

Review Article

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Secular Trends and Personality

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Perspectives From Longitudinal and Cross-Cultural Studies—Commentary on

Trzesniewski & Donnellan (2010)

Antonio Terracciano¹

Abstract

According to cross-temporal meta-analyses (Twenge, 2000, 2001), social trends over the last decades have powerfully influenced the personality profiles of children and students, with effects accounting for 20% of the variance of Neuroticism and Extraversion.

However, Trzesniewski and Donnellan (2010, this issue), who examined a large and representative U.S. high-school student sample, found little evidence of secular trends. In this commentary, I emphasize the distinction between cohort and period effects and review findings from longitudinal and cross-cultural studies on the role of social trends

and other cultural influences on personality traits. Analyses of adult personality scores from the Baltimore Longitudinal Study of Aging provide little support for powerful secular effects on Neuroticism and Extraversion; evidence supports a secular trend of declining trust, along with additional small effects on other facets of personality.

Analyses of personality scores from around the world suggest that social and cultural differences account for about 5% of the variance on major dimensions of personality. The integration of findings from multiple perspectives provides useful insights into the role of the environment on personality traits.

Keywords: personality, trust, Neuroticism, cohort effect, culture

Confidence in research findings generally builds from replication by independent investigators (Ioannidis, 2005). Trzesniewski and Donnellan (2010, this issue) examine a representative high-school student sample assessed over the past 30 years and present evidence that considerably weakens previous claims of large cohort effects on several psychological variables. In this commentary, I discuss some of the implications and limitations of the alleged cohort effects on personality traits and summarize results from longitudinal and cross-cultural studies to provide a different perspective on the issue. Ultimately, a pattern of evidence from multiple samples, study designs, and analytic methods is necessary to have confidence in claims of secular trends (Costa & McCrae, 1982).

Using cross-temporal meta-analyses, Twenge (2000) found that later generations of children and students scored about a full standard deviation higher on measures of

Anxiety and Neuroticism from 1952 to 1993,¹ a very large effect that accounted for about 20% of the variance. In clinical terms, Twenge (2000) argued that “The average American child in the 1980s reported more anxiety than child psychiatric patients in the 1950s” (p. 1007). A similar large effect was found for increasing Extraversion (Twenge, 2001).

In Twenge’s work (2000, 2001), birth cohort is a proxy for broad social trends, and it is seen as an important influence on personality development, especially during childhood. Changes in social, cultural, and environmental conditions are thought to create unique life experiences that affect the developmental course and the psychological make-up of a given generation. But do these social changes have an effect exclusively on children and students? Are these alleged cohort effects a transient phenomenon, or do these social influences have an enduring effect on the adult personality? Are average American adults today more anxious than adult psychiatric patients in the 1950s? Twenge’s cross temporal meta-analyses (2000, 2001) are limited to children and college students, therefore it is impossible to generalize beyond these age groups or to distinguish cohort or generational effects from time-of-measurement or period effects.

The distinction between cohort and period effects has important theoretical implications, given Twenge’s emphasis on early childhood experiences for personality development. For example, consider the secular trends observed for obesity. A cross-temporal meta-analysis would suggest that children and students assessed in 2008 would have a higher average BMI than those assessed in 1978.² This secular trend could be interpreted as a cohort effect, further speculating that early life experiences (e.g., too much food and sugary drinks) create a fat “Generation Me.” In reality, the obesogenic

environment influences all age groups and does not appear to be limited to a generation with common childhood life experiences. Cross-sectional and longitudinal studies can be informative as to whether the effects observed by Twenge extend beyond college student samples and whether these are enduring or lifelong effects or simply temporary trends with little impact on the development of adult personality.

To address such questions and provide insights on secular trends for personality traits among adults, it is useful to examine the findings from one of the largest and longest running longitudinal studies in the U.S.: the Baltimore Longitudinal Study of Aging (BLSA, Terracciano, Costa, & McCrae, 2006). Ten personality traits were assessed in a BLSA sample ($N = 2,359$; participants aged 17–98) from 1958 to 2002 (Terracciano, McCrae, & Costa, 2006), using the Guilford–Zimmerman Temperament Survey (GZTS; Guilford, Zimmerman, & Guilford, 1976). It should be noted that the BLSA sample is not representative of the U.S. population. Subjects entered the study at different ages and time periods, and the number of assessments and time intervals across visits varied considerably. These data have been analyzed using the classic cross-sectional, longitudinal, and time-sequential analyses to disentangle the effects of age, period, and cohort (Costa & McCrae, 1982). More recently, Terracciano, McCrae, and Costa (2006) used hierarchical linear modeling analyses (HLM) to examine all available data and distinguish age effects from secular trends. We estimated the effect of secular trends using year of birth as a predictor of both the intercept (individual differences) and slope (individuals' age-related changes). Results indicate that year of birth had limited influence on the rate of change (slope); adult developmental trajectories were very similar for individuals born in different birth cohorts. Year of birth was a significant predictor of

the intercept for 7 of the 10 GZTS scales. However, with the exception of the Personal Relations (7.6%) and Ascendance (2.6%) scales, these effects explained less than 1% of the variance.

Emotional Stability, a GZTS scale strongly and inversely related to Neuroticism (Terracciano, McCrae, & Costa, 2006), showed a pattern contrary to the striking increase in Neuroticism found among children and students. Emotional Stability was higher among later born cohorts and those tested at a later time; thus, instead of the large increase in Neuroticism suggested by the cross-temporal meta-analysis (Twenge, 2000), we found the younger generations tested at a later time to be slightly more emotionally adjusted. Objectivity, a second GZTS scale strongly related to Neuroticism, showed no cohort effect.

Similar to the effect for Extraversion found among college students (Twenge, 2001), we found a significant secular trend for Ascendance (assertive, outspoken, dominant): later born cohorts and those tested later in time scored higher on this Extraversion-related measure. However, although Twenge (2001) found an effect of about 1 *SD* over the same time period (1966–1993), we estimated an effect of about 0.33 *SD*. Further, we found no secular trend for Sociability, the GZTS scale most strongly related to Extraversion.

We found the largest secular trend for Personal Relations, a scale related to trust: Personal Relations was lower among later born cohorts and those tested at a later time. For example, those born around 1950 and tested in 2000 were estimated to score about 0.25 *SD* lower than those born around 1930 and tested in 1980. This finding is broadly consistent with Robinson and Jackson's (2001) conclusion that trust is declining in

America. Analyzing data from the General Social Survey (1972–1998), they estimated that trust has been declining among Americans since the 1980s and increasingly more so for those born after the 1940s. Similarly, Trzesniewski and Donnellan examined a number of psychological traits among high-school students (1976–2006) and found the largest effects for measures of trust and cynicism. Using different samples, study designs, and analytic methods, these three studies found a particularly consistent pattern of evidence that the level of trust is declining among Americans, with both cohort and time-of-measurement effects playing a role. Perhaps consistency across studies might be achieved when the analyses consider narrowly defined traits, such as the facets Trust and Assertiveness.

In the BLSA, we have also examined secular trends for the 30 facets and five factors assessed with the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992), a widely used measure of the Five-Factor Model (McCrae, Terracciano, A., & 78 Members of the Personality Profiles of Cultures Project, 2005). We examined over 5,000 NEO-PI-R assessment points collected from 1989 to 2004 (Terracciano, McCrae, Brant, & Costa, 2005). As with the GZTS, HLM analyses found little evidence that the rate of age-related changes (slopes) were influenced by year of birth. However, year of birth was a significant predictor of the intercept for several traits assessed with the NEO-PI-R. Analyses confirmed the secular trend of declining Trust and increasing Assertiveness, but the strongest effect was found for the Competence facet of Conscientiousness, with later born cohorts and those tested at a later time scoring higher (about 0.25 *SD* per decade).

Contrary to the cross-temporal meta-analyses (Twenge, 2001), we found no secular trend for Extraversion. Furthermore, HLM analyses revealed that year of birth was associated with lower levels of Neuroticism and Anxiety, an effect among adults that is contrary to those found among children and students by Twenge (2000). However, consistent with the finding of declining depression among children, year of birth was associated with lower scores on depression (Twenge & Nolen-Hoeksema, 2002). The small but converging findings of a declining level of depression challenge generational beliefs that recent cohorts are higher on negative affect. Similar to national character stereotypes, these generational beliefs might be unfounded stereotypes (Terracciano, Abdel-Khalek et al., 2005; Terracciano & McCrae, 2007).

It is clear that adult data from the BLSA sample fail to support the large cohort effects found for Neuroticism and Extraversion in cross-temporal meta-analyses of children and students. In addition to the BLSA sample, other longitudinal (e.g., Löckenhoff et al., 2008; Mroczek & Spiro, 2003) and cross-sectional studies (e.g., Costa et al., 1986) of adults report patterns that are difficult to reconcile with the trends reported by Twenge. We noted that “The dramatic effects that Twenge (2000, 2001) observed in college age samples do not seem to apply to these adults, who appear to have been fortunate enough to escape the ‘age of anxiety’ (Twenge, 2000). Perhaps culture has stronger effects on personality in childhood and adolescence, but in adulthood such influences appear to be diminished” (p. 501, Terracciano, McCrae et al., 2005). However, in light of the results from Trzesniewski and Donnellan, this is not the most parsimonious interpretation.

Cross-cultural research provides a different perspective and frame of comparison to evaluate secular trends in the U.S. The alleged cohort effects for Neuroticism and Extraversion have been interpreted as the result of historical social changes that influenced personality development. Do the large effects on personality deriving from social changes in the U.S. compare with the socio-cultural and broader environmental differences among countries? Have there been changes in the last 30–40 years in the U.S. that are larger than the cultural differences that exist today between the U.S. and Thailand, India, Turkey, or Uganda? Do cross-sectional studies in countries with different cultures and recent histories show different developmental patterns? Dr. McCrae, myself, and collaborators from around the world have collected personality data from students in about 50 cultures (McCrae, Terracciano, A., & 78 Members of the Personality Profiles of Cultures Project, 2005). We asked college students to complete the NEO-PI-R describing a college-age or adult they knew well. We found that the average scores on Neuroticism and Extraversion in the U.S. sample were similar to those in cultures as diverse as Japan, Estonia, Kuwait, and Burkina Faso (McCrae, Terracciano, A., & 79 Members of the Personality Profiles of Cultures Project, 2005). Mean level differences between cultures were generally less than half the effect sizes reported in the cross-temporal meta-analyses. Further, analysis of variance indicated that culture explained about 4% of the variance in Neuroticism and Extraversion (McCrae & Terracciano, 2008). A new study of adolescent personality in 24 cultures from around the world indicates that culture explains about 4%–5% of the variance in Neuroticism and Extraversion adolescent ratings (McCrae et al., in press). In both cross-cultural studies, the effect of culture was smaller than the estimated 20% cohort effect found in the cross-temporal meta-analyses.

Furthermore, similar age differences are observed in samples from nations that differ dramatically in culture and recent history (McCrae et al., 1999; McCrae, Terracciano, A., & 78 Members of the Personality Profiles of Cultures Project, 2005). Although observer ratings are less consistent, students self-report scores tend to be higher than adults scores on Neuroticism, Extraversion, Openness and lower on Agreeableness and Conscientiousness in most cultures. These cross-sectional patterns are consistent with the hypothesis that there is a universal maturational process.

To conclude, broad social trends and other environmental influences that vary across time and place are an interesting source of influence on personality development. The evidence considered here do not support the powerful secular effects found for Neuroticism and Extraversion in cross-temporal meta-analyses (Twenge, 2000, 2001). However, there seem to be more contained secular effects on specific traits such as trust, assertiveness, and depression. Given that in most studies the cohort effects are confounded with period effects, we can only speculate whether the observed secular trends are generational effects deriving from growing up in a particular era or a period effect not linked to developmental patterns. Integrating findings from different perspectives can provide useful insights on the role of the environment on personality traits.

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¹Surprisingly, Twenge and Nolen-Hoeksema (2002) found an opposite trend, especially for boys, on a measure of children's depression. Given the strong association between Neuroticism, anxiety, and depression (Clark & Watson, 1991), it is difficult to reconcile how more recent generations were both higher on anxiety and somewhat lower on depression. Also, as noted by Trzesniewski and Donnellan, the Neuroticism finding is puzzling considering the trend that Twenge found for increasing self-esteem, which has a strong, negative relation with Neuroticism.

²Most children today are in the normal weight range, and only a minority would be classified as obese. Still the average BMI would be higher for the "later generation". Assuming that Twenge (2000) report is correct, this raises the question of whether greater anxiety in the "later generation" is due to small increases across all individuals or large increases among a minority. Are there individual differences in response to an increasing "anxiogenic environment"?