

Child and Adolescent Predictors of Personality in Early Adulthood

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### Abstract

This study investigated development of the Big Five personality traits from early childhood into adulthood. An initial group of 137 Swedish children were assessed eight times between ages 2 and 29 years. Initial decreases in extraversion levelled off in early adulthood; agreeableness and conscientiousness increased from age 2 to 29; neuroticism initially increased, levelled off in later childhood and adolescence, and decreased throughout early adulthood; while openness to experience showed an initial increase, then decreased and levelled off in early adulthood. Individual developmental trajectories varied significantly, particularly in relation to gender. Personality traits became increasingly stable, and the fact that childhood scores predicted scores in adulthood indicated that personalities are fairly stable across this portion of the life span.

*Key words.* Personality development, Big Five personality traits, Early adulthood, Childhood, Adolescence, Longitudinal analyses

### Child and Adolescent Predictors of Personality in Early Adulthood

The transition to adulthood is increasingly delayed in industrial and postindustrial societies (Arnett, 1998, 2006; Shanahan, 2000), with many individuals undergoing significant transitions that make changes in personality likely during the twenties (Robins, Fraley, Roberts, & Trzesniewsky, 2001; Roberts, Wood, & Caspi, 2008). The Five-Factor model (FFM) of personality is commonly used to describe individual differences in personality (McCrae & Costa, 2008; John, Naumann, & Soto, 2008), but few researchers have followed the same individuals from early childhood to adulthood, despite Shiner's (2006) argument that such research is essential in order to understand personality across the lifespan. This was the first study to examine how the personality development of men and women in early adulthood was related to personality in childhood and adolescence.

### **Personality Development in Childhood**

Individual differences among children are apparent early and are related to many aspects of later development, including health, occupational and educational achievements, and social relationships (Ozer & Benet-Martinez, 2006; Shiner & Caspi, 2003; Wilson, Schalet, Hicks, & Zucker, 2013). There is a growing consensus that the FFM applies to both children and adults (Asendorpf & Van Aken, 2003; Hampson & Goldberg, 2006; John, Caspi, Robins, Moffit, & Stouthamer-Loeber, 1994; Lamb, Chuang, Wessels, Broberg, & Hwang, 2002; Shiner & Caspi, 2003; Soto, John, Gosling, & Potter, 2008), even though the traits may be less distinctive in early childhood than they are later (Wilson et al., 2013). Personality traits are already quite stable in early childhood, but their stability increases with age (Roberts & DelVecchio, 2000).

Developmental trends may differ depending on both age and context (Bates, Schermerhorn, & Goodnight, 2010; Lamb et al., 2002), raising questions about how developmental changes in adulthood are related to personality at previous ages. By including

personality ratings in childhood, a phase that is rarely included in studies of lifespan personality development (e.g., Allemand, Zimprich, & Hendriks, 2008; Lehman, Denissen, Allemand, & Penke, 2013; Roberts, Walton, & Viechtbauer, 2006), as well as adolescence and adulthood, we were able to study child and adolescent predictors of early adult personality and to put the associations between personality traits and psychosocial functioning into a broader developmental context.

### **Personality Development in Adolescence and the Emergence of Gender Differences**

Adolescence is considered a key period for personality change (Soto, John, Gosling, & Potter, 2011) and for the emergence of gender differences in personality (Klimstra, Hale III, Raaijmakers, Branje, & Meeus, 2009; McCrae et al., 2002; Soto et al., 2011). For example, in a large-scale cross-sectional study mostly involving US participants, Soto et al. (2011) found that girls became more neurotic from childhood to adolescence (neuroticism decreased from early adulthood to middle age), whereas boys' neuroticism decreased from childhood to middle age. In a study of Dutch adolescents, Klimstra et al. (2009) found that girls were more neurotic and conscientious than boys throughout adolescence and that initially higher levels and faster increases in agreeableness for girls disappeared by the end of adolescence. However, Lamb et al. (2002) found no gender differences on any of the traits from ages 2 to 15. These similarities between boys and girls were somewhat surprising and one goal of the present study was to determine whether gender differences in the same cohort emerged after age 15. Sweden, where this study was performed, is widely recognized for high levels of gender equality (World Economic Forum, 2013) and may thus foster patterns of development for males and females that differ from those evident in other countries.

### **Personality Development in Early Adulthood**

Although normative trends across childhood and adolescence have not been delineated with any consistency (Bates et al., 2010), personality development largely follows the same

trends in early adulthood and later parts of the life-span (e.g., Allemand et al., 2008; Lehman et al., 2013; Roberts et al., 2006; Soto et al., 2011): Conscientiousness appears to increase and neuroticism to decrease (Roberts et al., 2006; Robins et al., 2001; Vaidya, Gray, Haig, Mroczek, & Watson., 2008). Some studies point towards no change (Robins et al., 2001) and some towards increases (Vaydia et al., 2008) in extraversion, while agreeableness appear to be the most stable trait (Roberts et al., 2006) albeit with occasional slight increases in early adulthood (Robins et al., 2001; Vaydia et al., 2008). Openness to experience also tends to increase in early adulthood (Robins et al., 2001; Vaydia et al., 2008). Because lifespan studies of personality development usually start in late childhood or adolescence, many questions remain concerning the associations between, and development of, personality traits in other phases. For example, do different developmental demands in childhood and early adulthood produce different mean levels and developmental trajectories?

### **The Present Study**

This study expanded upon Lamb et al.'s (2002) study of personality development from age 2 to 15 by assessing the same participants at 21, 25, and 29 years of age. From age 2 to 15, agreeableness and conscientiousness increased, extraversion decreased, neuroticism initially increased then levelled off, and openness to experience first increased then decreased. Three specific research questions and hypotheses guided the present study:

1. How are personality traits in childhood, adolescence, and early adulthood related?

Informed by previous research on rank-order stability (Roberts & DelVecchio, 2000) we expected to find that child and adolescent scores predicted personality traits in early adulthood and that rank-order stability would increase with age.

2. How do personality traits develop in early adulthood and does this differ for males and females? We expected agreeableness, conscientiousness, and openness to experience to increase and neuroticism to decrease in early adulthood (Roberts et al., 2006; Robins et al.,

2001; Vaydia et al., 2008) but could offer no hypotheses with respect to extraversion. Gender differences often emerge in adolescence (e.g., Soto et al., 2011), although there were no gender differences when these participants were assessed in childhood and adolescence. We predicted that gender differences would emerge after age 15, although they might be quite muted due to the gender-equitable Swedish context.

3. Is personality development from early childhood best described by linear or curvilinear developmental trajectories? We expected conscientiousness and agreeableness to increase across the whole period, while predicting that the increases in neuroticism and decreases in extraversion observed between ages 2 and 15 would flatten or change directions so that neuroticism started to decrease and extraversion to increase in early adulthood (Roberts et al., 2006; Robins et al., 2001; Vaydia et al., 2008). Previous findings concerning openness to experience (e.g., Bates et al., 2010) were not consistent and we therefore did not formulate any hypotheses concerning the associated trajectories. We also expected to find individual variations in developmental trajectories, such that people differed, not only with respect to their scores, but also with respect to changes over time.

## Method

### Participants

The Gothenburg (Sweden) Longitudinal study of Development started in 1982 with 144 children aged between 1 and 2 years. The participants came from a variety of socioeconomic backgrounds and were firstborn children whose parents lived together. In the first wave included in this study (which was the second time the families were studied, here referred to as Wave 1) 137 children participated (68 girls, 69 boys,  $M_{age} = 2.3$  years,  $SD = 0.26$ ). In the latest wave (Wave 8), the average age of the remaining 124 participants was 29.3 years. Wave 4 had the lowest retention rate ( $N = 108$ ,  $M_{age} = 8.4$ ). (For the number of participants, mean ages, and attrition at each wave see supporting information, Table 1).

There were no differences between those who participated in all waves and those who did not with regard to either gender or initial levels of any of the Big Five traits.

### **Measures**

**The Big Five Inventory (BFI).** A Swedish version (Zakrisson, 2010) of the Big Five Inventory (John et al., 2008) was used in Wave 8 (age 29). The questionnaire has 44 items designed to capture core aspects of each of the Big Five traits. Participants rate phrases on a 5-point scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). John et al. (2008) reported internal consistencies (Cronbach's Alpha) ranging from .79 for the agreeableness scale to .87 for the neuroticism scale. In the present study the internal consistencies were: .85 for extraversion, .76 for agreeableness, .77 for conscientiousness, .80 for neuroticism, and .82 for openness to experience.

**The California Child Q-set (CCQ).** The California Child Q-set (Block & Block, 1980) was used to study the participants' personalities in all waves. The CCQ includes indicators of characteristic behaviors, emotions, and cognitions and yields a comprehensive measure of individual differences in personality as described by parents or teachers at early ages (Wilson et al. 2013) and by participants themselves at older ages. The measure involves 100 cards with personality descriptors written on them. The informant places each card in one of nine categories ranging from 1 = *least descriptive*, to 9 = *most descriptive*. 11 cards are placed in each category, except the middle category (5 = *neither descriptive nor non-descriptive*) in which 12 cards are placed. The items were translated from English into Swedish and back-translated to make sure that their meaning had not been changed by translation.

In the first five waves, trained members of the research staff visited the participants' homes and the mothers described the participants using the CCQ. Starting at age 21 (wave 6) the participants completed the CCQ themselves. In the last three waves, the same Q-set was

used as in Wave 1-5 although a few items were reworded. For example, item 30: “Tends to arouse liking and acceptance in adults” was changed to “Tends to arouse liking and acceptance in others”.

On the basis of the California Child Q-set, John et al. (1994) defined Big Five scale scores (for lists of the items on all scales, see supporting information, Table 2) with internal consistencies (Cronbach’s Alpha) ranging from .53 for the openness scale to .83 for the agreeableness scale. In this study, we used the scales described by John et al. to maximize our ability to compare findings with the results of other studies. Reliabilities for Waves 1-5 were presented by Lamb et al. (2002). At Waves 6-8 Alphas ranged from .69 to .75 for extraversion, .70 to .72 for agreeableness, .40 to .51 for conscientiousness, .79 to .80 for neuroticism, and .40 to .49 for openness to experience (see supporting information, Table 2). The reliabilities for the conscientiousness and openness to experience scales were consistently moderate to low so analyses involving these scales should be interpreted with caution.

The external validity of the CCQ-derived Big Five scales was evident in associations between scores on these scales and both mothers’ and teachers’ ratings of the children’s school adjustment, school performance, and cognitive abilities at eight years of age (Wave 4, Lamb et al., 2002) and between the CCQ scales and judgments and behavioral observations of children’s aggressiveness, inhibition, IQ, and cognitive self-esteem throughout childhood (ages 4 to 10, Asendorpf & Van Aken, 2003). Correlations between the CCQ-derived and BFI-derived scale scores at age 29 ( $N = 92$ ) were .79 for extraversion, .66 for agreeableness, .71 for conscientiousness, .78 for neuroticism, .66 for openness to experience. Correlations between the CCQ-derived scores in all waves and the BFI scores at wave 8 (age 29, see supporting information, Table 3) revealed that the BFI scores at age 29 were similarly associated with the CCQ-derived scores in most waves, although correlations were attenuated by age.



## **Data Analysis**

Rank-order stability was investigated using Pearson correlations between Big Five scores across waves for each scale. Fisher's *r*-to-*z* transformations were calculated to compare the correlation coefficients (Lee & Preacher, 2013a, 2013b). Individual differences in developmental trajectories were modeled with growth curves computed using the PASW statistical package, version 20 (SPSS, 2005). Multilevel Modeling (MLM) was used because it accommodates variability in measurement occasions and in spacing of measurements. Unconditional models were initially estimated before models including age as a time-varying covariate. To account for variability in time between measurement occasions, we coded the age factor to the mean age at each wave, and centered it at the first wave. In all models, we specified that age involved both fixed and random effects, with fixed effects referring to estimated average change trajectories and random effects to variations across individuals. To investigate gender differences, we entered gender as a covariate, with values of 0 for men and 1 for women. Parameter estimates were obtained using restricted maximum likelihood estimation and missing data were modeled under the assumption that data were missing at random (MAR). In the analyses of development from age 2 to age 29, linear and curvilinear developmental trends were investigated, with first, second, and third order polynomial functions of age fitted to the data. A dummy variable coded 0 for wave 1-5 and 1 for wave 6-8 was included as a main effect in order to control for the change of informant between waves 5 and 6.

## **Results**

### **Rank-Order Stability**

Analyses exploring the relations between personality traits in early adulthood and personality traits in childhood and adolescence showed that, for all of the Big Five traits, there were significant correlations across most waves, with an average correlation of  $r = .34$  (see

supporting information, Table 3) but non-significant correlations between assessments of agreeableness in early childhood and adulthood as well as between assessments of conscientiousness in both early and middle childhood and adulthood. Correlations between adjacent waves (see Table 1) pointed to increases with age in the stability of individual differences in personality traits, with most correlations in adulthood significantly stronger than those in previous waves. The correlations decreased between ages 15 and 21 (waves 5 and 6), when the informants changed, but the decrease was only significant for neuroticism.

### **Developmental Trends in Early Adulthood**

Agreeableness and conscientiousness increased from age 21 to 29, whereas neuroticism decreased (see Figure 1; for descriptive statistics and model estimations see supporting information, Table 4, 5 and 6). Extraversion and openness to experience did not change from age 21 to age 29. Initial scores on all traits varied significantly between individuals, and there was significant variation around the change trajectories for neuroticism and conscientiousness. Women were significantly more extraverted and neurotic and less open to experiences than were men. The stability of these gender differences across early adulthood was evident in the absence of effect for gender on the change trajectories for these traits. For agreeableness, on the other hand, a significant interaction between gender and age meant that the averages for women and men were similar at age 21, but that women became increasingly more agreeable than men.

### **Developmental Trends from Childhood to Early Adulthood**

A third research question focused on the shape of the developmental trajectories. As illustrated in Figure 2 (for model estimates see supporting information, Table 7) cubic curvilinear trends best described the development of all traits except agreeableness for which the trend was linear and positive. Specifically, initial decreases in extraversion levelled off in early adulthood; agreeableness showed a small linear increase from age 2 to 29;

conscientiousness increased throughout, although not at a consistent rate; neuroticism showed initial increases that levelled off and then showed a slight decrease; and openness to experience showed an initial increase, followed by a decrease that levelled off in early adulthood. The change of informant change between ages 15 and 21 was controlled for in these analyses. Overall, personality thus changed at different rates and, for some traits, in different directions at different portions of the lifespan.

### **Discussion**

These findings provide novel and important insights into how personalities develop across the first three decades of the lifespan. Agreeableness and conscientiousness increase consistently independent of both age and cultural context, as indicated by the similarities between the present findings and those obtained in previous studies (e.g., Allemand et al., 2008;; Lehman et al., 2013; Roberts et al., 2006; Soto et al., 2011). However, as in some previous studies (Roberts et al., 2006; Robins et al., 2001), the changes in agreeableness were quite small, suggesting that individuals tend to maintain their levels of agreeableness. Neuroticism increased until the school years and then started to level off, before decreasing over time in early adulthood. Perhaps neuroticism increases as children move from close dependence on primary caregivers into larger and more demanding out-of-home (day care and school) contexts (Lamb & Ahnert, 2006). Levelling off in the school years might be related to the positive aspects of independence when children become comfortable at school and with peers. Meanwhile, the decrease in neuroticism from age 21 to 29 could reflect well-being associated with stable intimate relationships and work arrangements in the late twenties (Arnett, 2012; Kroger, 2007). Extraversion and openness to experience appear susceptible to both age-related and contextual influences, however. For example, as in the present study, Robins et al. (2001) found no change in extraversion in early adulthood, whereas Vaidya et al. (2008) found increases. Extraversion might be influenced by cultural values emphasizing

gregariousness or humility, and openness to experience by the value placed on curiosity. The decreases in these traits across childhood in the present study might reflect the gradual embrace of cultural beliefs in Sweden regarding humility and contentedness. Together with findings obtained in other countries at various ages, the present study indicates that normative increases in agreeableness and conscientiousness are consistent regardless of culture, whereas individual differences in extraversion, openness to experience, and neuroticism are more susceptible to age-related and socio-cultural influences.

Gender affected individual differences in all aspects of personality except conscientiousness. There were no gender differences from ages 2 to 15 (Lamb et al., 2002), so these new analyses reveal that Swedish women start showing higher extraversion and neuroticism and lower openness to experience between ages 15 and 21, and higher agreeableness between ages 21 and 29. The predicted emergence of gender differences later than in other cultures (e.g., Klimstra et al., 2009 in the Netherlands) suggests that different social demands and norms for women and men are formatively important and that gender-differentiated demands may become salient later in Sweden than in other countries. Previous research in Sweden (Frisén & Wängqvist, 2011; Frisé, Carlsson, & Wängqvist, 2014) has revealed that 25-year-old women think more about future work and family priorities than do their male peers. Perhaps the anticipation of future parenthood explains the emerging gender differences in personality as well.

The increasing stability of personality traits over time demonstrated the expected individual consistency (Roberts & DelVecchio, 2000) with changes in personality less common in early adulthood than in childhood and adolescence. Change is also an important aspect of personality development (Shiner, 2006), however, and previous rankings do not fully explain later personality traits. Taken together, the analyses of both stability and change showed that the participants' personalities were stable, but not unchanging. Individual factors

(such as genetic makeup), external factors (such as exposure to unique and shared environments), and the distinctive ways in which individuals create changes in themselves and their contexts may lead to different developmental trajectories (Mroczek et al., 2006). Knowledge of the ways personalities change from childhood to adulthood might, by extension, help explain whether and how personalities are influenced by everyday experiences (Shiner, 2006) as well as by both normative and unexpected events throughout the lifespan. How, for example, does the loss of a parent affect children's personality development? Do personality changes vary depending on individual characteristics? These are important questions to address in future research on personality development.

This longitudinal study was the first to trace the personalities of the same individuals from early childhood into adulthood. Even though the generalizability of the findings is limited by the small sample size, the high retention rate and the inclusion of eight measurement points over a 27-year span made the contributions unique. However, long-term longitudinal research involves some unavoidable trade-offs. The analyses showed high rank-order stability for all the Big Five traits, with the internal reliabilities of the scales measuring extraversion, agreeableness, and neuroticism consistently adequate. Analyses using latent variables might have helped overcome problems associated with the reduced reliability of the other two scales although the sample size made such analyses inappropriate. The multilevel approach adopted is, however, suitable for longitudinal analyzes of unbalanced data with variations in the number of participants and in spacing between waves (Singer & Willet, 2003; Mroczek et al., 2006).

The ipsative nature of the data meant that scores on each trait were not fully independent of scores on other traits. This interdependence complicated previous efforts to explore the factor structure (Lamb et al., 2002) and calls for caution when interpreting the mean scores. However, correlations between scores on the CCQ-derived scales and BFI-

derived scores at age 29 demonstrated concurrent validity and previous studies have established the external validity of the scales in childhood (Lamb et al., 2002; Asendorpf & van Aken, 2003).

Multiple informants would certainly have strengthened the validity of the CCQ-derived scores and would have allowed us to investigate similarities and differences in the constructs measured by mother reports and self-reports. However, the analyses reported here showed convergence between the mothers' and participants' reports. Self-report measures were not suitable in early childhood (when the participants were 2-3-years old) and it is highly unlikely that mother reports would be more valid indicators of personalities in adulthood than self-reports. Unfortunately, both maternal and self-reports were never obtained in the same wave and this makes it impossible to interpret the drop in rank-order stability between age 15 and 21.

The CCQ was designed to measure children's personality while remaining appropriate, with minor changes, in adulthood, making it suitable for this type of longitudinal study. However, the poor reliability of some of the trait measures means that other measures, such as observations or behavioral tests, would be preferable when openness to experience or conscientiousness are of particular interest. It might also be valuable to include other conceptualizations of personality (e.g., Ego-Resiliency and Ego-Control) when trying to map the development of personality across this age-period.

The developmental trajectories of some of the Big Five traits varied at different phases of the lifespan and there were significant variations in individual developmental trajectories. Some developmental trends, including age-related increases in agreeableness and conscientiousness, appear to be independent of culture, whereas differences in mean-level changes and between-individual variability on other traits might reflect cultural differences.

Culturally sensitive accounts of normative changes in personality development thus need to take into account individual, socio-cultural, and age-related variability.

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Table 1

*Correlations Between CCQ-Derived Big-Five Scale Scores from Adjacent Waves.*

Measure	Between Ages (years)						
	2-3	3-7	7-8	8-15	15-21	21-25	25-29
Extraversion	.53***	.48***	.71***	.54***	.48***	.75***	.75***
Agreeableness	.63***	.36***	.75***	.48***	.34**	.67***	.76***
Conscientiousness	.62***	.50***	.66***	.43***	.25*	.65***	.65***
Neuroticism	.52***	.38***	.64***	.62***	.32**	.84***	.80***
Openness	.68***	.46***	.51***	.50***	.46***	.65***	.71***

*Note.*  $N = 92$ . Informants changed between ages 15 and 21.

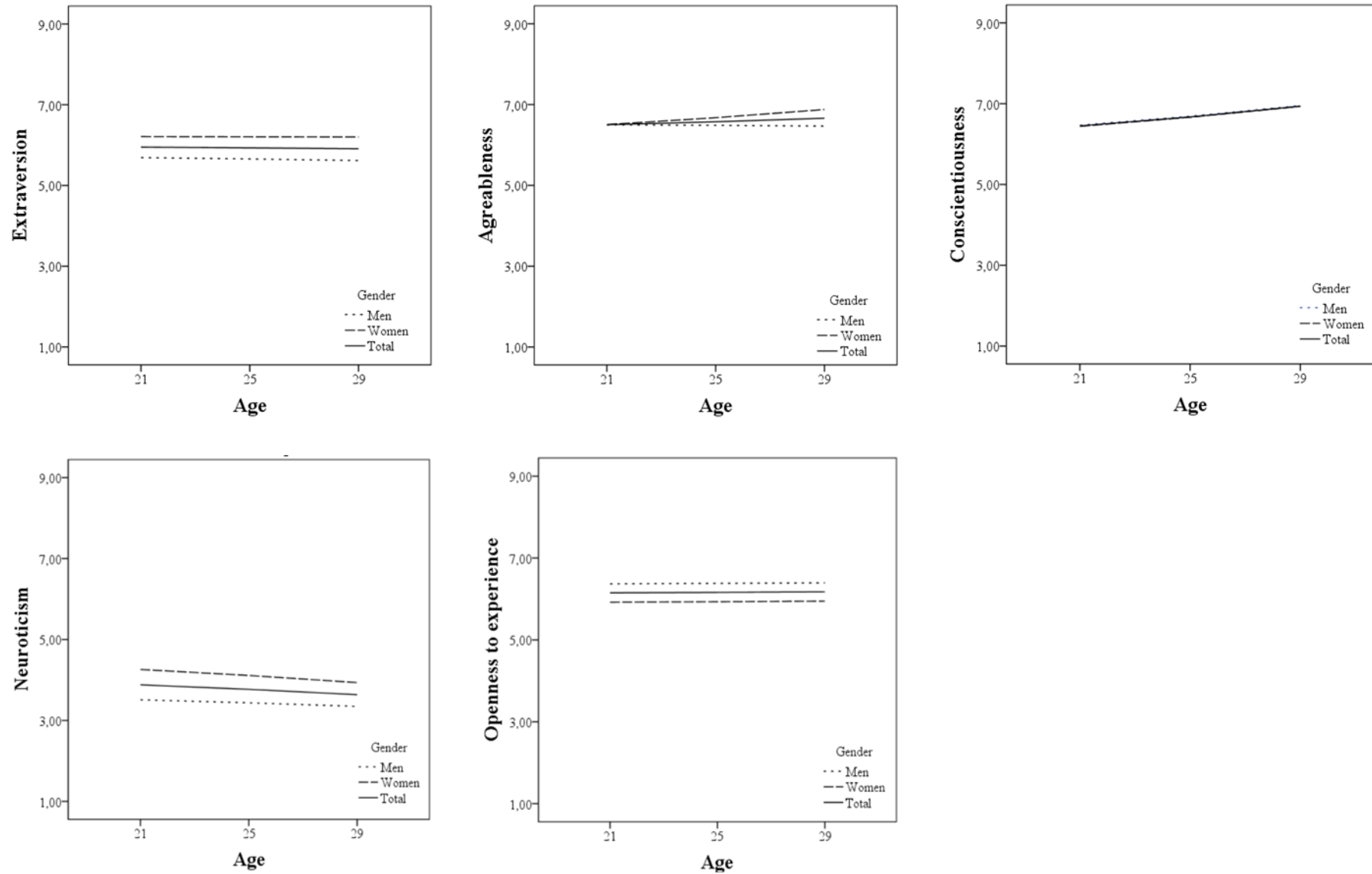


Figure 1. Estimated growth for the total group and for women and men separately the Big Five traits from age 21 to 29.

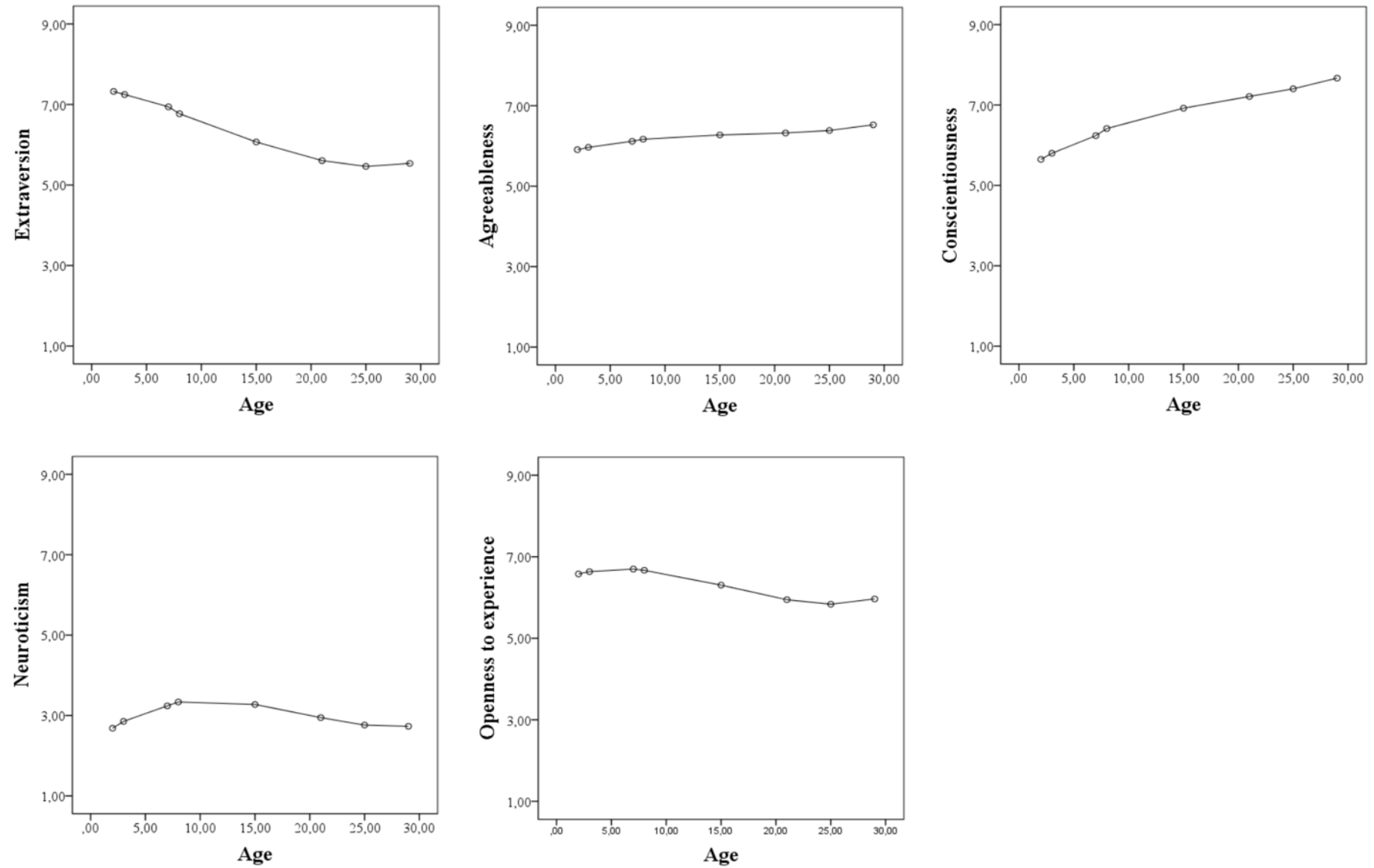


Figure 2. Estimated growth for the Big Five scales in the total group from ages 2 to 29.