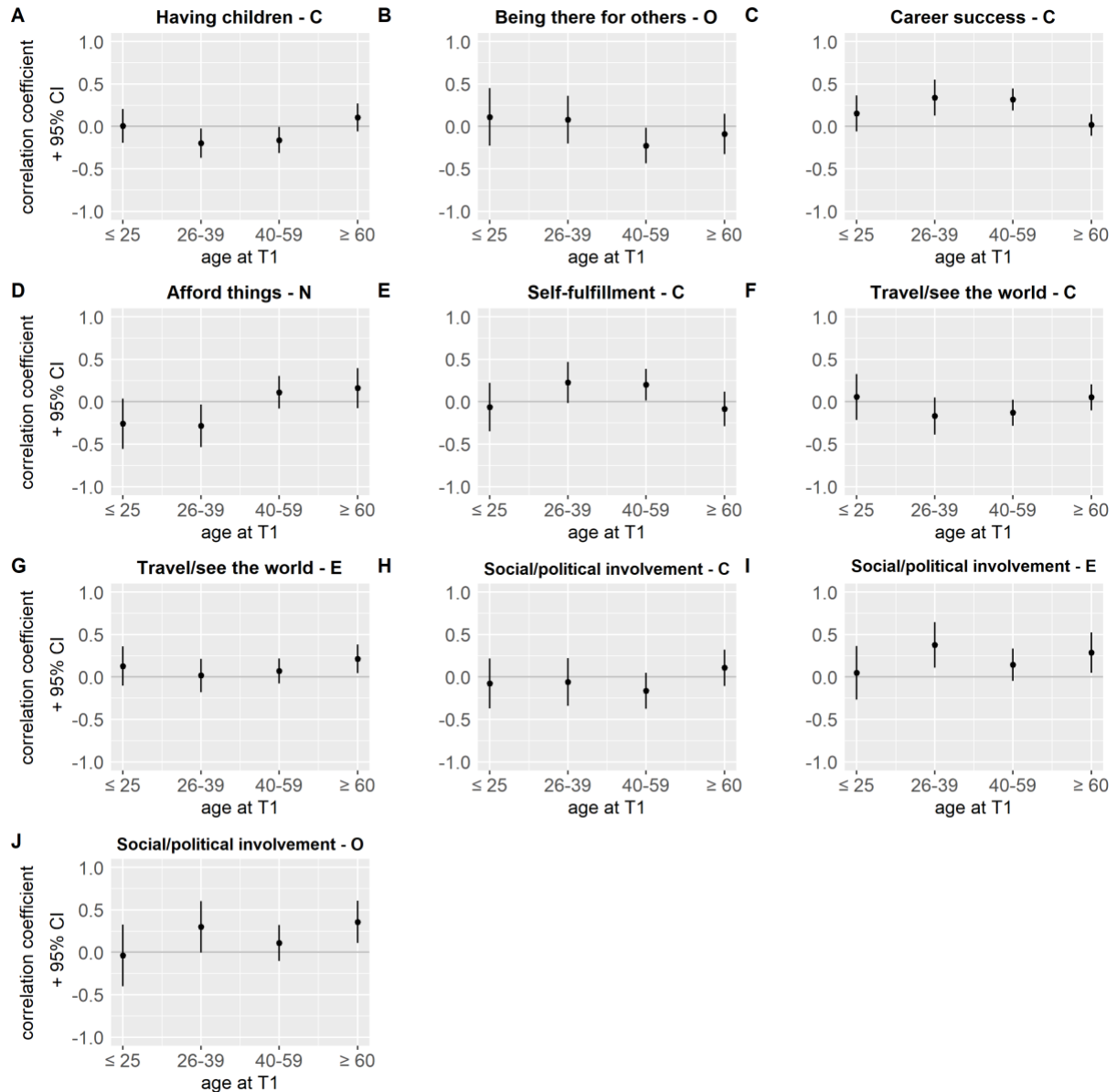
Moderator	Association	BIC <sub>free</sub>	BIC <sub>constrained</sub>	Chi <sup>2</sup> <sub>diff</sub>	df	p
<b>Age group</b>						
	Having children – C	1113366	1113400	52.87	3	<.001
	Having children – E	1190864	1190858	16.27	3	.001
	Happy marriage/relationship – O	1213277	1213271	14.60	3	.002
	Being there for others – O	1201244	1201246	23.89	3	<.001
	Career success – C	1097176	1097210	53.41	3	<.001
	Afford things – C	1075718	1075708	13.35	3	.004
	Afford things – N	1233724	1233718	16.56	3	<.001
	Own a house – O	1267502	1267492	12.19	3	.007
	Self-fulfillment – C	1089253	1089250	18.47	3	<.001
	Travel – C	1115885	1115882	19.04	3	<.001
	Travel – E	1193320	1193319	21.10	3	<.001
	Travel – O	1247716	1247709	15.43	3	.001
	Social/political involvement – C	1109441	1109448	28.82	3	<.001
	Social/political involvement – E	1187237	1267867	25.86	3	<.001
	Social/political involvement – O	1241373	1241368	17.02	3	<.001
<b>Perceived control</b>						
	Being there for others – A	954827	954832	11.03	1	<.001
	Being there for others – O	1010215	1010217	8.82	1	.003
	Afford things – E	965168	965174	12.46	1	<.001
	Travel – A	997832	997835	10.20	1	.001
<b>Sex</b>						
	Having children – C	1050832	1050834	8.91	1	.003
	Happy relationship/marriage – C	1015956	1015958	7.77	1	.005
	Being there for others – O	1133272	1133277	11.73	1	<.001
	Owning a house – C	1069771	1069772	8.01	1	.005
	Self-fulfillment – C	1027134	1027137	10.27	1	.001
	Travel – C	1050484	1050489	12.16	1	<.001
	Social/political involvement – N	1200151	1200155	10.09	1	.001
<b>Educational background</b>						
	Having children – C	1073769	1073770	15.28	2	<.001
	Having children – O	1204483	1204481	12.04	2	.002
	Being there for others – A	1095314	1095313	13.35	2	.001
	Being there for others – E	1101801	1101796	9.40	2	.009
	Career success – C	1061841	1061841	14.45	2	<.001
	Career success – O	1192906	1192903	12.41	2	.002
	Travel – O	1203139	1203134	10.13	2	.006
<b>Regional socialization</b>						
	Having children – C	869470	869471	7.97	1	.005
	Happy marriage/relationship – C	842189	842189	6.91	1	.009
	Afford things – C	835651	835652	7.63	1	.006



*Note.* A = Agreeableness; C = Conscientiousness; E = Extraversion; O = Openness; N = Neuroticism; BIC = Bayesian information criterion.

**Figure 4**

*Model Estimated Slope-Slope Correlations for the Goal-Trait Combinations Where  $\chi^2$ -Difference Tests Indicated (Suggestive) Evidence for Age Group Differences*



*Note.* Illustrated are age-group specific slope-slope correlation parameters and 95% confidence intervals. A = Agreeableness; C = Conscientiousness; E = Extraversion; O = Openness; N = Neuroticism; CI = confidence interval.