

Neuroticism, Extraversion, Goals, and Subjective Well-Being: Exploring the Relations in
Young, Middle-Aged, and Older Adults

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Abstract

The positive association between intrinsic, as opposed to extrinsic, goal importance and subjective well-being (SWB) is well-documented. However, less is known whether these associations are consistent across age groups and when simultaneously considering personality traits. Structural equation models conducted with young, middle-aged, and older adults indicated that neuroticism was negatively related to SWB across age groups, while extraversion and intrinsic goal importance held age-differential associations: Extraversion was related to SWB in the two younger age groups, whereas in older adults only an indirect effect emerged via intrinsic goal importance. Intrinsic goal importance was related to SWB among young and older adults but not among middle-aged adults. These results underscore the importance of age-differential associations in determinants of SWB.

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Key words: Neuroticism, extraversion, intrinsic goal importance, extrinsic goal importance, subjective well-being, age groups

Neuroticism, Extraversion, Goals, and Subjective Well-Being: Exploring the Relations in Young, Middle-Aged, and Older Adults

The lifelong ability of people to continually adapt to changes in life circumstances and to attain a positive developmental trajectory in psychological functioning has received great attention within the scope of life span psychology. Positive psychological functioning implies attainment or maintenance of an optimal level of subjective well-being (SWB), the universal relevance of which is rooted in the assumption that the quest for happiness represents a fundamental human need, regardless of age. As a consequence, a great deal of research has focused on what constitutes happiness, in order to attain a complete description of SWB and of its causes and correlates (for an overview see Diener, Suh, Lucas, & Smith, 1999). Personality traits, especially neuroticism and extraversion, reflect major determinants of SWB (for comprehensive meta-analyses see DeNeve & Cooper, 1998; Steel, Schmidt, & Shultz, 2008). However, dispositional traits represent only one possible group of determinants of SWB. Another group of determinants highlights the relevance of having and pursuing subjectively important goals for one's well-being (e.g., Diener et al., 1999).

Accordingly, a recent elaboration by Sheldon and Hoon (2007) highlights the importance of simultaneously considering different factors as determinants of SWB for a comprehensive description of its causes and correlates. From a theoretical point of view, the multidimensional nature of SWB co-determined by multiple situational and dispositional factors is widely proffered across standard textbooks (e.g., Kahnemann, Diener, & Schwarz, 1999; Mroczek & Little, 2006). From an empirical point of view, however, efforts to simultaneously address different factors as determinants of SWB are scarce and lack an explicit life span perspective (e.g., Haslam, Whelan, & Bastian, 2009; Romero, Villar, Luengo, & Gómez-Fraguela, 2009; Sheldon & Hoon, 2007). The present study aims to address these issues by examining how personality traits and subjective goal importance are

related to SWB from a life span developmental perspective across young, middle-aged, and older adulthood.

Personality Traits and SWB

Abundant evidence points to a strong association between personality traits and SWB. Both theoretically and empirically, neuroticism and extraversion typically emerge as the two most relevant personality traits in predicting SWB. From a theoretical point of view, neuroticism and extraversion are viewed as core trait-based determinants of SWB due to their affective-based nature. The negative emotionality of neuroticism and positive emotionality implicit in extraversion are strongly related to, yet still distinct from, the positive and negative affect dimension of SWB (Yik & Russell, 2001). From an empirical point of view, there is ample evidence for a strong association between neuroticism, extraversion, and SWB (e.g., Costa & McCrae, 1980; Lucas & Fujita, 2000; Pavot, Diener, & Fujita, 1990; Vittersø, 2001; Vittersø & Nilsen, 2002; Watson & Clark, 1992). Comprehensive meta-analyses further support the link between these two traits and SWB (DeNeve & Cooper, 1998; Steel et al., 2008) .

Goals and SWB

Life goals are defined as internal representations of desired outcomes, events, and processes and as the personally meaningful objectives people pursue in their daily lives (Austin & Vancouver, 1996). A great deal of research suggests that merely having personal goals, regardless of content, is positively related to life satisfaction (Emmons, 1986). Moreover, active pursuit and successful attainment of these goals is associated with positive affect (Emmons & Diener, 1986) and overall SWB (Brunstein, 1993; Sheldon & Elliot, 1999).

However, self-determination theory emphasizes not only the merely having goals, but rather the need to take goal content into account, and posits that the type of goals individuals find important (i.e., intrinsic or extrinsic) is differentially related to SWB (Kasser & Ryan, 1993, 1996). Intrinsic goals include personal growth, close and intimate interpersonal

relationships, community contribution, and physical health, whereas extrinsic goals are related to financial success, fame, and social recognition. The former tend to be more satisfying, as they are congruent with innate psychological needs for autonomy, competence, and relatedness. The focus of the latter goals is on receiving positive evaluations from others and on obtaining external reward upon goal attainment. Extrinsic goals may lead to behavior that is incongruent with one's needs (Kasser & Ryan, 1996; Ryan & Deci, 2000). Consistently assigning importance to intrinsic rather than extrinsic goals is positively related to SWB over the long run, with the reverse true for assigning more importance to extrinsic goals such as financial success and social recognition. Accordingly, extrinsic goals are neutrally associated with SWB, or even positively related to ill-being (Kasser & Ryan, 1993, 1996, 2001; Niemiec, Ryan, & Deci, 2009; Schmuck, Kasser, & Ryan, 2000; Sheldon, 2005; Sheldon, Ryan, Deci, & Kasser, 2004). In a similar vein, recent analyses using household panel data revealed that life goals related to family, friends, social and political involvement (so-called non-zero sum goals) are positively related to life satisfaction, whereas career-, material- and success-related goals (so-called zero sum goals) have detrimental effects (Headey, 2008; Headey, Muffels, & Wagner, 2010). Interestingly, when looking at goal content, Headey's distinction between non-zero sum goals and zero sum goals is nearly identical to the distinction between intrinsic and extrinsic goals according to self-determination theory.

Personality Traits and Goals

From a conceptual and theoretical point of view there is a distinction between personality traits and life goals: The former represent relatively stable, consistent patterns of behaving and feeling, whereas the latter are internal representations of the things we want to achieve in life and the person we want to become (e.g., McAdams, 1995). Some theorists like Cantor (1990) argue that while personality traits can be viewed as the structural attributes a person "has" (i.e., the "having" side of personality), goals or life tasks can be understood as the "doing" side of personality according to Allport (1937). As such, life goals adopt a linking

function between people's traits and their behavior (Cantor, 1990). In a very similar vein, it has been hypothesized that traits express themselves in goals such that goals can be viewed as direct outcomes of personality traits (Costa & McCrae, 1994). With respect to the empirical association between personality traits and life goals, a recent longitudinal study examined stability and change in personality traits and life goals in students during the transition to academic education or employment (Lüdtke, Trautwein, & Husemann, 2009). The findings point to concurrent correlations mainly for the relation between extraversion and importance assigned to various goals in the areas of community, health, relationships, hedonism, and personal growth. Moreover, reciprocal effects models revealed effects of prior personality traits on subsequent life goal importance, but almost no effects of prior life goal importance on subsequent personality traits (Lüdtke et al., 2009). Other longitudinal results revealed modest correlations between extraversion and goal importance, whereas neuroticism was unrelated to any of the goal domains at baseline (Roberts, O'Donnell, & Robins, 2004). Furthermore, changes in goal importance over a four-year period were related to changes in personality traits, mimicking the baseline pattern (Roberts et al., 2004). Similarly, another study found extraversion to be modestly related to life goals, whereas neuroticism was virtually unrelated to any life goal domain (Roberts & Robins, 2000). The lack of association between neuroticism and life goals may be due to inherent approach characteristic of life goals, more strongly related to positive affect, which is in turn strongly associated with extraversion (Watson & Clark, 1992), thus explaining the stronger connection between extraversion and life goals (Roberts & Robins, 2000).

Simultaneous Contribution of Traits and Goals to SWB

An interesting line of recent multivariate research explores whether goals explain variance in SWB above and beyond the effect of personality traits. First evidence suggests that traits are more strongly associated with SWB than goals, and that the effects of goals on SWB are fully mediated by traits, thus implying that goals only exert an indirect influence on

SWB via traits (Haslam et al., 2009). Conversely, when analyzing goals as mediators of the influence of traits on SWB, results indicate that the mediational effects of goals are not pronounced, and that the direct effect of traits on SWB remains substantial. However, although personality traits are stronger associated with SWB than goals, goals also account for variance in SWB, even after controlling for the effect of personality traits (Romero et al., 2009). These results underscore the importance to consider different potential determinants as correlates of SWB, since each determinant provides relevant and independent information for the understanding of SWB (Sheldon & Hoon, 2007). However, despite abundant research, it is only recently that researchers have begun to simultaneously take different determinants into account (e.g., Haslam et al., 2009; Romero et al., 2009; Sheldon & Hoon, 2007).

A Life Span Perspective on Goals and SWB

Framed within the concept of successful aging, maintenance of an optimal level of SWB despite age-related losses is of utmost importance (e.g., Baltes, 1997). From a life span developmental perspective, socioemotional selectivity theory (Carstensen, Isaacowitz, & Charles, 1999) offers a valuable framework that focuses on the individual perception of time left in life (open-ended vs. limited) and posits developmental trends for social goals across the life span. This theory differentiates between knowledge- and emotion-related goals and posits that as people place more emphasis on emotion-related goals as compared to knowledge-related goals as they get older (i.e., the more they perceive their time in life as limited). In contrast, younger people perceive their time as open-ended and place more emphasis on knowledge-related goals. Moreover, mainly due to different time perspectives across the life span, socioemotional selectivity theory suggests better emotion regulation as people get older, as well as fewer negative emotional experiences (Carstensen et al., 1999). Interestingly, people typically list positive social interactions, personal growth, sense of purpose in life, and self-acceptance as important to successful aging, life satisfaction and well-being in later life (Fisher, 1995; Lapierre, Bouffard, Dube, Labelle, & Bastin, 2001; Ryff, 1989). These criteria

for successful aging are not only mirrored in intrinsic goal content (Kasser and Ryan, 1996), but also in emotion-related goals as posited by Carstensen and colleagues (1999). However, evidence as to whether the association between intrinsic and extrinsic goals and SWB is equivalent across ages is scarce, examined in only two studies to date, to our knowledge. Both indicate continued growth and development across the life span, and find that older adults place more emphasis on pursuing intrinsic goals as compared to younger adults, thereby explaining the positive association between age and SWB (Bauer & McAdams, 2004; Sheldon & Kasser, 2001). In the same vein, research on inter-generational differences in goal importance indicates that emphasis on self-focused and extrinsic goals, such as challenging experiences, fun, fame, power, and financial success, is more prominent in young adults than in their parents or grandparents. Conversely, older adults rate intrinsic goals, such as physical health, the common good, and a clean environment, as more important than younger adults do (Grob, Weisheit, & Gomez, 2009).

It should be noted, however, that these latter results represent mean-level differences in extrinsic and intrinsic goal importance as a function of age, and must not necessarily reflect the association between goal importance and SWB. Moreover, these mean-level differences are largely due to differences in life stage. Young, middle-aged, and older adults are typically in different phases of their lives, in which distinct topics are relevant or different tasks can or must be accomplished (e.g., getting started in work in young adulthood vs. retirement from work in later adulthood). Correspondingly, the goals people pursue generally reflect relevant life stage tasks (Cross & Markus, 1991; Grob, Little, & Wanner, 1999; Nurmi, 1992; Nurmi, Pulliainen, & Salmela-Aro, 1992; Strough, Berg, & Sansone, 1996). More specifically, goals related to education, partnership, friendships, and employment are more salient in young adulthood. Middle-aged adults' goals predominantly deal with their children's future, maintenance of one's achievements, and material-related issues. In older adulthood, goals related to health, retirement, leisure, aging, and the environment are more prominent (Freund

& Riediger, 2006). However, the focus of the present work goes beyond mean-level differences in intrinsic and extrinsic goal importance across the life span and rather focuses on age-differential associations between the constructs under study.

The Present Study

The main goal of the present study was to analyze the associations between neuroticism, extraversion, intrinsic and extrinsic goal importance, and SWB using a large cross-sectional sample with young, middle-aged, and older adults. Thus, the present study pursues the path taken in recent SWB research by simultaneously addressing personality traits and goal importance as determinants of SWB. Furthermore, we seek to provide preliminary evidence from a life span developmental perspective, examining these associations across different age groups.

Most past research was limited by the use of a relative score of intrinsic goal importance or goal attainment (i.e., extent of intrinsic goal importance relative to extrinsic goal importance). Thus, we use the approach of Niemiec and colleagues (Niemiec et al., 2009; Sheldon, 2005) and analyze intrinsic and extrinsic goal importance as separate constructs. Due to the dispositional nature of traits, the theoretical considerations viewing life goals serving a linkage function between traits and behavior (e.g., Cantor, 1990; Costa & McCrae, 1994), the stronger association between traits and SWB as compared to goals (Haslam et al., 2009; Romero et al., 2009), and due to longitudinal evidence indicating a stronger impact of traits on subsequent goal importance rather than vice versa (Lüdtke et al., 2009), we establish a model in which personality traits precede goal importance and SWB, and goal importance precedes SWB. With respect to personality traits, we exclusively focus on neuroticism and extraversion, as earlier research has found these two traits to be most strongly related to overall SWB (Costa & McCrae, 1980; Gomez, Krings, Bangerter, & Grob, 2009; Vittersø & Nilsen, 2002), and extraversion to be substantially associated with goal importance (Lüdtke et al., 2009; Roberts et al., 2004; Roberts & Robins, 2000).

Drawing upon self-determination theory, we assumed a positive association between intrinsic goal importance and SWB in all participants, and no association between extrinsic goal importance and SWB (Kasser & Ryan, 1993, 1996, 2001; Niemiec et al., 2009; Schmuck et al., 2000; Sheldon, 2005; Sheldon et al., 2004). However, taking humans' tendency toward a successful developmental trajectory across the life span into account (Baltes, 1997; Carstensen et al., 1999), and in accordance with recent evidence (Bauer & McAdams, 2004; Sheldon & Kasser, 2001), the association between intrinsic goal importance and SWB was expected to be strongest among older adults. As for personality traits, neuroticism was hypothesized to be negatively, and extraversion positively related to SWB in all participants (DeNeve & Cooper, 1998; Steel et al., 2008). Moreover, we hypothesized that extraversion would be positively related to intrinsic and extrinsic goal importance in all participants, whereas no association was expected between neuroticism and neither intrinsic nor extrinsic goal importance (Lüdtke et al., 2009; Roberts et al., 2004; Roberts & Robins, 2000).

Method

Sample and Procedure

Data collection was conducted during June through August, 2000, in Germany. Participants included family members from three different age groups (young, middle-aged, and older adults), and were recruited through members of the youngest age group via presentations of the study purpose in school classes, notices posted on the university campus, advertisements in local newspapers, and personal contacts. Members of the youngest age group received the questionnaires for all participants in an envelope. Participants were instructed to fill in the questionnaires at home, and to return them in a postage-prepaid envelope. In total, 718 individuals returned the questionnaire (response rate: 57%), including 251 young adults ($M = 19.12$ years, $SD = 2.63$, range = 16-25 years, 72% female), 242 middle-aged adults ($M = 47.49$, $SD = 4.63$, range = 37-60 years, 67% female), and 225 older adults ($M = 75.50$, $SD = 6.59$, range = 61-95 years, 74% female). As this study focuses on the

life stage of the respective age groups, we use age-group specific terminology (young, middle-aged, and older adults, respectively) rather than terminology describing familial relatedness.

Measures

Life goals. Participants were provided with eight life goals (example items: “To have a close and intimate relationship”; “To be famous”) and were asked to indicate the importance of each respective goal on a 5-point rating scale ranging from 1 (*not important at all*) to 5 (*very important*). With regard to goal content and based on self-determination theory (Deci & Ryan, 1985; Kasser & Ryan, 1996), four goals covered intrinsic human aspirations (i.e., intimate relationship, common good, satisfactory work life, and physical health), whereas four goals represented extrinsic driven aspirations (i.e., financial success, fame, admiration by others, and power).¹

Personality traits. Neuroticism and extraversion were measured with an adjective-based inventory comprising six items per personality trait, with each item composed of two adjectives. Example items are “fearful, nervous” for neuroticism, and “sociable, talkative” for extraversion (see Gomez et al., 2009; for similar instruments see also Gosling, Rentfrow, & Swann, 2003). The adjectives used to cover the five personality factors are drawn upon Goldberg’s (1992) Big Five markers. All adjective pairs were Likert-scaled, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Internal consistencies were $\alpha = .67$ for neuroticism (range across age groups: .64 - .72), and $\alpha = .78$ for extraversion (range across age groups: .75 - .82), respectively.

Subjective well-being. SWB was assessed with three indicators representing the cognitive component of well-being: First, the Satisfaction with Life Scale (SWLS) measures the global judgment of satisfaction with one’s life (Diener, Emmons, Larsen, & Griffin, 1985). This widely recognized five-item instrument (sample items: “In most ways my life is close to my ideal”; “I am satisfied with my life”) has been shown to be appropriate for use

with different age groups (Pavot, Diener, Colvin, & Sandvik, 1991). In order to have a consistent response format across instruments, the original 7-point scale was abbreviated to a 5-point rating scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Internal consistency in the overall sample was good ($\alpha = .80$; range across age groups: .79 - .83). Second, positive attitude towards life (PAL) was assessed with six items (“My future looks good”; “I enjoy life more than most people do”; “Whatever happens, I can see the bright side”; “I enjoy living”; “My life seems meaningful to me”; “My life is on track”). Third, a self-esteem scale (SE) composed of three items measured participants’ satisfaction with oneself (items: “I am capable of doing things just as well as other people”; “I feel that my life has as much value as others”; “I have a positive attitude towards myself”). Both the PAL and the SE scale were drawn from the adult form of the Berne Questionnaire of Well-Being (Grob, 1995; Grob, Lüthi, Kaiser, Flammer, Mackinnon, & Wearing, 1991). All items were Likert-scaled, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Coefficient alpha reliabilities in the overall sample were $\alpha = .80$ for the PAL scale (range across age groups: .77 - .83), and $\alpha = .70$ for the SE scale (range across age groups: .68 - .69). In the overall sample, SWLS correlated substantially with PAL and SE ($r = .74$, and $r = .48$, respectively, both p 's < .001).

Statistical Approach

We first must consider the degree of similarity between study participants that might result from dependencies in the data when sampling members of the same family. If scores between family members are systematically interrelated, the assumption of independent observations does not hold for analyses at the individual level. Thus, in order to examine whether we can use the individual or the family as analytical unit we first must determine the level of interdependence in the data. According to Kenny (1995) similarity correlations smaller than .30 are indicative of a small level of dependency, and allow using the individual as the analytical unit. If stronger similarity exists however, one must consider multi-level

analytical techniques to adequately deal with nonindependence in the data. Accordingly, we computed correlations between family members for each scale. As these similarity correlations were below the .30 threshold for each scale (ranging from -.19 to .24), we conclude that nonindependence is not a substantial problem in these data and therefore conducted all subsequent analyses at the individual level.²

The structural relationships between personality traits, intrinsic and extrinsic goal importance, and SWB across age groups were analyzed at a latent level by means of multiple-group analyses using structural equation modeling, thus reducing the likelihood for measurement error. By definition, structural equation models are composed of a measurement and a structural model. The measurement part of a model specifies the relations between latent variables (in our case: personality traits of neuroticism and extraversion, intrinsic and extrinsic goal importance, and SWB) and their manifest indicators, whereas the structural part consists of the associations between the latent variables. In the case of neuroticism and extraversion, item parcels built according the item-to-construct balance technique were used as indicators of the latent constructs (Bandalos & Finney, 2001; Little, Cunningham, Shahar, & Widaman, 2002). Specifically, for each personality trait, the three items with the highest item-total correlations were set as anchors of the respective parcels and the three items with the lowest values were then added to the parcels in inverted order, resulting in three parcels per personality trait in the model (see Little et al., 2002, p. 166).

Prior to age-related comparisons, equivalence in the measurement model was established across age groups, in order to ensure that the measurement of the constructs under study is unbiased across age groups (i.e., that the representation and understanding of the latent constructs is equivalent across groups). This equivalence in the measurement model is referred to as measurement invariance and it has been suggested that at least weak measurement invariance (cf. Meredith, 1993) should be established before analyzing group differences in the structural part of the model (Horn & McArdle, 1992; Meredith, 1993).

Weak measurement invariance is established by constraining the relations between the indicators and their respective latent variables (i.e., the factor loadings) to be equal across groups. If model comparison between the constrained and unconstrained model does not lead to a significant deterioration of model fit, weak measurement invariance holds across groups, thus fulfilling the prerequisite for further group comparisons on the structural model.

Statistical analyses were conducted using AMOS software package (Arbuckle, 2007) and applying maximum likelihood estimation. Model fit was evaluated using the χ^2 exact fit test, the root mean square error of approximation (RMSEA), and the comparative fit index (CFI). RMSEA values lower than .08 and CFI values above .90 were considered as good model fit indices (Byrne, 2001). For nested model comparisons and multiple-group analyses the χ^2 difference test between the unconstrained and constrained model was used.

Results

Measurement Model and Measurement Invariance

The model contained a total of five latent variables: two latent personality traits (neuroticism and extraversion), each indicated by three parcels, two constructs of intrinsic and extrinsic goal importance, each indicated by four ratings of goal importance, and SWB, indicated by three manifest variables. Intrinsic goal importance was composed of intimate relationship, common good, work, and physical health, and extrinsic goal importance of financial success, fame, admiration, and power. Aggregated mean scores of SWLS, and the PAL- and SE-subcales were used as indicators of the latent SWB variable. Table 1 presents means, standard deviations and correlations between the study variables at the observed, aggregated level. Mean-level differences were found for neuroticism, as well as for intrinsic and extrinsic goal importance. Young adults had higher levels of neuroticism and rated extrinsic goals to be more important as compared to middle-aged and older adults. Middle-aged adults rated intrinsic goals more important than young and older adults.

The unconstrained model (i.e., measurement model) for young, middle-aged, and older adults, with five latent variables, their respective manifest indicators, and with covariances between the latent constructs freely estimated, achieved an acceptable overall model fit, $\chi^2(330) = 663.93, p < .001, RMSEA = .038, CFI = .897$. Note, that whereas the RMSEA suggested a well-fitting model, the CFI, however, marginally failed to reach the value of .90 and beyond (cf. Byrne, 2001). As the CFI depends on the average size of the correlations in the data, the low CFI might reflect a low to moderate average correlation between variables. When setting the factor loadings invariant across age groups, the constrained model did not lead to a poorer model fit, $\Delta\chi^2(24) = 36.10, p = .06$. Thus, establishing invariance on the factor loadings of the measurement model across age groups was successful and enabled further analyses on possible age-specific differential influences of personality traits as well as intrinsic and extrinsic goal importance on SWB on the structural model.³

Age Group Comparisons on the Structural Model

In order to test age group differences on the structural model, the correlation between neuroticism and extraversion was estimated, and single-headed paths were imposed between the remaining latent variables. Furthermore, residual error terms were added to the three endogenous variables (intrinsic, extrinsic goal importance, and SWB) as well as a correlation between the residual terms of intrinsic and extrinsic goal importance. In a first step, the model with established weak measurement invariance (i.e., with invariant factor loadings across age groups) was applied to each age group with no further constraint on the latent structure. Then, subsequent restrictions were imposed on the structural associations by assuming the paths between the latent constructs to be equal across age groups. If relations between personality traits, intrinsic and extrinsic goal importance, and SWB vary across age groups, a constrained model should result in a deterioration of model fit when compared to the reference model.

As hypothesized, neuroticism was not significantly related to intrinsic goal importance ($\beta = .22, p = .07$ for young adults, $\beta = -.08, p = .52$ for middle-aged adults, $\beta = -.21, p = .17$

for older adults, respectively) as well as to extrinsic goal importance ($\beta = .06, p = .54$ for young adults, $\beta = .02, p = .88$ for middle-aged adults, $\beta = .13, p = .33$ for older adults, respectively) across age groups. Similarly, extrinsic goal importance was not directly associated with SWB in any age group ($\beta = -.01, p = .89$ for young adults, $\beta = .04, p = .66$ for middle-aged adults, $\beta = -.22, p = .27$ for older adults, respectively). Thus, the estimates of these three paths were set to zero. These model specifications resulted in a good fit of the data, $\chi^2(360) = 672.43, p < .001, RMSEA = .035, CFI = .903$, and explained 66%, 45%, and 65% of the variance in SWB for young, middle-aged, and older adults, respectively.

Accordingly, this model represented the starting point for further multiple-group comparisons (Model 1). Results of Model 1 along with the standardized estimates for each age group are depicted in Figure 1. Fit statistics and model comparisons emerging from multiple-group analyses are displayed in Table 2. In a first step, all parameters in the structural model were set equal across age groups, including the two correlations between intrinsic and extrinsic goal importance residuals and between neuroticism and extraversion, and the paths from extraversion to intrinsic goal importance, extrinsic goal importance, and SWB, the path from neuroticism to SWB, as well as the path from intrinsic goal importance to SWB (Model 2). As Table 2 shows, this model led to a significant deterioration in model fit, $\Delta\chi^2(14) = 27.73, p < .05$, and implied differential associations between personality traits, intrinsic and extrinsic goal importance, and SWB across age groups.

Next, each parameter was successively constrained to be equal across age groups, and the remaining coefficients were freely estimated. Successive equality constraints on the paths from neuroticism to SWB (Model 3), from extraversion to SWB (Model 4), from intrinsic goal importance to SWB (Model 5), from extraversion to intrinsic goal importance (Model 6), and finally from extraversion to extrinsic goal importance (Model 7), resulted in no significant deteriorations in model fit (see last column of Table 2). These model comparisons

suggest all associations in the model to be equal across age groups. However, a closer examination of the path estimates in the model (see Figure 1) yields a more differentiated—yet descriptive—picture of age-differential effects.

For instance, when observing the path from extraversion to SWB, extraversion was only significantly related to SWB in young ($\beta = .23, p < .01$) and middle-aged adults ($\beta = .18, p < .05$), whereas the path did not reach significance in older adults ($\beta = .07, p = .49$).

However, no age-differential effects were apparent for neuroticism, the strongest predictor of SWB in the model, with standardized estimates of $\beta = -.62, \beta = -.53, \text{ and } \beta = -.57$, in young, middle-aged, and older adults, respectively.

Further, multiple-group comparisons indicated the effect of intrinsic goal importance on SWB to be equal across age groups, although intrinsic goal importance was only significantly associated with SWB in young ($\beta = .23, p < .01$) and older adults ($\beta = .37, p < .001$), but not so in middle-aged adults ($\beta = .14, p = .12$).

The path from extraversion to intrinsic goal importance, although significant in each age group ($\beta = .27, p < .05$ young adults, $\beta = .33, p < .01$ middle-aged adults, and $\beta = .43, p < .001$ older adults, respectively), seem to increase from the youngest to the older age group, although multi-group comparison revealed no age-effects. These results indicate that for young adults there is both a direct effect of extraversion on SWB and an indirect effect via intrinsic goal importance, whereas for older adults there is only an indirect effect of extraversion on SWB via intrinsic goal importance (see Figure 1). However, the total effects of extraversion on SWB were similar in the three age groups ($\beta = .29, \beta = .23, \text{ and } \beta = .23$ for young, middle-aged, and older adults, respectively). Finally, although the path from extraversion to extrinsic goal importance was invariant across age groups according to multiple-group comparisons, extraversion was only related to extrinsic goal importance in

young and middle-aged adults ($\beta = .33, p < .001$ for young adults, $\beta = .23, p < .01$ for middle-aged adults), but no significant effect emerged for older adults ($\beta = .11, p = .22$).

In addition, constraining the correlation between neuroticism and extraversion to be invariant across age groups in Model 8 (Table 2), marginally failed to reach a significant reduction in model fit, $\Delta\chi^2(2) = 5.83, p = .06$, and the same was true when constraining the residuals of intrinsic and extrinsic goal importance to be invariant across age groups in Model 9, $\Delta\chi^2(2) = 5.56, p = .06$.

To summarize, no model but the one that specified simultaneous constraint of all estimates in the model to be equal across age groups (Model 2) led to a poorer model fit and implied group differences in the structural relations as a function of age group. An individual constraint of each of the seven estimates (Models 3 to 9), however, did not reduce model fit and implied no differential associations across age groups. Nevertheless, a descriptive evaluation of the respective paths in the model beyond multiple-group analyses yielded a more comprehensive picture: Neuroticism was the strongest predictor in the model and was negatively related to SWB in each age group, whereas extraversion was only in young and middle-aged adults positively related to SWB, but not in older adults. Intrinsic goal importance was only in older and young adults positively related to SWB, but not in middle-aged adults. The importance of extrinsic goals was not related to SWB in any age group. As hypothesized, neuroticism was unrelated to both intrinsic and extrinsic goal importance. Extraversion was positively related to intrinsic goal importance in each age group. However, the association with extrinsic goal importance emerged only in young and middle-aged adults.

Discussion

The main purpose of this study was to investigate how neuroticism, extraversion, and goal importance relate to SWB across age groups. Specifically, previous research mainly stemming from self-determination theory (e.g., Kasser & Ryan, 1996; Schmuck et al., 2000; Sheldon et al., 2004) was expanded by using intrinsic and extrinsic goal importance as

separate constructs (see Niemiec et al., 2009; Sheldon, 2005), rather than a relative score of intrinsic goal importance. Moreover, a life span developmental approach was adopted in order to provide a thorough examination of how traits and life goals relate to SWB across age groups.

As far as personality traits are concerned, neuroticism was negatively related to SWB without differential effects across age groups, whereas extraversion was only directly related to SWB in young and middle-aged adults, but not in older adults. Thus, although these findings underscore well-established evidence of a strong association between personality traits and SWB (e.g., DeNeve & Cooper, 1998; Steel et al., 2008; Vittersø & Nilsen, 2002), more research on age-related differential effects of personality traits on SWB across the life span is needed. This is particularly relevant as these results are not fully congruent with previous work analyzing data from members of three birth cohorts. Using a sample of young, middle-aged, and older adults without familial relatedness, differential effects of neuroticism and extraversion on SWB across the life span were found with a stronger association between neuroticism and SWB in older adults and only for young adults a significant association between extraversion and SWB (Gomez et al., 2009). However, attention is due when comparing these studies: For instance, although SWB was the main outcome variable in both studies, it was not assessed identically. In the study with the three birth cohorts SWB was measured with a single scale, whereas in the present study SWB was more thoroughly assessed with the inclusion of three measures of SWB.

Results mostly supported the hypothesized positive association between intrinsic goal importance and SWB, although only in young and older adults, whereas intrinsic goal importance was not related to SWB in middle-aged adults. As hypothesized, no association between extrinsic goal importance and SWB emerged in any age group. At first glance, the unrelatedness between intrinsic goal importance and SWB in middle-aged adults seems counterintuitive, since evidence on a positive association between intrinsic goal importance

and SWB is abundant (e.g., Kasser & Ryan, 1996; Schmuck et al., 2000; Sheldon et al., 2004), and was hypothesized to emerge in each age group. Reasoning from a conceptual perspective, goals may have both intrinsic and extrinsic components. Our results suggest that the possibility that even extrinsic goals can involve intrinsic aspects requires a sense of maturity and growth that may not yet be sufficiently pronounced in young adults. There is abundant evidence that young, middle-aged, and older adults are in different life stages and are faced with different life topics and life tasks. (Cross & Markus, 1991; Grob et al., 1999; Nurmi, 1992; Nurmi et al., 1992; Strough et al., 1996). We thus argue that our middle-aged respondents might be better able to view a goal in terms of its intrinsic and extrinsic components due to their respective standing in life. For instance, middle-aged adults could rate a goal originally classified as extrinsic such as “financial success” as subjectively important due to intrinsic reasons, namely in order to provide one’s children with a good education (for similar reasoning see Carver & Baird, 1998; Bauer & McAdams, 1994). The young and older adults in our sample, however, cannot place the same intrinsic importance to this specific goal since they either have not yet children requiring financial support for education (young adults) or their children are already adult and do not need financial education support anymore (older adults). In short, this generativity aspect is lost when exclusively focusing on intrinsic vs. extrinsic goal contents and when not taking the *reasons* for importance ratings of life goals into account. Hence, future research should try to assess respondents’ subjective evaluation of a specific goal in terms of its intrinsic and extrinsic importance.

With respect to the effects of personality traits on goal importance, results supported the hypothesized associations, and revealed extraversion to be positively associated with intrinsic and extrinsic goal importance, whereas neuroticism was unrelated to goal importance (although marginally significant in young adults). These findings are in line with previous research examining the relations between personality traits and life goals (Lüdtke et al., 2009;

Roberts et al., 2004; Roberts & Robins, 2000). As far as age-differential associations are concerned, extraversion was only in young and middle-aged adults related to extrinsic goal importance, but not in older adulthood. For the association between extraversion and intrinsic goal importance, multi-group comparisons revealed no age effects. Since extraversion was only in young and middle-aged adults directly related to SWB, whereas in older adults only an indirect effect emerged via intrinsic goal importance, this finding speaks for an age-related shift in the association between extraversion and SWB in favor of a greater relevance of intrinsic goals for one's well-being across the life span. One possible interpretation might be that the relevance of extraversion as direct determinant of SWB diminishes as people get older. Rather, extraversion exerts its effect on SWB via intrinsic goal importance. Carrying this line of thought forward, a further implication is that motivational, goal-related aspects of personality (in our case: intrinsic goal importance) become more important correlates of well-being in later life as connective link between traits and SWB, whereas the relevance of more dispositional aspects of personality (in our case: extraversion) as direct correlates of SWB diminishes. There is evidence that intrinsic goals mediate the positive relationship between age and well-being (Sheldon & Kasser, 2001). Our results add to this finding and underscore the importance of intrinsic goals in old age for people's well-being. Future research could explicitly test this idea, ideally within a longitudinal study able to address developmental trajectories across the life span.

Altogether, however, these findings are in line with the notion that placing importance on goals that are meant to fulfill inherent psychological needs (i.e., goals with intrinsic goal content) results in higher SWB, whereas focusing on goals geared to external rewards or external positive evaluations upon goal attainment (i.e., goals with extrinsic goal content) are unrelated to SWB (e.g., Kasser & Ryan, 1993, 1996, 2001; Ryan & Deci, 2000). Furthermore, we assumed a positive developmental trajectory across the life span (Baltes, 1997; Carstensen et al., 1999) and postulated that intrinsic goal importance should be more strongly related to

SWB in older adults as compared to the two younger age groups. Although results from multiple-group comparisons failed to support the hypothesized stronger effect in older adults, inspection of the path estimates point to a possibly stronger association between intrinsic goal importance and SWB in older adults. These results are partly consistent with previous evidence suggesting that intrinsic goals seem to account for a small proportion of the positive relationship between age and SWB (Bauer & McAdams, 2004; Sheldon & Kasser, 2001). In congruence with Erikson's psychosocial stage theory (1980), people attain wisdom and fulfillment when successfully mastering the last psychosocial crisis and when they are able to integrate their lived life as part of themselves. Thus, these results support the notion that through life reflection and life experience older people seem to know which goals are important to pursue and which goals contribute to feelings of well-being. Similar to Sheldon and Kasser's (2001) wine metaphor in which they stated that "like fine wine, many continue to 'get better' as they get older" (p. 499), we conclude that younger age groups could profit from the wisdom of the older age group as far as the stronger relation between intrinsic goal importance and SWB is concerned. However, from a life span developmental perspective the question of whether intraindividual changes in intrinsic and extrinsic goal importance occur throughout the life span remains unanswered. Thus, longitudinal research should address possible shifts from more extrinsic goal importance in young adulthood to more intrinsic goal importance in older adulthood.

Limitations

A comprehensive interpretation of the results should also consider the shortcomings of the present study. Due to the cross-sectional study design, age and cohort effects cannot be disentangled, therefore demanding a cautious interpretation of differences across age groups. In addition, the cross-sectional nature of this study allows no conclusion about the causal influence of personality traits and goals on SWB, thus it remains a question of theoretical implication whether to assume personality traits preceding both goals and SWB, and goals

preceding SWB. Due to the dispositional nature of personality traits and their stronger association with SWB as compared to goals (e.g., Haslam et al., 2009; Romero et al., 2009) and due to longitudinal evidence on a stronger impact of traits on subsequent goal importance rather than vice versa (Lüdtke et al., 2009), we opted for a model with personality traits as predictors of both SWB and goal importance, and with goal importance as predictor of SWB.

Moreover, the inclusion of members of different age groups of the same family bears another caveat. One could argue that family members might resemble each other in terms of life goals due to within-family and transmission processes. In fact, when analyzing similarities and mean-level differences in individual goal content across generations, evidence for both similarities and dissimilarities of life goals in the family were found (Grob et al., 2009). Thus, on the one hand, differences in goal content as a function of life stage are consistent with the notion of linear age trends in goal importance, as evidence suggests that the goals people pursue generally reflect the developmental tasks of the corresponding age group (Cross & Markus, 1991; Grob et al., 1999; Nurmi et al., 1992; Strough et al., 1996). On the other hand, the assumption of intrafamilial similarity regarding goals is still tenable (Grob et al., 2009). This said however, our pre-analyses to examine the level of similarity between family members supported the appropriateness to apply data analytic techniques based on the individual as the analytical unit rather than the family.

A further limitation of the present study is that only neuroticism and extraversion were used as trait-based determinants of SWB instead of integrating all Big Five factors. Although previous research has repeatedly shown these two traits to be strongly related to SWB (e.g., Costa & McCrae, 1980; Gomez et al., 2009; Vittersø & Nilsen, 2002), future studies should include all Big Five factors in an overall model in order to control for shared variance between personality traits and to provide a complete picture of the associations between personality traits, goal importance, and SWB.

To our knowledge, this study represents the first attempt so far to investigate the associations between personality traits, life goals, and SWB from a life span developmental perspective including members of different age groups in the analyses. As such, our results contribute to and complement current research and at the same time provide first evidence as a means to clear the ground for further longitudinal research on precursors of SWB, with special attention paid to developmental trajectories across the life span.

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Footnotes

¹ Both exploratory and confirmatory factor analyses for the total sample as well as for the young, middle-aged, and older adults subsample yielded a two-factor solution for the eight goal importance ratings that was congruent with the theoretically derived goal structure (i.e., intrinsic vs. extrinsic).

² The full table of similarity correlations can be obtained from the first author upon request.

³ To test for possible gender-specific associations among the study variables we analyzed measurement invariance *and* structural invariance across gender. To this end, not only factor loadings, but also the structural relations were constrained to be equal across gender, which did not lead to a significant loss of model fit. Therefore, the main analyses were performed without differentiating between men and women.

Table 1

Correlations, Means, and Standard Deviations of the Study Variables

	1.	2.	3.	4.	5.
Young Adults <i>M (SD)</i>	2.74 (0.63) _a	3.86 (0.65) _a	4.19 (0.49) _a	3.46 (0.72) _a	3.72 (0.61) _a
1. Neuroticism	-	-.31	-.11	-.05	-.58
2. Extraversion		-	.17	.26	.49
3. Intrinsic Goal Importance			-	.12	.22
4. Extrinsic Goal Importance				-	.19
5. Subjective Well-Being					-
Middle-aged adults <i>M (SD)</i>	2.56 (0.52) _b	3.84 (0.56) _a	4.34 (0.43) _b	2.99 (0.65) _b	3.83 (0.48) _a
1. Neuroticism	-	-.28	-.10	.01	-.46
2. Extraversion		-	.21	.17	.37
3. Intrinsic Goal Importance			-	.26	.20
4. Extrinsic Goal Importance				-	.16
5. Subjective Well-Being					-

Table 1 (continued)

Older adults <i>M (SD)</i>	2.55 (0.59) _b	3.77 (0.66) _a	4.11 (0.60) _a	2.87 (0.73) _b	3.75 (0.57) _a
1. Neuroticism	-	-.44	-.20	.04	-.56
2. Extraversion		-	.32	.07	.49
3. Intrinsic Goal Importance			-	.32	.38
4. Extrinsic Goal Importance				-	.09
5. Subjective Well-Being					-

Note. Means with different subscripts differ significantly ($p < .05$) across age groups (i.e., within columns). Sample size for correlations ranged from $n = 247$ to $n = 251$ in young adults, from $n = 240$ to $n = 242$ in middle-aged adults, and from $n = 212$ to $n = 225$ in older adults, respectively. Correlations in bold are significant ($p < .05$).

Table 2

Model Fit Indices for Multiple Group Comparisons Across Age Groups

Model	χ^2	<i>df</i>	CFI	RMSEA (CI ₉₀)	$\Delta\chi^2$ (Δdf)
Model 1: Measurement invariance across age groups	672.43***	360	.903	.035 (.031-.039)	-
Model 2: All parameters invariant	700.16***	374	.899	.035 (.031-.039)	27.73 (14)*
Model 3: Neuroticism to SWB invariant	672.81***	362	.904	.035 (.031-.039)	0.38 (2)
Model 4: Extraversion to SWB invariant	674.04***	362	.903	.035 (.031-.039)	1.61 (2)
Model 5: Intrinsic goal importance to SWB invariant	673.57***	362	.903	.035 (.031-.039)	1.14 (2)
Model 6: Extraversion to intrinsic goal importance invariant	677.19***	362	.902	.035 (.031-.039)	4.76 (2)
Model 7: Extraversion to extrinsic goal importance invariant	675.70***	362	.903	.035 (.031-.039)	3.27 (2)
Model 8: Correlation neuroticism–extraversion invariant	678.26***	362	.902	.035 (.031-.039)	5.83 (2)
Model 9: Correlation intrinsic–extrinsic goal importance residuals invariant	677.98***	362	.902	.035 (.031-.039)	5.56 (2)

Note. CFI = comparative fit index; RMSEA = root mean square error of approximation; CI₉₀ = 90% confidence interval; SWB = Subjective well-being. Model 1 represents the reference model, against which each subsequent model is evaluated.

* $p < .05$; *** $p < .001$

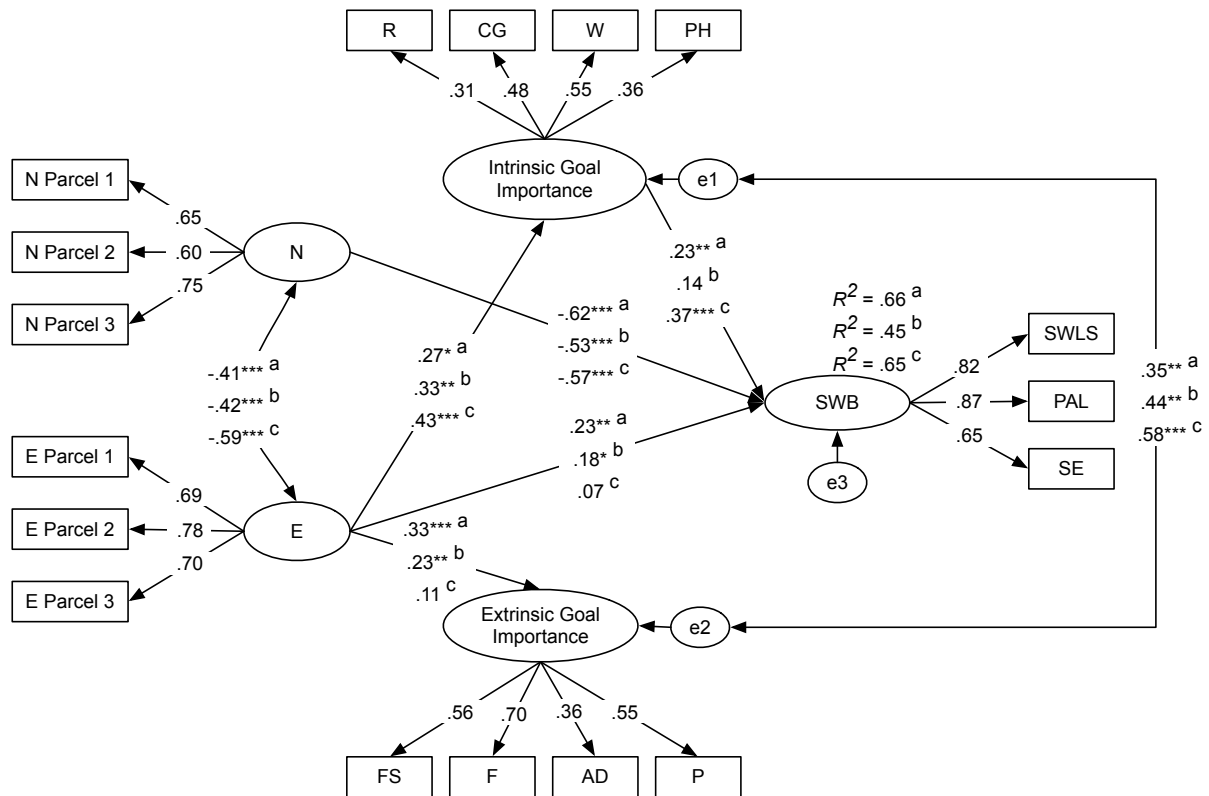


Figure 1. Structural equation model for the relations between neuroticism, extraversion, intrinsic and extrinsic goal importance, and SWB across age groups (^a young adults; ^b middle-aged adults; ^c older adults). Standardized parameter estimates of the unconstrained age-specific multiple-group model with established measurement invariance are displayed. All factor loadings of the observed variables on their respective latent construct across age groups were significant ($p < .001$). The error terms of the manifest variables were omitted for clarity reasons. N = Neuroticism; E = Extraversion; R = Relationship; CG = Common Good; W = Work; PH = Physical Health; FS = Financial Success; F = Fame; AD = Admiration; P = Power; SWLS = Satisfaction with Life Scale; PAL = Positive Attitude towards Life; SE = Self-esteem; SWB = Subjective Well-Being. The paths from neuroticism to intrinsic and extrinsic goal importance and from extrinsic goal importance to SWB were set to zero and are therefore not depicted in the figure.

* $p < .05$; ** $p < .01$; *** $p < .001$.