Personality Change Beyond the Big Five: Personality Aspects, Vocational Interests and Cognitive Ability

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Link to the test.

Overview

Evaluations of mean-level change in “personality” have revealed several important trends across the lifespan for Big Five traits (Roberts & Mroczek, 2008) and cognitive ability (Schaie, 1994). Less is known, however, about mean-level changes in either Interests or more narrowly-defined aspects of Big Six personality traits. The present study uses cross-sectional data to explore differences in mean level scores of these domains by age and gender.

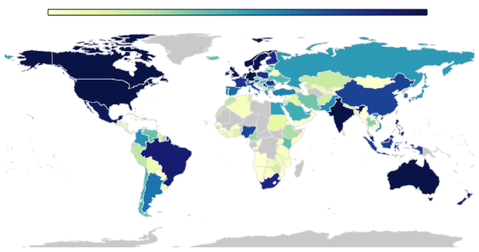
Methods

Between January 22, 2013 and January 11, 2014, approximately 44,331 individuals from 180 countries (73% US) took an online personality test (`sapa-project.org`) linked to the Personality Project website (`personality-project.org`). Participants completed a mean of 98 items assessing temperament (Big Five and Big Six constructs), cognitive abilities, and vocational interests. In exchange for completing the survey and providing demographic information, participants received feedback on their temperament and abilities on the basis of their responses.

Temperament was assessed with items sampled from four sets of scales from the International Personality Item Pool: the 100 item set for the Big-Five Factor Markers (Goldberg, 1999), the 100 items of Big Five Aspect Scales (DeYoung, Quilty, & Peterson, 2007), the 240 items of the IPIP-HEXACO scales (Ashton, Lee, & Goldberg, 2007), and the 48 items in the Questionnaire Big Six scales (Thalmayer, Saucier, & Eigenhuis, 2011). After removing 115 overlapping items, 373 temperament items remained. Cognitive ability was assessed using four item types (60 items total) from the International Cognitive Ability Resource (Condon & Revelle, in manuscript). Vocational interests were assessed with the 60 item public-domain RIASEC marker scales (Armstrong, Allison, & Rounds, 2008) and the 92 item Oregon Vocational Interest Scales (Pozzebon, Visser, Ashton, Lee, & Goldberg, 2010).

Each participant was administered a quasi-random subset of the available items. Overlapping item administration across participants allowed for the construction of synthetic correlation matrices where the underlying data are “Massively Missing Completely at Random” (mean pairwise item administration = 1550). Analyses were conducted in R using the “psych” and associated packages. Correlations $> |0.02|$ significantly differ from 0 at $p < 0.05$.

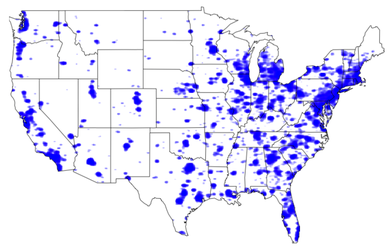
Participants by Country



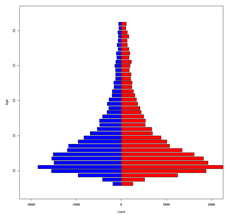
Top Countries by Participants

Country	Participants
United States	29,973
Canada	1,929
United Kingdom	1,271
Australia	1,001
Germany	649
India	409
Norway	298
Sweden	298
Philippines	231
Mexico	229
Netherlands	224
New Zealand	184

Participants by US ZIP Code



Age & Gender



age mean = 25; median = 22

55% female

Figure 1: Cross-Sectional Changes in the Big Six & Related Aspects by Gender

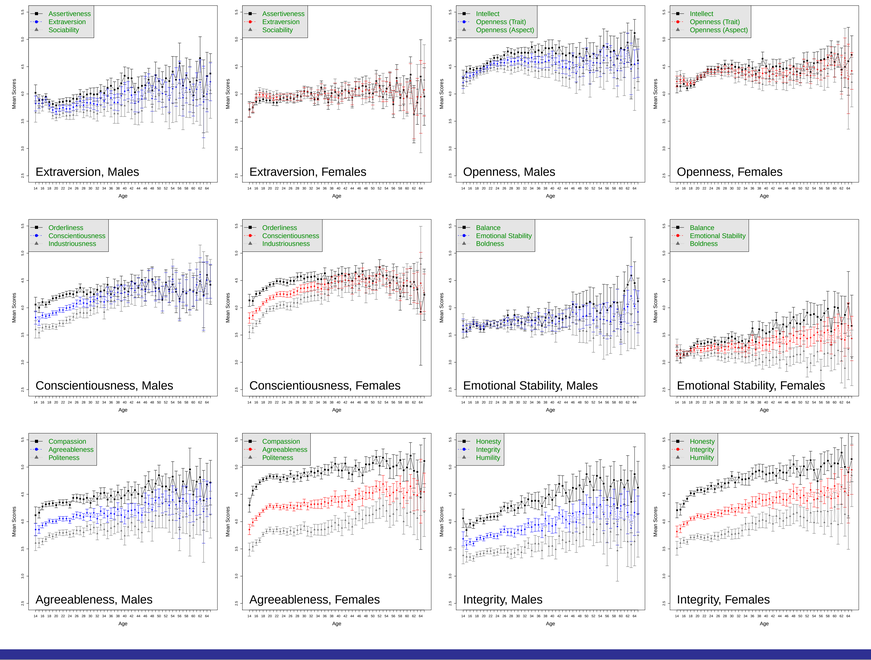


Figure 2: Scale Correlations

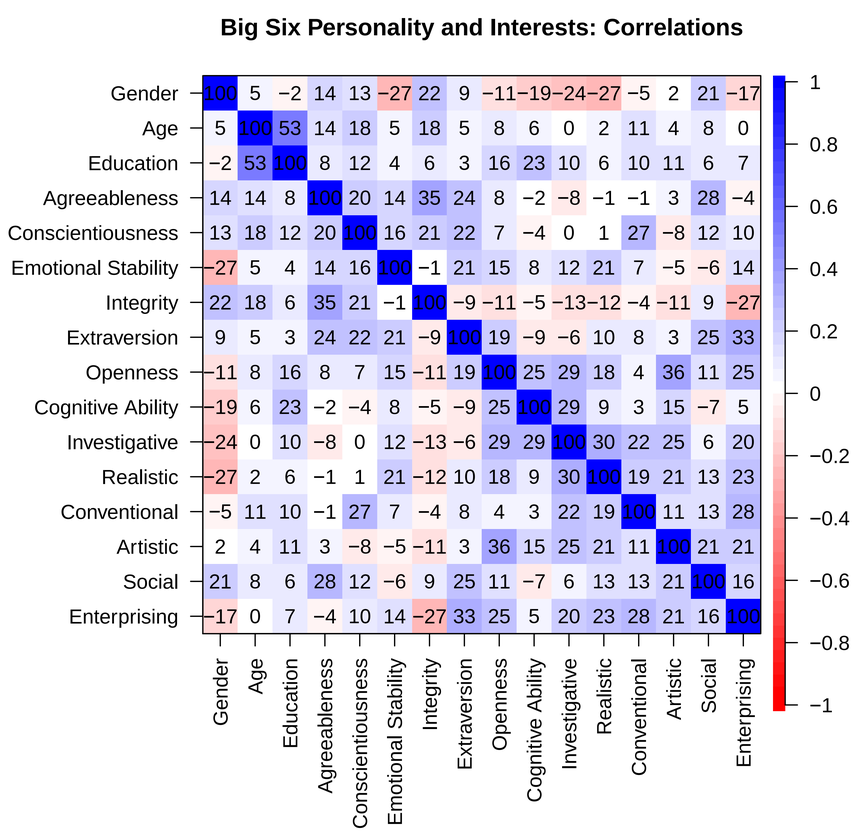
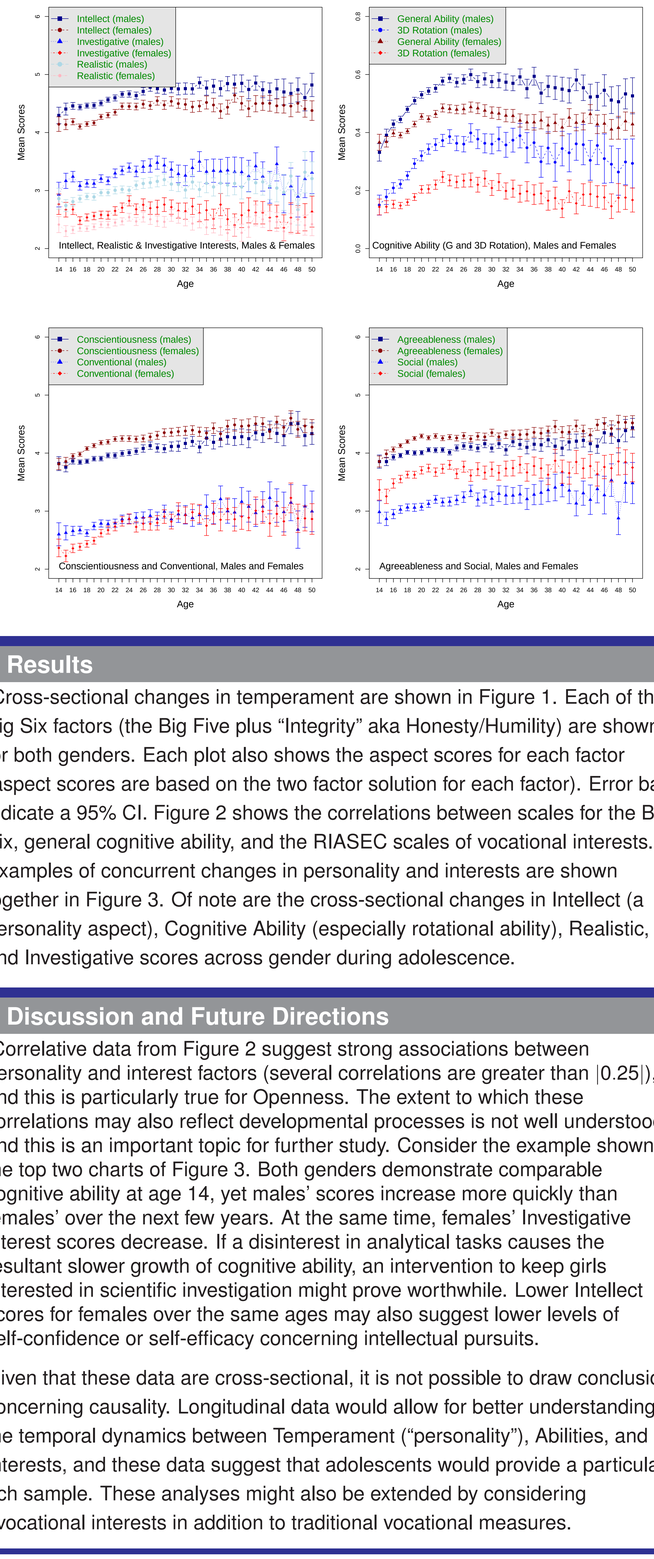


Figure 3: Temperament/Interest Age Trends



Results

Cross-sectional changes in temperament are shown in Figure 1. Each of the Big Six factors (the Big Five plus “Integrity” aka Honesty/Humility) are shown for both genders. Each plot also shows the aspect scores for each factor (aspect scores are based on the two factor solution for each factor). Error bars indicate a 95% CI. Figure 2 shows the correlations between scales for the Big Six, general cognitive ability, and the RIASEC scales of vocational interests. Examples of concurrent changes in personality and interests are shown together in Figure 3. Of note are the cross-sectional changes in Intellect (a personality aspect), Cognitive Ability (especially rotational ability), Realistic, and Investigative scores across gender during adolescence.

Discussion and Future Directions

Correlative data from Figure 2 suggest strong associations between personality and interest factors (several correlations are greater than $|0.25|$), and this is particularly true for Openness. The extent to which these correlations may also reflect developmental processes is not well understood and this is an important topic for further study. Consider the example shown in the top two charts of Figure 3. Both genders demonstrate comparable cognitive ability at age 14, yet males’ scores increase more quickly than females’ over the next few years. At the same time, females’ Investigative interest scores decrease. If a disinterest in analytical tasks causes the resultant slower growth of cognitive ability, an intervention to keep girls interested in scientific investigation might prove worthwhile. Lower Intellect scores for females over the same ages may also suggest lower levels of self-confidence or self-efficacy concerning intellectual pursuits.

Given that these data are cross-sectional, it is not possible to draw conclusions concerning causality. Longitudinal data would allow for better understanding of the temporal dynamics between Temperament (“personality”), Abilities, and Interests, and these data suggest that adolescents would provide a particularly rich sample. These analyses might also be extended by considering avocational interests in addition to traditional vocational measures.

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