

# Age Changes in Personality and Their Origins: Comment on Roberts, Walton, and Viechtbauer (2006)

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Although B. W. Roberts, K. W. Walton, and W. Viechtbauer (2006) depicted the present authors as proponents of the immutability of traits, in fact we have always acknowledged the possibility of change, and we are pleased that the results of their meta-analysis are consistent with our conclusions about modest change after age 30. We agree with B.W. Roberts et al. that analyses should be conducted at the level of more specific traits, but prefer the 30 facets of the Revised NEO Personality Inventory to the Social Dominance–Social Vitality distinction. The origins of age changes might be found either in environmental influences common to all cultures or in biologically based intrinsic maturation; we offer some reasons for preferring the latter interpretation. Meta-analyses are useful but not definitive, and the resolution of the origin question lies in further research.

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Readers of Roberts, Walton, and Viechtbauer's (2006) meta-analysis of mean-level changes in personality may be surprised to hear that we are pleased with their results, which largely confirm what we have been claiming for the last several years. Roberts et al. (2006) seem to have used our writings on personality stability as a foil, attributing to us a view of trait "immutability" (p. 19) that we have never held (see Caspi, Roberts, & Shiner, 2005, p. 466, for a similar misrepresentation of our position on trait change). For the record, we recognized age differences between adolescents and over-30 adults at least as early as 1989, when we published college-age norms for the NEO Personality Inventory (NEO-PI; Costa & McCrae, 1989; see also Costa & McCrae, 1994). In 1996, we did indeed postulate that traits "reach mature form in adulthood; thereafter they are stable" (McCrae & Costa, 1996, p. 72), but by 1999—in the chapter cited by Roberts et al.—we added that new, cross-cultural evidence suggested "that cross-sectional decreases in N[euroticism], E[xtraversion], and O[penness] and increases in A[greeableness] and C[onscientiousness] continue at a very modest pace throughout adulthood" (McCrae & Costa, 1999, p. 145).

Our views on personality trait development are based on our own cross-sectional and longitudinal studies as well as our reading of the broader literature, but to a considerable extent, we have reached the same conclusions as Roberts et al. (2006): (a) Neuroticism (the inverse of Emotional Stability) and Extraversion decline, whereas Agreeableness and Conscientiousness increase with age; (b) Openness first increases and then decreases; (c)

changes are more pronounced in early adulthood than either before or after; and (d) similar developmental patterns are found for men and women (McCrae & Costa, 2003). Keeping the scale of the graphs in mind, we leave it to the reader to judge whether the changes in Roberts et al.'s (2006) Figure 2 are "very modest" after age 30, or indeed whether one could fairly describe trait levels as generally "stable" after that age.

Roberts et al.'s (2006) review considered only longitudinal studies, but the results square well with those from a host of cross-sectional studies. A recent large-scale ( $N = 11,985$ ) cross-sectional study was distinguished by two features: The data came from observer ratings rather than the self-reports on which Roberts et al.'s meta-analysis was chiefly based, and they were collected in 50 different cultures (McCrae et al., 2005). Neuroticism, Extraversion, and Openness were higher and Agreeableness and Conscientiousness were lower in college-age targets than in adults, although the effects for Neuroticism and Agreeableness were very small. Openness increased during the age range from 18 to 21 and decreased after age 40. The rate of (cross-sectional) change was faster in college-age than in over-40 targets. In all these respects, these data appear to corroborate the Roberts et al./Costa and McCrae descriptions of trait development.

## Faceting the Factors of Personality

One clear divergence between these two sets of results concerns the scales labeled Social Dominance by Roberts et al. (2006). Those authors reported a substantial increase between early adolescence and age 40 on dominance measures. By contrast, McCrae et al. (2002) found no cross-sectional age differences on Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992) Assertiveness in American or Flemish teenagers, and across 20 cultures, McCrae and Costa (in press) reported that adults tended to score a bit lower than college-age respondents on Assertiveness. More research is needed to reconcile these sets of findings.

We have reservations about the subdivision of Extraversion into Social Vitality and Social Dominance. The distinction apparently

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was first made by Helson and Kwan (2000), who divided California Psychological Inventory (CPI; Gough, 1987) scales into measures of social vitality and social assurance. Unfortunately, CPI scales are strongly intercorrelated, and the meaningfulness of these divisions is questionable. Roberts et al. (2006) wrote that CPI Sociability and NEO-PI-R Activity are Social Vitality scales, whereas NEO-PI-R Assertiveness is a Social Dominance scale. Yet CPI Sociability is more highly correlated with NEO-PI-R Assertiveness ( $r = .52$ ) than with NEO-PI-R Activity ( $r = .31$ ; McCrae, Costa, & Piedmont, 1993). Until a firmer empirical case for this distinction is made, it does not seem useful to us.

However, we concur with Roberts et al. (2006) that it is worthwhile examining developmental trends for more specific traits. Although there is no consensus on how best to partition the five broad traits into discrete facets, there is considerable evidence for one proposed system, the 30 facets of the NEO-PI-R. These facets are characterized by heritability (Jang, McCrae, Angleitner, Riemann, & Livesley, 1998), universality (McCrae et al., 2005), cross-observer validity (McCrae et al., 2004), and rank-order stability (Costa, Herbst, McCrae, & Siegler, 2000), and have been shown to have incremental validity beyond the five broad factors (Reynolds & Clark, 2001). There is cross-sectional evidence that facets of the same domain sometimes have different developmental courses; for example, across five cultures the Excitement Seeking facet of Extraversion declined precipitously from adolescence on, whereas the Warmth facet showed relatively small age differences (McCrae et al., 1999). Longitudinal HLM analyses replicated these findings in an American sample (Costa, McCrae, & Terracciano, 2004). Future meta-analyses should surely be conducted at the facet level.

### Interpreting the Data

Although we generally agree with the description of personality trait development offered by Roberts et al. (2006), we differ on the causal interpretation. The facts seem to be that men and women all over the world change in predictable ways as they go from late adolescence to middle adulthood, toward what might be described as “psychosocial maturity” (Whitbourne & Waterman, 1979). There are at least two plausible explanations for these changes: They may be the result of universal social norms adopted more-or-less independently by all cultures, or they may reflect species-wide intrinsic maturational processes, perhaps evolved because they facilitate the upbringing of the next generation.

Although either or both of these views is consistent with the observed developmental course of traits, five-factor theory (FFT; McCrae & Costa, 1999) advocates the second, based on collateral information. In general, it has been difficult to demonstrate any replicable environmental effects on personality traits (Bouchard & Loehlin, 2001; Neyer & Asendorpf, 2001), so a strong effect of age expectations would be a curious exception. It also seems unlikely to us that a wide range of cultures would all adopt the same age norms, when cultures differ so profoundly on other norms (e.g., gender roles, religious obligations). By contrast, the hypothesis of intrinsic maturation is supported indirectly by evidence that similar age trends are found in other primates (King, Weiss, & Farmer, 2005). Indeed, anyone familiar with puppies and old dogs can understand how the human decline in Excitement Seeking might be biologically based.

There has been some confusion on both sides of this argument about the evidence from behavior genetics studies. McGue, Bacon, and Lykken (1993) reported that developmental changes from late adolescence to early adulthood were modestly to moderately heritable, and those findings were cited in support of FFT by McCrae et al. (1999). Roberts et al. (2006) saw the small magnitude of the effects as evidence “that environmental factors play a larger role in personality trait change in adulthood than do genetic factors” (p. 20). Both of these articles failed to point out that McGue et al. were examining the heritability of individual differences in personality change, whereas the question of central interest concerns normative change—change that is common to everyone. Behavior genetic studies are simply not informative about the origins of attributes shared by all members of a population.

### The Limitations of Meta-Analysis

Roberts et al. (2006) are enthusiastic supporters of meta-analysis, proposing that it can resolve disputes that arise from different readings of the literature. Although meta-analyses provide one valuable perspective, we do not regard them as definitive. The rules for study eligibility and for the coding of effects are to some degree arbitrary, and poor studies are considered alongside good studies. The results are hardly infallible. Serious problems with meta-analyses have been recognized in medical applications, where results often differ from those obtained from the medical “gold standard”: large randomized, controlled trials (LeLorier, Gregoire, Benhaddad, Lapierre, & Derderian, 1997). Two recent meta-analyses of rank-order consistency reached opposite conclusions about the effects of initial age, with Roberts and DeVecchio (2000) concluding that longitudinal consistency is uniformly high after age 50 and Ardel (2000) claiming that consistency declines after age 50.

We would prefer to resolve scientific issues by using sound judgment in reading the literature and by designing new studies that address the limitations identified in existing studies. Like Roberts et al. (2006), we would encourage longitudinal studies of ethnic minorities and non-Western cultures. We hope that researchers would include in their batteries measures of the social environment (such as parenting styles, age expectations, and young adult life experiences) that might shed light on the origins of normative age trends. We would also encourage studies of the aging brain that might suggest the underlying physiology of age changes in personality, and comparative studies of aging in other species. As a field we have made great progress in describing the modest changes that occur to personality traits in adulthood; investigations into their causes should now become a new priority.

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