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## Stereotypes of Age Differences in Personality Traits: Universal and Accurate?

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## Abstract

Age trajectories for personality traits are known to be similar across cultures. To address whether stereotypes of age groups reflect these age-related changes in personality, we asked participants in 26 countries ( $N = 3,323$ ) to rate typical adolescents, adults, and old persons in their own country. Raters across nations tended to share similar beliefs about different age groups; adolescents were seen as impulsive, rebellious, undisciplined, preferring excitement and novelty, whereas old people were consistently considered lower on impulsivity, activity, antagonism, and Openness. These consensual age group stereotypes correlated strongly with published age differences on the five major dimensions of personality and most of 30 specific traits, using as criteria of accuracy both self-reports and observer ratings, different survey methodologies, and data from up to 50 nations. However, personal stereotypes were considerably less accurate, and consensual stereotypes tended to exaggerate differences across age groups.

Laypersons often have intuitive notions of lifespan development, influenced by literary, philosophical, and media representations, as well as their personal observations. They can readily report their beliefs on the social, emotional, physical, and cognitive features of adolescents, adults, and old persons (e.g., Buchanan & Holmbeck, 1998; Grünh, Gilet, Studer, & Labouvie-Vief, 2011; Löckenhoff et al., 2009), and these stereotypes are thought to contribute to societal attitudes and prejudices towards these groups (Nelson, 2002; Zebrowitz & Montepare, 2000). In this article, we quantify the perceived personality trait profiles of adolescents, adults, and the old using a comprehensive measure of the Five-Factor Model (FFM) of personality (Digman, 1990). We assess perceptions of these age groups in 26 countries around the world to test whether these views are culture-bound or universal, and we evaluate the accuracy of stereotypes of age differences.

Research on age stereotypes generally asks participants to list attributes that describe a group. These free-response assessments have revealed multifaceted beliefs regarding adolescents and the elderly. For example, the elderly are described as demanding but kind (Hummert, 1990; Hummert, Garstka, Shaner, & Strahm, 2004), and pitiful and not particularly capable (Fiske, Cuddy, Glick, & Xu, 2002). Adolescents have been described as rebellious and moody (Gross & Hardin, 2007), yet hardworking and intelligent (Buchanan & Holmbeck, 1998). In order to encompass these multifaceted beliefs in a comprehensive personality profile, we used the FFM framework, which proposes that personality traits can be organized into five distinct domains, namely, Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. Each domain can be further divided into lower order facets (Costa & McCrae, 1995). The structure of the FFM has been shown to replicate across age, gender, and culture (McCrae, 2004). Thus, by using a common measure of personality perception, we can determine whether adolescent boys and girls, men and women, and old men and old women are consistently perceived to differ across the full range of personality traits.

A number of studies have tested the hypothesis that raters in different cultures have substantially different views of adolescents and the old (Boduroglu, Yoon, Luo, & Park, 2006; Yun & Lachman, 2006). Social stereotypes of the elderly vary widely among different ethnic groups (Liu, Ng, Loong, Gee, & Weatherall, 2003), as do cultural ideals and practices surrounding elder care and treatment (Harvey & Yoshino, 2006). National groups also vary in their perception and treatment of adolescents; Americans used more socially negative words to describe adolescents than did the Chinese (Boduroglu et al., 2006), and mothers' reactions to hyperactive boys differ cross-culturally (Gidwani, Opitz, & Perrin, 2006). Personality stereotypes of different age groups, however, may be more similar across nations (Haslam, Bastian, Fox, & Whelan, 2007; Igier & Mullet, 2003). In particular, Cuddy, Norton, and Fiske (2005) found that stereotypes of the old as high in warmth and low in competence generalized to 6 different nations. Furthermore, age-linked social role influences on personality perception, such as marriage and child rearing (Wood & Roberts, 2006), are likely to be similar across cultures. We further develop this research area by assessing stereotypes about different age groups with an FFM measure of the five major factors and 30 facets in samples from 26 countries. We aim to determine the content and consistency of age stereotypes across cultures, and compare the relative strength of age and culture on such personality stereotypes.

By using the FFM, we can also evaluate stereotype accuracy by comparing stereotypical perceptions to published self-reported and observer-rated personality data for each age group. Measures of assessed personality differences across the lifespan show patterns that are similar across cultures (Donnellan & Lucas, 2008; Lucas & Donnellan, 2009; McCrae, Costa, H ebí ková, et al., 2004; McCrae et al., 2005; Soto, John, Gosling, & Potter, 2011).

The age differences seen in cross-sectional studies are similar to the age trajectories observed in longitudinal studies (Lucas & Donnellan, 2011; Roberts, Walton, & Viechtbauer, 2006; Terracciano, McCrae, Brant, & Costa, 2005). Roughly speaking, Extraversion, Openness, and Neuroticism generally decline, and Agreeableness and Conscientiousness generally increase, during most of the adult lifespan. However, the strength and direction of these age effects are less clear for some personality factors during some portions of the lifespan, such as at old age. For example, some studies find Openness declining through adulthood (Donnellan & Lucas, 2008; Lucas & Donnellan, 2011; McCrae et al., 2005; Specht, Egloff, & Schmukle, 2011; Terracciano, McCrae et al., 2005), but others report relative stability (Roberts et al., 2006), or even increases (Soto et al., 2011). There are also mixed findings on whether Conscientiousness linearly increases through age (Soto et al., 2011; Roberts et al., 2006) or peaks in middle age and then declines (Donnellan & Lucas, 2008; Lucas & Donnellan 2011; Terracciano, McCrae, et al., 2005). Given these discrepancies in the literature, we will use data from multiple published studies to evaluate the accuracy of age stereotypes.

Do perceived age differences in personality accurately match actual age differences, or are they baseless stereotypes? Literature on the accuracy of personality stereotypes might support either hypothesis. On the one hand, FFM assessments of gender stereotypes roughly match actual sex differences in personality across cultures (Williams, Satterwhite, & Best, 1999); on the other hand, previous work generally found little correspondence between stereotypes of national character and mean levels of personality in a particular country (Terracciano, Abdel-Khalek, et al., 2005; but see Realo et al., 2009; Rogers & Wood, 2010). Perhaps age stereotypes are exaggerated, but have a kernel of truth (Jussim, 2012; Jussim, McCauley, & Lee, 1995). A few studies have assessed the trajectory of age stereotypes within a single country, focusing on the five major factors of personality. In the U.S., 68-year-old targets were rated lower on Neuroticism and Extraversion, and higher on Openness, Agreeableness and Conscientiousness, compared to 17-year-olds, 28-year-olds and 45-year-olds (Wood & Roberts, 2006). However, in another American sample, participants rated 69-year-old targets lower on Openness and Conscientiousness compared to 41-year-old and 22-year-old targets (Slotterback, 1996), but no differences were found for the other three factors. Australian raters perceived age-normative linear declines for Neuroticism, Extraversion, and Openness, and increases for Agreeableness and Conscientiousness (Haslam et al., 2007). French participants additionally perceived curvilinear age differences, where the age-normative trends above reversed directions for very old (85-year-old) targets on all factors save Openness (Igier & Mullet, 2003). The present study extends this work by examining the accuracy of age stereotypes across a large number of cultures.

## Study Design

There are two senses in which psychologists use the term *stereotype* (Jussim, 2012). *Consensual stereotypes* refer to collective beliefs about a target group, whereas *personal stereotypes*—what Haslam and Wilson (2000) called *personal beliefs*—refer to the views that a single person has about a group. Issues of universality and accuracy should be addressed at both levels, but the main focus of the present study is on consensual stereotypes of age groups, operationalized as the mean of a sample of personal stereotypes. Thus, we will be concerned with such questions as “Do Chileans in general hold the same beliefs about personality in the old as Estonians, and are these beliefs correct?”

In an ideal design, the personal stereotypes sampled would be representative of all members of a country, as would the criteria, personality trait assessments. The same instrument would be used to assess traits and stereotypes of traits, so that they would be directly comparable, and the same countries would provide data on perceptions and assessed traits (e.g., Allik,

Möttus, & Realo, 2010; Realo et al., 2009). However, the data for such an ideal design to assess age stereotypes are not yet available. Therefore, in this study we make a series of assumptions that allow us to estimate universality and accuracy of age stereotypes, and we test many of these assumptions by using a variety of data sources. Convergence across these different analyses should give confidence in the conclusions.

In this study, we assessed personality perceptions of the typical adolescent, adult, and older person, using an FFM measure, including lower order facets, in 26 countries across the globe. To define the boundaries of each age group, we also asked our participants to report their perceptions on the beginning and end age for adolescence, adulthood, and old age (cf. Toothman & Barrett, 2011). We evaluated the relative contributions of target age, gender, and culture to perceptions of personality, and the extent to which age stereotypes generalized across cultures. We then quantified the relationship of the stereotypical perceptions assessed in the present study with self-reports and observer ratings of personality traits from published studies, on the consensual as well as the personal level.

The current design contributes to the literature on age-based personality stereotypes in several theoretically important ways. First, our cross-national study systematically measures the content and consistency of age-based personality stereotypes in 26 geographically and culturally diverse countries, and may help settle controversy regarding the degree to which these stereotypes differ across countries. By extension, this research may shed light on the role of cultural ideals and practices in lay personality perception. Second, in extant research on personality stereotypes, few studies have examined lower order facets of personality. Because age-based personality differences vary among lower order facets within the same factor (Roberts et al., 2006; Soto et al., 2011; Terracciano, McCrae, et al., 2005), an assessment of age stereotypes and accuracy beyond the five major factors provides more nuanced information than available from previous research. Finally, we go beyond previous qualitative assessments of the accuracy of age stereotypes by statistically comparing our data with multiple criterion samples, allowing quantitative conclusions about stereotype accuracy.

## Method

### Procedure

Participants from 26 countries<sup>1</sup> ( $N = 3,470$ ) completed the questionnaires in the primary (or official) language of their locale. These participants were previously described in detail in Löckenhoff et al. (2009). One hundred and forty-seven participants were excluded based on data quality (incomplete surveys or evidence of random responding), leaving 3,323 participants in the current study ( $N$  per site = 49–283,  $Mdn$   $N$  per site = 100; see Table 1). About two-thirds of participants were female and most were in their early 20s, except for subsamples in Italy, South Korea, and the United States. They were assigned either males or females as targets, then rated the personality traits of the typical adolescent, adult, and old person in their country in counterbalanced order.

Participants also reported their perceptions of the beginning and end ages of adolescence, adulthood, and old age with responses to single items: “What age do you consider [age group]? From XX to YY.” Adolescence was perceived to start at a median age of 13 ( $M = 13.38$ ,  $SD = 2.72$ ) years and end at a median age of 19 ( $M = 20.28$ ,  $SD = 3.90$ ) years.

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<sup>1</sup>In this article we use “country” or “nation” to refer to the political units in our sample, including the Hong Kong Special Administrative Region of the People’s Republic of China. While we are fully aware that Hong Kong is not a country separate from Mainland China, linguistic, political, and sociocultural differences between the two regions justify analysis of Hong Kong separately from Mainland China.

Adulthood was perceived to start at 21 ( $M = 22.70$ ,  $SD = 4.92$ ) years and end at 59 ( $M = 56.79$ ,  $SD = 13.68$ ) years. Old age was perceived to start at 60 ( $M = 59.72$ ,  $SD = 8.50$ ) years. Table 1 lists age perception means by country. In analyses comparing age stereotypes to actual age differences in self-report personality data, these perceived age cutoffs were used to categorize previously published data into one of the three age groups.

## Measures

**National Character Survey**—Stereotypes about the three age groups were assessed using the National Character Survey (NCS; Terracciano et al., 2005), which consists of 30 bipolar items corresponding to the 30 facets of the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992). NCS domain scores are calculated by summing six facets for each of the five factors. In order to facilitate comparison with previously published data, raw scores on the NCS were transformed to  $T$ -scores<sup>2</sup> using norms based on stereotype ratings of the typical member of one's own country, without any specification of age or gender, collected from 49 different countries (Terracciano et al., 2005). Thus, in this article we express ratings of the typical male or female of a given age in a specific country relative to ratings of people in general. (Using norms from the present sample did not substantially change findings)<sup>3</sup>.

**Comparison data**—To provide quantitative estimates of the accuracy of perceived age differences in personality, we used self-reports and observer ratings for different age groups drawn from the prior literature. Specifically, we used personality self-reports on the domain level from nationally representative samples in Britain and Germany (Donnellan & Lucas, 2008), self-reports of domains and some facets from a large Internet sample in English-speaking countries (Soto et al., 2011), self-reports on domain and facet levels from a cross-sectional sample in the United States (McCrae et al., 2005), and observer ratings of personality on the facet level from a large cross-national study (McCrae, Terracciano, et al., 2005). All data sources reported  $T$ -scores in the original publication.

In the nationally representative British and German samples (Donnellan & Lucas, 2008), personality was assessed using a 15-item version of the Big Five Inventory (John & Srivastava, 1999). Participants completed the personality measure in English (British sample) or German (German sample). Based on the age cut-offs reported in the present study, we used the 16–19 age group as the adolescent self-reported personality (British  $N = 1,007$ ; German  $N = 1,344$ ), aggregated the 20–29, 30–39, 40–49, and 50–59 age groups as the adult self-reported personality (British  $N = 7,433$ ; German  $N = 14,126$ ), and aggregated the 60–69, 70–79, and 80–85 age groups as the old self-reported personality (British  $N = 3,381$ ; German  $N = 5,379$ ).

<sup>2</sup> $T$ -scores, familiar to personality assessors, are mathematically equivalent linear transformations of  $z$ -scores, with a mean of 50 and standard deviation of 10. Both metrics are indicated in the Figures.

<sup>3</sup>In comparing stereotypes and personality assessments, a particularly important consideration is the use of a common metric. Because different instruments are used, raw scores cannot be compared, and it is necessary to standardize all scores using appropriate norms before making comparisons. This is the usual procedure when personality assessments are compared across instruments, but it is arguable that the norms used to standardize stereotype ratings may differ systematically from those used to standardize self-reports: Variance may be substantially lower in stereotype ratings, because all personal stereotypes may agree strongly on each target group's characteristics. Under that scenario, standardized age differences in stereotype scores would appear to be exaggerated. Fortunately, that objection can be addressed. The NCS has been used in other studies for both self-reports and ratings of typical group members. In one (Allik, Mõttus, & Realo, 2010), self-reports of Russians and ratings of the typical Russian were gathered. Across 30 trait scales, the mean standard deviations were very similar (1.05 and 1.07, respectively). In another, data from six Northeastern European nations (Realo et al., 2009) also showed comparable mean standard deviations for self-reports (0.98) and national stereotype ratings (0.97; personal communication, A. Realo, December 4, 2011). Thus, stereotype data, when standardized, should be fully comparable to personality assessment data.

Soto et al. (2011) reported data from a volunteer sample of Internet survey participants from English-speaking countries (the United States, Canada, the United Kingdom, Ireland, Australia, and New Zealand). Participants rated their own personality using the 44-item version of the Big Five Inventory, which includes the five major domains of personality and can be used to assess 10 of the 30 facets of the NEO-PI-R (Soto & John, 2009). Again, using age cut-offs derived from the present study we aggregated the data into adolescents (13–20,  $N = 540,934$ , age  $M = 17.34$ ), adults (21–59,  $N = 704,191$ , age  $M = 31.93$ ), and the old (60–65,  $N = 8,797$ , age  $M = 61.86$ ).

To establish the correspondence of the NCS with self-reported personality across all 30 facets, we compared our data to results from an American cross-sectional study utilizing the NEO Personality Inventory-3 (NEO-PI-3), a revision of the NEO-PI-R (McCrae, Martin, & Costa, 2005). This sample has a broad age span, ranging from 14 to 90 years, with respondents in the age range 18 to 30 overrepresented by design. We aggregated the self-report data into adolescents (14–20,  $N = 500$ , age  $M = 17.62$ ), adults (21–59,  $N = 526$ , age  $M = 37.57$ ), and the old (60+,  $N = 109$ , age  $M = 69.10$ ).

In addition to evaluating stereotype accuracy relative to self-report data, we also drew on observer ratings. Specifically, we compared perceptions of adolescents and adults in the present sample with NEO-PI-R personality ratings of students ( $M = 19.8$  yrs,  $N = 5,095$ ) and adults ( $M = 49.9$  yrs,  $N = 6,128$ ) by observers who knew these individuals well (McCrae, Terracciano, et al., 2005). That study reported data from 50 countries, and, like the present sample, included both English- and non-English speaking samples.

### Analyses of Accuracy

To quantify accuracy within each trait, it is necessary to compare mean stereotype scores with mean observed trait scores for three age groups. Calculating Pearson correlations within each trait would not be appropriate due to the low number of data points (i.e., the three mean ratings of adolescents, adults, and the old);<sup>4</sup> instead, we calculated agreement for each domain and facet using two indices of profile agreement, Cattell's (1949) coefficient of pattern similarity,  $r_p$ , and the coefficient of profile agreement,  $r_{pa}$  (McCrae, 2008). We calculated  $r_p$  and  $r_{pa}$  between perceived and observed means, with each age group as a profile element ( $k = 3$ ).

Cattell's index is sensitive only to the mean squared distance between standardized profile elements; it yields high values whenever the two profiles are close. McCrae's index is intended to be a refinement of  $r_p$  that also takes into account the extremeness of scores, because agreement on extreme scores is more noteworthy than agreement on average scores. When dealing with group data (as in the present application), this means that  $r_{pa}$  is more conservative than  $r_p$ , because group means tend toward average values. These coefficients are roughly comparable to a Pearson correlation, but are best interpreted as an index of relative effect size.

To assess overall accuracy of age stereotypes across traits, we computed Pearson correlations across the 15 domain scores (5 factors  $\times$  3 age groups) or the 90 facet scores (30 facets  $\times$  3 age groups). Because observer ratings of personality traits were available only for adolescents and adults, we correlated the age differences reported in McCrae, Terracciano, et al. (2005) with perceived mean differences between adolescents and adults in the present

<sup>4</sup>The median overall similarity Pearson correlation between perceived and self-reported means was .99 (range = .92 to .99) across the five domains of personality using data from McCrae et al. (2005). The median distinctive similarity Pearson correlation (Furr, 2008) between perceived and self-reported means was .97 (range = .93 to .99). Therefore,  $r_{pa}$  is the more conservative and realistic estimate of profile agreement in this case.

study across the 30 facet scores to assess overall accuracy. To assess the overall accuracy of age stereotypes on a per-country basis, we repeated the above facet-level analyses separately for each country.

## Results

### Scale Reliability and Rater Effects

In order to evaluate the reliability of the NCS domain scores obtained in the current study, we first calculated Cronbach's  $\alpha$  for the five factor scales from the 3,323 individual responses; these values were .62, .65, .70, .64, .77 for Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness, respectively, which are acceptable for six-item scales. A principal components analysis was conducted on the 30 items, and five factors were extracted and rotated toward the American NEO-PI-R factor structure (Costa & McCrae, 1992) to evaluate the adequacy with which the FFM was represented by the NCS items. Factor congruence coefficients were .90, .84, .74, .91, and .90 for Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness, respectively. All these values are well beyond chance (McCrae et al., 1996), and three of them are clear replications (Lorenzo-Seva & ten Berge, 2006). Extraversion shows a marginal replication, whereas Openness is weak. Interjudge reliability [ICC(1, $k$ )] of the mean values for each Culture  $\times$  Sex  $\times$  Age group was calculated for each NCS domain and facet (see Table 2); these values ranged from .63 to .95 ( $Mdn = .87$ ), suggesting that respondents generally agree on the perceived personality features that differentiate these groups. The internal consistencies, factor structure, and interjudge reliabilities of the NCS scales are similar to those reported previously (Terracciano et al., 2005).

Because our raters were disproportionately female college students, we examined the influence of rater gender and age on age stereotypes. We first calculated the mean NCS scores for each of the targets separately for male and female raters, and then examined the degree of agreement across the 30-facet profile. To determine agreement, we used three complementary measures of profile similarity. In order to account for correspondence in level as well as shape, we computed double-entry intraclass correlations (ICCs, McCrae, 2008). The standard Pearson correlation is a measure of the overall similarity of two profiles, and distinctive similarity Pearson correlations are the correlations of two profiles net of normative agreement (Furr, 2008). Similarity between male and female raters for each of the groups rated (e.g. the correlation of males' with females' perceptions of adolescent females) was high (ICC = .67 to .89,  $Mdn = .73$ ; overall similarity  $r = .71$  to .89,  $Mdn = .78$ ; distinctive similarity  $r = .73$  to .91,  $Mdn = .79$ ), suggesting that stereotypes of age and gender did not differ markedly as a function of rater sex. We also examined effects of rater age in the three countries where data were available from adult raters (Italy, college  $N = 86$ ,  $Mage = 25.42$  years, range = 18–35 years, adult  $N = 65$ ,  $Mage = 37.00$  years, range = 22–79 years; South Korea, college  $N = 93$ ,  $Mage = 22.14$ , range = 19–28 years, adult  $N = 25$ ,  $Mage = 38.72$  years, range = 29–52 years; United States, college  $N = 285$ ,  $Mage = 21.13$  years, range = 17–56 years, adult  $N = 31$ ,  $Mage = 41.75$  years, range = 22–74 years). In each country, we calculated IC Cs, overall similarity, and distinctive similarity between adult and college-age raters' mean ratings of the targets. ICC values ranged from .50 to .95 ( $Mdn = .86$ ), overall similarity values ranged from .52 to .96 ( $Mdn = .87$ ), and distinctive similarity values ranged from .80 to .95 ( $Mdn = .85$ ), suggesting that the present results may generalize to adult raters.

### Effects of Target Sex and Culture

To examine effects of target sex and culture on stereotypes, we conducted a 3-way Target Age  $\times$  Target Sex  $\times$  Culture ANOVA. Across the 35 domain and facet scales, Age

accounted for 1–36% of the variance ( $M = 13\%$ ,  $Mdn = 10\%$ ), Sex accounted for 0–4% of the variance ( $M = 1\%$ ,  $Mdn = 0\%$ ), and Culture accounted for 1–5% of the variance ( $M = 2\%$ ,  $Mdn = 2\%$ ). Interaction effects were found for Age  $\times$  Culture, accounting for 1–7% of the variance ( $M = 3\%$ ,  $Mdn = 3\%$ ). No other interaction effects exceeded 1% of variance. These analyses suggested that the data could be collapsed across sex and culture to focus on age group stereotypes.

Additional analyses support that decision. Figure 1 shows a plot of the age differences in mean stereotype ratings on the five factors with each country represented by a separate line. The plot illustrates that cultural differences and the Age  $\times$  Culture interactions were minor in comparison with the age difference trend common across countries.<sup>5</sup> We also examined the cross-cultural consistency of age group profiles by calculating coefficient alpha, using the 30 facet mean  $T$ -scores in the 3 age groups as cases ( $n = 90$ ) and countries as items ( $k = 26$ ). Cronbach's  $\alpha$  was .99, with a median corrected item/total correlation of .89, and none lower than .65. Methodologically, this implies that scores can appropriately be combined across countries; substantively, it means that perceptions of the personality traits of adolescents, adults, and old people are essentially universal.

### Perceived Age Differences in Traits

Post-hoc analyses, explicating the main effects of age in the 3-way ANOVAs reported above, revealed that mean perceptions of all age groups on all domains and facets were significantly different from each other, except for five pairwise comparisons (see Table 2). Age group differences are portrayed in Figures 2 through 7. At the domain level, Neuroticism was perceived to be highest in adolescents; Extraversion and Openness were lowest among the old and highest among adolescents; and Agreeableness was highest among the old. Conscientiousness was perceived to be highest in adults and lowest in adolescents. This pattern is generally consistent with existing data on cross-sectional and longitudinal personality differences by age (e.g., Soto et al., 2011; Terracciano, McCrae, et al., 2005).

In general, the facets follow the same pattern of age differences as the domains to which they are assigned. There are, however, some variations. For example, old people are perceived to be higher rather than lower than adolescents in Depression; adolescents are perceived to be higher rather than lower than old people in Trust; and a curvilinear trend is seen for stereotypes of Assertiveness, in which adults are considered highest. In addition, there is some differentiation among facets with regard to the magnitude of age differences. Impulsiveness, Excitement Seeking, Fantasy, Modesty, and Deliberation show effects that are stronger than that of the overall domain to which they are assigned.

Comparison of facet trends across domains reveals other patterns. Among the facets showing the greatest cumulative age differences are Excitement Seeking and Impulsiveness, which decline, and Self-Discipline and Deliberation, which increase with age. These traits have been conceptualized as aspects of impulsivity (Whiteside & Lynam, 2001), and people everywhere apparently believe impulsivity declines markedly with age. Competence, Achievement Striving, Assertiveness, and (low) Vulnerability all show curvilinear trends, implying that people are thought to be strongest and most effective in midlife (cf. Cuddy, Norton, & Fiske, 2005). These curvilinear patterns were also seen in a longitudinal study of self-reports (Terracciano, McCrae, et al., 2005), although in that American sample the traits did not peak until about age 65.

<sup>5</sup>Factor-level means by country and age group used to generate Figure 1, as well as facet-level means, can be found in Supplementary Table 1.

## Agreement with Self-reported Personality Data

Black bars in Figures 2 to 7 show the mean levels of assessed personality traits for each age group in data from McCrae and colleagues (2005), and suggest that there is considerable agreement between perceptions and assessments; thus, age stereotypes appear to be relatively accurate. At the domain level, we calculated  $r_p$  and  $r_{pa}$  values comparing NCS data with self-reported personality scores. Using the McCrae et al. (2005) American data depicted in Figure 2,  $r_{ps}$  for Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness were .92, .95, .80, .91, and .86, respectively; the corresponding  $r_{pas}$  were .53, .60, .60, .56, and .56. For the Donnellan and Lucas (2008) British sample, corresponding  $r_{ps}$  [ $r_{pas}$ ] were .84, .89, .71, .92, and .84 [.49, .56, .54, .49, and .57]; for their German sample they were .72, .79, .69, .92, and .89 [.41, .50, .50, .49, and .61]. The corresponding values using the Soto et al. (2011) domains of personality were .88, .69, .39, .94, and .91 [.50, .44, .29, .51, and .59]. Except for the domain of Openness in the Soto data, this level of agreement is comparable to that found when comparing five-factor profiles of individuals from self-reports and ratings of knowledgeable observers (McCrae, 2008).

At the facet level, we made comparisons using the 10 facets assessed in Soto et al. (2011); the median  $r_{pa}$  with the corresponding NCS facets was .49 (range = .36 to .56); all  $r_{ps}$  exceeded .66. The median  $r_{pa}$  of the NCS facets with the McCrae et al. (2005) self-report data was .52 (range = .35 to .77; see Table 2); all  $r_{ps}$  exceeded .62. The general accuracy of age group stereotypes thus appears to extend to the full range of personality traits, although with some variation in magnitude. The weakest agreement was found for Trust; as Figure 6 shows, adolescents are perceived as being more trusting than adults, when in fact they are less trusting. The strongest agreement was seen for Excitement Seeking, where very large declines with age were seen in both perceptions and self-reports.

To summarize the overall accuracy of personality stereotypes across all age groups, we correlated the mean perceived value for each age group on each trait with the corresponding means from self-report comparison samples. In the samples where only scores on the five domains were available, correlations were  $r_s = .87, .82, .62, \text{ and } .40$  for the American, British, German, and Internet samples, respectively ( $N_s = 15, p < .05$  except for the Internet sample). Correlation of perceived values of the 30 trait facets with the McCrae et al. (2005) self-report NEO-PI-3 facets data also showed a strong association ( $r = .74, N = 90, p < .001$ ).

We repeated the facet-level analyses within gender (perceptions of male targets correlated with male self-reports, and perceptions of female targets correlated with female self-reports), and found correlations of  $r = .65$  and  $r = .67$ , respectively, both  $p < .001$ . Table 1 reports correlations for the 26 countries separately; they range from .54 in India to .73 in Portugal, all  $p < .001$ . Correlations of perceptions with self-reports across the 30 facets within age groups yielded  $r_s = .71$  for adolescents, .50 for adults, and .84 for the old ( $N_s = 30, p_s < .01$ ). These findings indicate that the overall accuracy of personality stereotypes did not depend upon the gender, culture, or age group of the target.

## Agreement with Observer Ratings of Personality

To quantify the correspondence of the mean differences in NCS ratings of adults and adolescents with mean differences in observer ratings of personality for these two age groups, we used as criterion the difference between mean observer ratings of adults and students on the NEO-PI-R as reported in McCrae, Terracciano, et al. (2005), and found a strong association across the 30 facets ( $r = .85, N = 30, p < .001$ ; see Figure 8).<sup>6</sup> To further investigate whether this association holds in each country, we repeated the above analyses within each of the 25 countries with available stereotype and observer data. Across these 25

countries, median correlations between stereotypes and observer ratings were .75 (Table 1, last column). The sole country where correspondence between stereotypes and observer ratings failed to reach conventional significance (India,  $r = .34$ ) was the country with the smallest sample size. These data suggest that NCS ratings of age groups correspond not only to self-reports, but also to observer ratings of personality traits, and that the correspondence of stereotype and observer ratings is broadly similar across nations.

### Exaggeration of Stereotypes

A visual observation of Figures 2–7 suggests that the mean perceptions of each trait for each age group are more extreme than self-reported means. For example, the mean difference on Neuroticism between the perceived adolescent and the old is  $d = .90$ , but only  $d = .54$  in self-report data (McCrae et al., 2005). To make comparisons of the target effects we calculated the  $SD$  of the standardized mean perceptions of adolescent, adult, and old targets for each domain and facet, as well as the  $SD$  of the three corresponding self-reported means. The resulting ratio,  $SD_{\text{Perceptions}}/SD_{\text{Self-reports}}$ , quantifies the relative dispersion of perception and self-report means. For four of the domains and 25 of the facets, this ratio is greater than 1.0 (facet  $M = 1.66$ ; see Table 2), suggesting that in general age stereotypes are exaggerated relative to assessed age differences.

However, at least some of that exaggeration may be related to our study design. Participants each rated all three age groups, and it is possible that a contrast effect lead to more extreme ratings for the second and third targets rated. To examine that possibility, we repeated the analyses using only the first rating from each participant. As Table 2 shows, across the 30 facets, the mean  $SD$  ratio is 1.34, suggesting that about half of the exaggeration remained.

The appearance of exaggeration may also be due to the use of non-representative samples in the criterion: Samples of convenience may represent a select group with less variation than the population. To address that possibility, we repeated the exaggeration analyses using the self-report domain means from the nationally representative German and British samples, and the resulting  $SD$  ratios across the five domains were at least as large as the  $SD$  ratios from the non-representative sample (German  $SD$  ratio range = 1.90 – 3.01,  $M = 2.56$ ; British  $SD$  ratio range = 1.43 – 5.40,  $M = 3.86$ ), indicating that the exaggeration is not merely an artifact of a particular comparison sample or instrument.

### Individual Differences in Stereotype Perceptions

The above results demonstrated stereotype accuracy at the consensual level; averaged age stereotypes tend to be accurate reflections of the average personality traits of persons at each age group. Any particular individual's idiosyncratic stereotypes, however, may or may not be accurate. In order to investigate further, we examined individual differences in the perception of personality stereotypes, and the accuracy of those perceptions. To quantify the variability in personal age stereotypes, we calculated ICC(1,1)s for each of the five domains and 30 facets across all raters and ratings. As shown in Table 2, reliability on the personal level was low, suggesting that while good reliability could be obtained on the consensual level by aggregating across a large number of raters, inter-individual variability was high. People have distinctive ideas about the personality traits of different age groups, although they share a common gist that is revealed by aggregation.

The accuracy of stereotype perceptions on the personal level can be represented by the correspondence of a particular individual's stereotypes with self-reported personality of each

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<sup>6</sup>When we compared observer rating mean differences to the perceived differences between old and adolescent groups, the correlation was .77.

age group. We examined personality perceptions for the 3,042 participants who had complete ratings of adolescents, adults, and the old, and correlated each individual's ratings with the observed means from the McCrae et al. (2005) self-report data across the 90 Facet  $\times$  Age Group cases. The distribution of personal stereotype accuracy correlations is presented in Figure 9. Most correlations (95.6%) are positive, and many (77.7%) are statistically significant ( $r > .21$ ,  $p < .05$ ). However, the mean correlation (calculated using the Fisher  $z$  transformation) is only .34 ( $SD = .18$ ), and not one of the participants was as accurate as the consensual stereotype profile,  $r = .74$ . This suggests that, at the personal level, age stereotypes of personality traits are variable and only modestly accurate.

## Discussion

This article presented a large-scale, cross-national study of perceived personality profiles of typical adolescents, adults, and the old. Across countries, there was a consistent profile attributed to typical adolescents, who were seen as impulsive, preferring excitement and novelty, and rebellious and undisciplined, relative to adults. Compared to adults, old people were consistently considered less impulsive and lower in activity, more agreeable, and more likely to prefer routine. Compared to both adolescents and the old, adults were perceived as highest in competence, achievement striving, assertiveness, and the least vulnerable to stress. These views were broadly consistent with assessed personality of adolescents, adults, and the old (McCrae et al., 2005; Soto et al., 2011; Donnellan & Lucas, 2008) on mean levels as well as trajectory. Finally, the agreement between age stereotypes and observer-rated personality held in the vast majority of countries, illustrating a pancultural correspondence of consistent age stereotypes with assessed personality.

Analyses of variance showed that the effect of target age accounted for a much greater proportion of variance in perceived traits than did target gender or culture. There were some main effects for culture—differences in perceived national character—and some significant Age  $\times$  Culture interactions, suggesting that there are subtle differences in the ways nations perceive personality across the lifespan. Future research may investigate possible correlates of these relatively subtle differences. Nevertheless, perceptions of age differences in general are similar across cultures. For example, in countries as diverse as Argentina, Uganda, Iran, and Malaysia—and in all other countries examined here—old people were perceived to be more agreeable and less extraverted than adolescents (see Supplementary Table 1). This suggests that the processes behind the perception of age differences are similar across cultures, at least for personality traits (see also Löckenhoff et al., 2009).

It is possible that stereotypes may drive personality change through the lifespan, as has been argued for perceived social norms (Wood, Gosling, & Potter, 2007) and age-indexed occupational and social roles (Wood & Roberts, 2006). But the most plausible and parsimonious explanation for the robustness of age stereotypes across 26 countries is that people everywhere base their beliefs about aging on real age differences in personality. Perceptions of the typical adolescent, adult, and old personality profiles corresponded closely with assessed mean-level personality traits at different ages, and this was true across instruments, languages, samples, and methods of measurement. The sole low association between self-reported personality domains and perceptions of typical personality was found for Openness in the Internet sample (Soto et al., 2011), which may be due to a self-selection effect: “middle-aged adults who choose to complete questionnaires in exchange for personality feedback may be especially concerned with understanding themselves, an aspect of Openness” (Soto et al., 2011, p. 343), leading to higher Openness scores in adult and older participants than would be expected.

Agreement between age stereotypes and actual age differences in personality in the present study is similar to the correspondence between gender stereotypes and assessed personality in the previous literature (Williams et al., 1999; Costa, Terracciano, & McCrae, 2001). At the same time, our findings stand in contrast to the lack of association between national character stereotypes and mean levels personality traits in different countries (Terracciano et al., 2005). One possible explanation may be that national character stereotypes have complex origins and are strongly influenced by economic (Chan, McCrae, Rogers, Weimer, Greenberg, & Terracciano, 2011) and geographical factors (McCrae, Terracciano, Realo, & Allik, 2007). They could be fostered deliberately to unify previously disparate peoples (e.g. Germany), to define an identity that contrasts with an influential neighbor (e.g. Canada), or to maintain a separate identity within a larger political unit (e.g., Hong Kong vis-à-vis China). None of these mechanisms would be expected to distort age stereotypes.

To the extent that age stereotypes are accurate, they become useful as a source of information on the lifespan development of personality traits. For example, in self-report data, Agreeableness tends to increase from adolescence to middle adulthood at about the same rate as Conscientiousness (McCrae et al., 1999), whereas in observer rating data, increases in Agreeableness are considerably smaller (McCrae, Terracciano et al., 2005). An examination of Figure 8 shows that the facets of Conscientiousness consistently show larger perceived age differences than the facets of Agreeableness; thus, in this respect, age stereotypes are more consistent with observer rating data than with self-report data.

Another example where sources of lifespan data disagree on the directionality as well as the magnitude of personality change is on Openness. In our stereotype data, Openness is lower through adulthood and old age, consistent with some studies (e.g., Lucas & Donnellan, 2011) but not others (e.g., Soto et al., 2011). In old age we also find a reversal of maturational trends in Conscientiousness and Neuroticism that is similar to some previous research (e.g., Terracciano, McCrae, et al., 2005), but in contrast to others (e.g., Roberts et al., 2006). Stereotypes of older adults are also not uniformly positive or negative (cf. Hummert, 1990); positive perceptions of Agreeableness contrast with negative perceptions of Extraversion and Openness. By extension, personality change through the lifespan also does not take a uniformly positive or negative trajectory.

### **Inaccuracies in Age Stereotypes**

Despite overall agreement, there were discrepancies between perceived age differences and self-reported personality on a few traits. The old were perceived to be more depressed than other age groups, although in personality surveys young adults are actually more likely to report depression (e.g. Soto et al., 2011) and epidemiological evidence suggests that major depression is significantly less prevalent in the old (e.g. Kessler, Birnbaum, Bromet, Hwang, Sampson, & Shahly, 2010). Adolescents are thought to be more trusting than adults, perhaps because laypeople confuse the inexperience of youth with intrinsic gullibility. Similarly, adults may be seen as most assertive because career trajectories are expected to peak in midlife.

Furthermore, across the majority of personality facets, perceived age differences were exaggerated compared to actual age differences. One possible explanation for exaggeration is that the retention and recall of traits may be biased by the stereotype relevance of each trait to a particular age group (e.g. Banaji, Hardin, & Rothman, 1993). For instance, the application of the trait “impulsive” to the typical adolescent may be due to easier recall of adolescent exemplars driving recklessly, even though the majority of adolescents will never be cited for reckless driving. As a result, the perceptions of impulsivity in adolescents would be exaggerated compared to assessed impulsivity. Similarly, the easy recall of inactive old people in nursing homes may lead to the exaggerated perception that the typical old person

is low in activity level, though only a small minority (3.1%) of people over the age of 65 in the United States were in nursing homes at the time of the 2010 census (Werner, 2011). A corollary to this effect is that counter-stereotypic traits and behaviors are not recalled as frequently (Hamilton & Rose, 1980), exacerbating the exaggeration of stereotypes.

Another possibility is that the observed inaccuracies are in fact based on faulty assumptions. The knowledge that elders are near the end of their lives may result in the assumption that they must be in despair about death and have ceased to strive for achievements. Raters may exaggerate the prevalence of disability and dementia in old age and attribute vulnerability, incompetence, and lower activity to all old persons. These assumptions may become self-reinforcing (Mendoza-Denton & Mischel, 2007) resulting in a biased view of stereotype-relevant traits in each age group.

Stereotypical views of age groups are even less accurate at the personal level. Indeed, we found substantial individual differences in age stereotypes, and the perceptions of any particular individual were less accurate than the group consensus. While most individuals rate age stereotypes in the same direction as actual age group differences in personality, some do not. Mean levels of age stereotypes across individuals are reasonably accurate reflections of mean levels of personality in different age groups, but any particular individual's personal stereotypes might not be accurate.

### Limitations and Future Directions

Limitations of the present study suggest new directions for research. As mentioned above, an ideal design would assess both age stereotype perceptions and personality with representative national samples from the same set of countries, using identical instruments that have demonstrated scalar equivalence in all languages. That design would allow a direct and unambiguous comparison of perceptions with realities, including their relative magnitude—e.g., exaggeration. In the absence of such data, the present results appear to represent a reasonable approximation, given converging patterns of evidence that support the validity of our assumptions.

We chose a mix of published comparison studies including both representative and non-representative samples. Across the five criterion samples, representativeness did not affect the correspondence between stereotypes and self-reported or observer-rated personality. College students' perceptions of different age groups were generally consistent across countries, not uniformly positive or negative, and in line with actual age differences in mean-level personality, suggesting that students are trustworthy informants about age stereotypes. Data from college-aged and adult raters in our Italian, South Korean, and U.S. samples also suggested that personality perceptions were similar for young adults and middle-aged adults. Other published data from the U.S. also confirm modest rater age effects for personality perception (Wood & Roberts, 2006). Furthermore, in one French study, rater age accounted for less than a tenth of the variance in the personality perception of the young, middle-aged, and the old (Igier & Mullet, 2003). Nevertheless, future research should continue investigating possible rater effects, such as rater age, occupation, or personality traits, in stereotype perception.

Participants made clear differentiations between adolescent versus adult targets and between adult versus old targets in their perceptions of typical personality. A sample of Australian undergraduates perceived personality change as a linear process for each of the five factors (Haslam et al., 2007). Research on longitudinal personality change, however, has shown a notable difference between young adulthood (20–30), where personality change is more rapid, and middle adulthood (30–50), where personality change is more gradual (e.g. Roberts et al., 2008). Future studies of age stereotypes in personality should employ

adolescent, young adult, middle adult, and old targets, and assess the accuracy of this more differentiated view of aging.

Another concern is that our survey instrument (NCS) used only one item to represent each of the 30 facets in the NEO-PI-3 and NEO-PI-R; longer instruments, such as the brief version of the NEO-PI-3 (McCrae & Costa, 2007) would provide more reliable and accurate data. Despite our choice of a brief survey instrument, correlations between stereotypes obtained by our instrument and personality data reported with various long and short instruments were substantial. Because age perceptions do not vary widely across countries, future studies might survey a smaller number of countries using a longer instrument.

In conclusion, this large cross-national investigation of age stereotypes of personality profiles expands our scientific knowledge about the perception of these age groups. Establishing that there is cross-cultural similarity in the perception of adolescents, adults, and the old suggests that findings on personality perception can apply around the world. The near universality of age perceptions bodes well for future ageism research and the cross-cultural applicability of interventions designed for age bias reduction. However, this universality also includes inaccuracies and exaggerations in personality perception and suggests that ageism may be related to pancultural processes. As the proportion of the world's population in old age increases, analysis of the content, accuracy, and biases of age personality perceptions becomes more important socially as well as scientifically.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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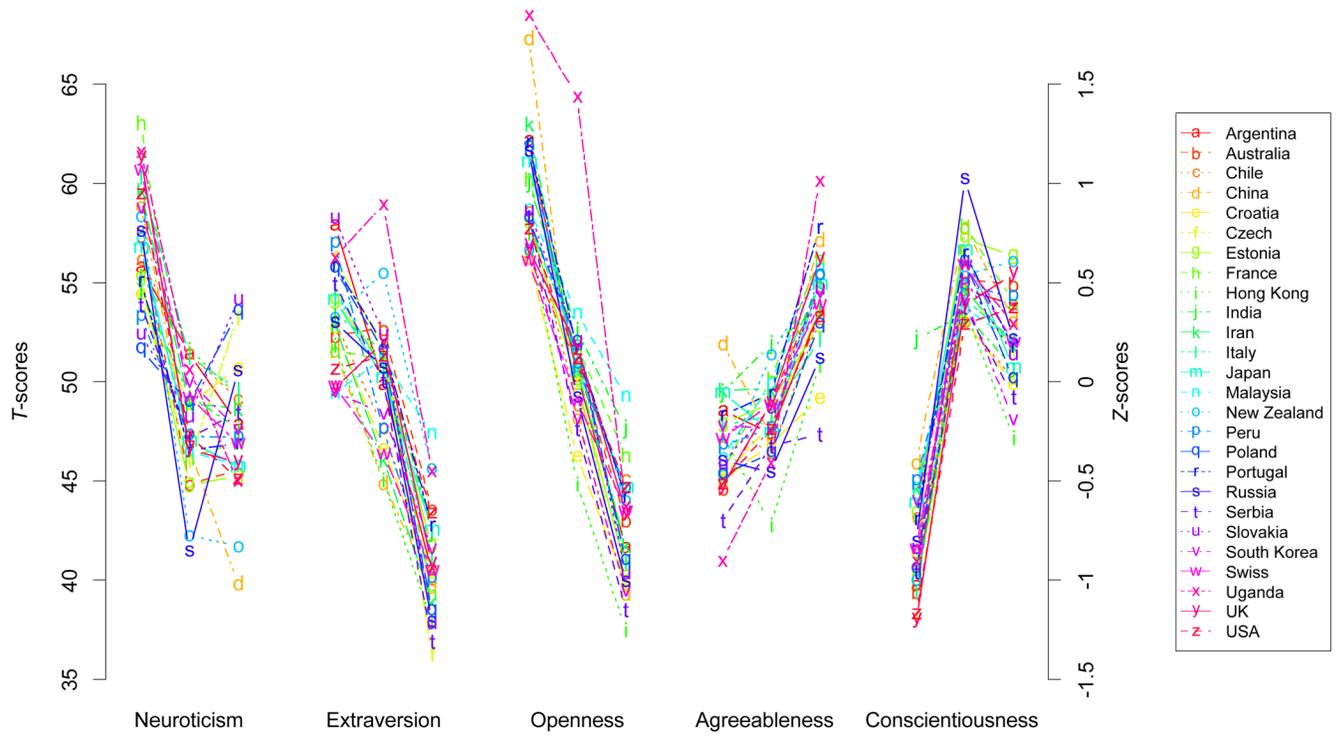
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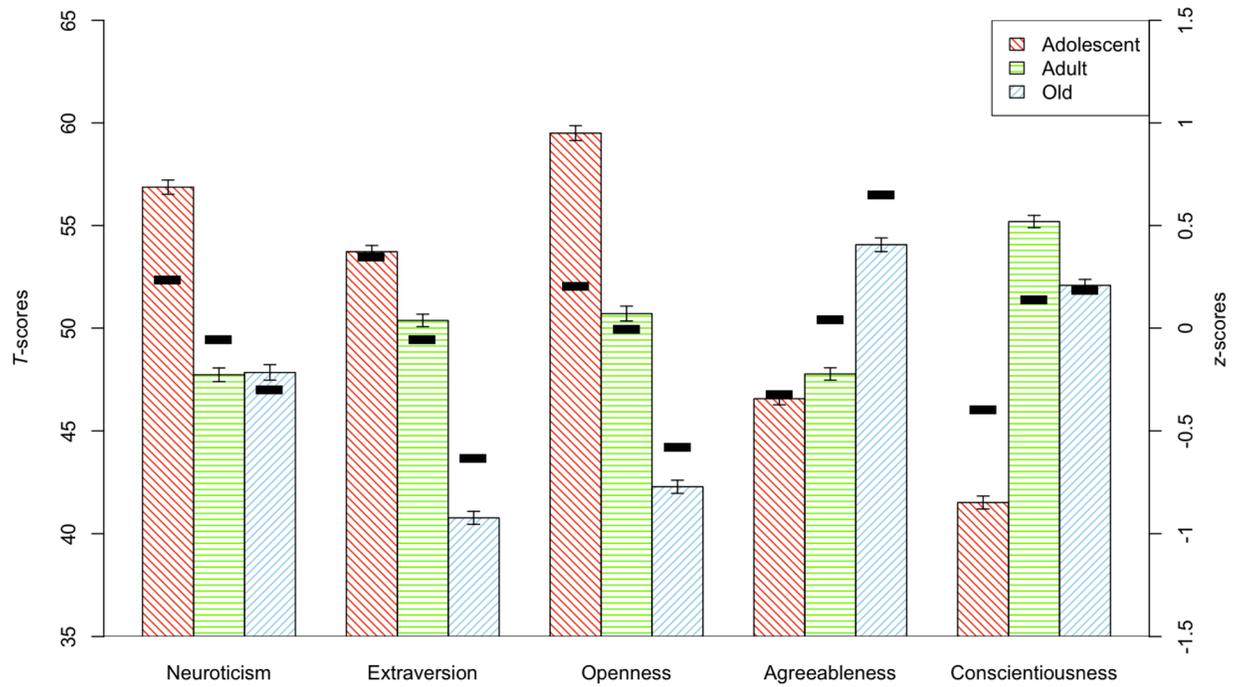
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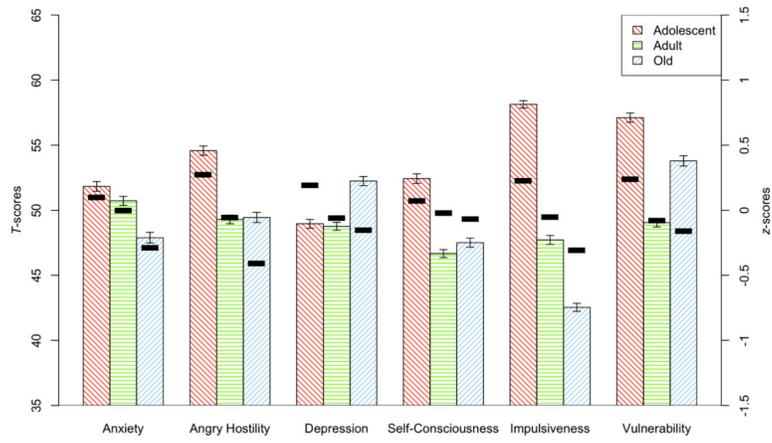
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**Figure 1.** Mean perceptions of adolescents, adults, and the old on the five personality factors, separated by country. Within each personality factor, targets were plotted in age order.



**Figure 2.** Mean perceptions of adolescents, adults, and the old on the five personality factors. Solid black bars represent self-report personality data from McCrae et al. (2005).

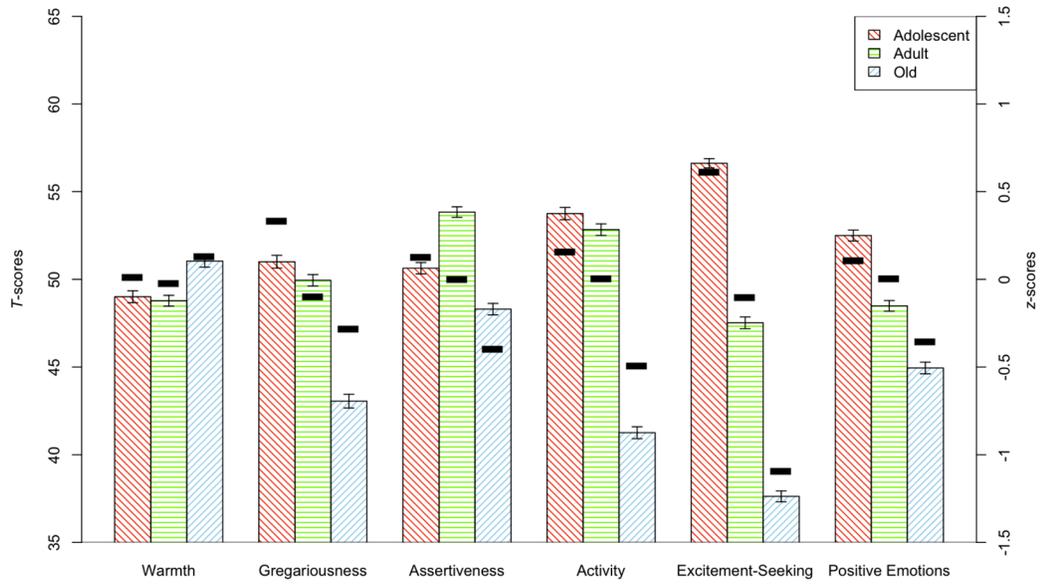


**Figure 3.** Mean perceptions of adolescents, adults, and the old on the facets of Neuroticism. Solid black bars represent self-report personality data from McCrae et al. (2005).

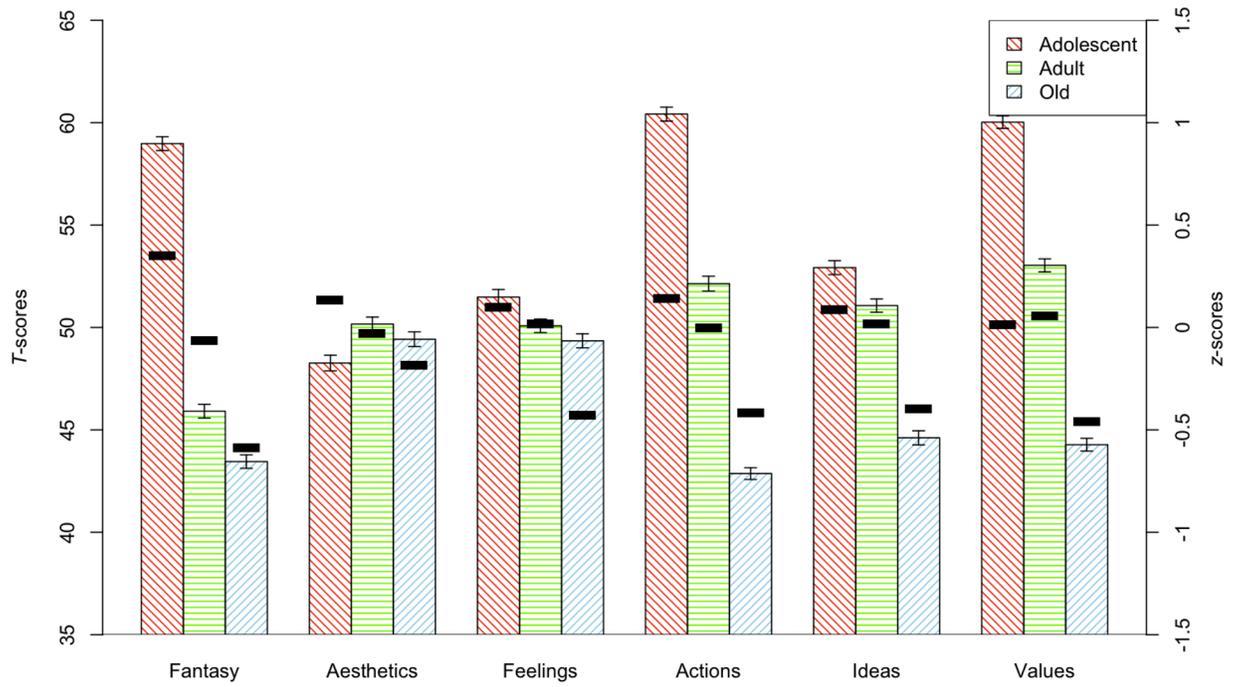
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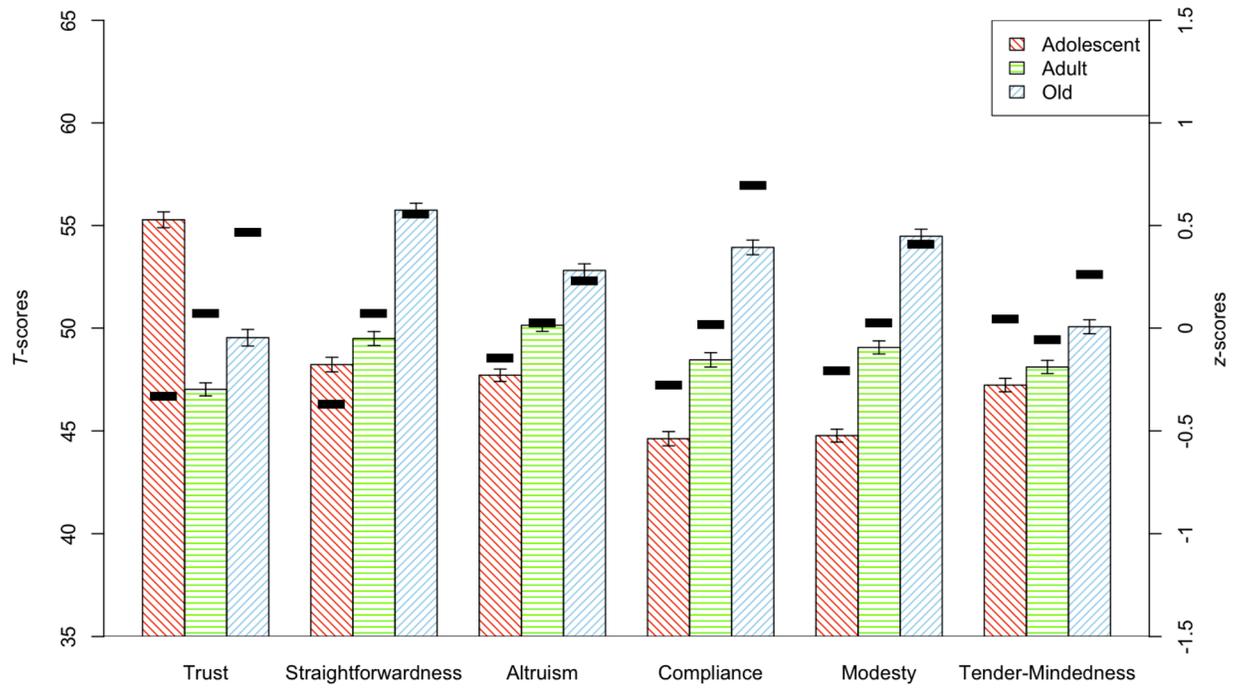
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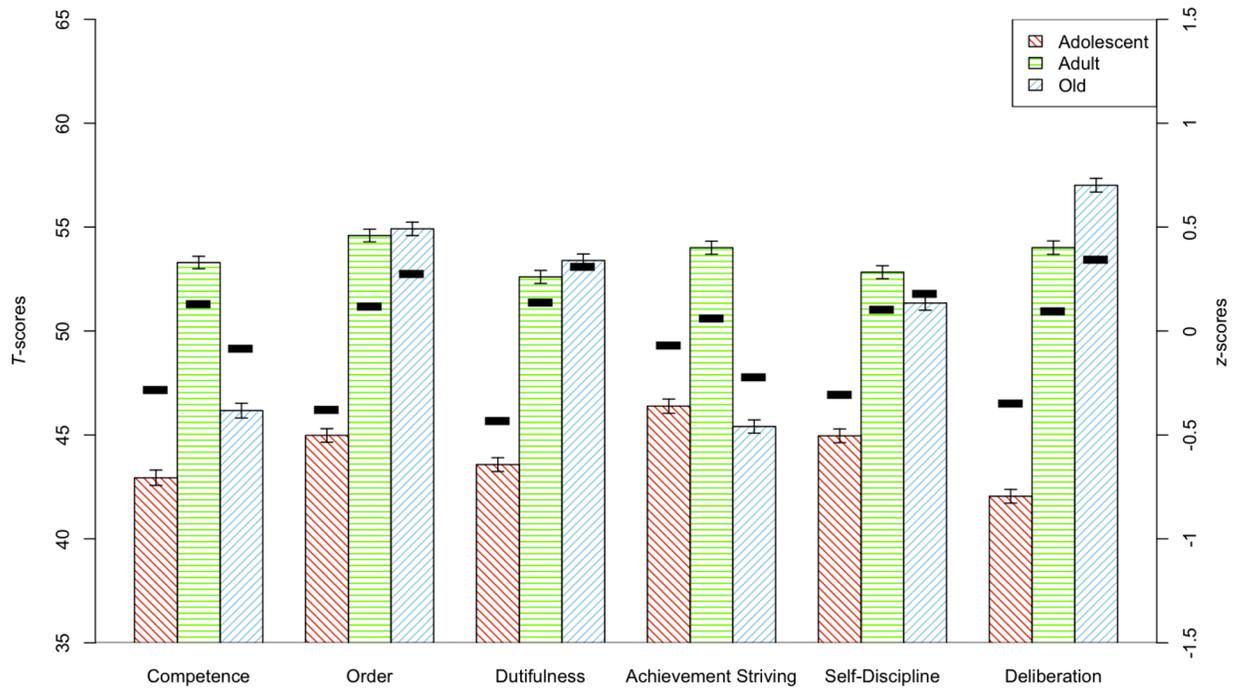
**Figure 4.** Mean perceptions of adolescents, adults, and the old on the facets of Extraversion. Solid black bars represent self-report personality data from McCrae et al. (2005).



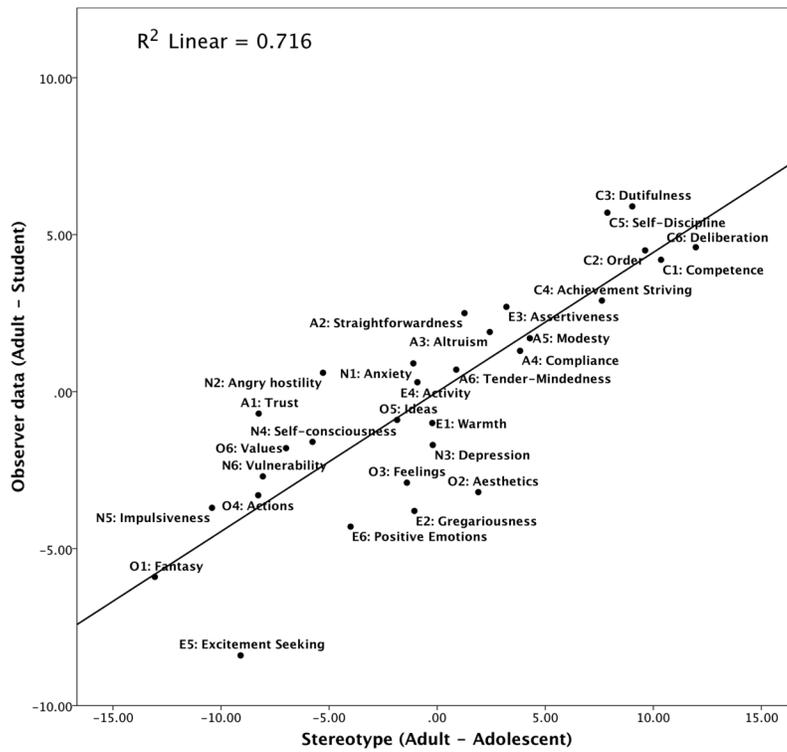
**Figure 5.** Mean perceptions of adolescents, adults, and the old on the facets of Openness. Solid black bars represent self-report personality data from McCrae et al. (2005).



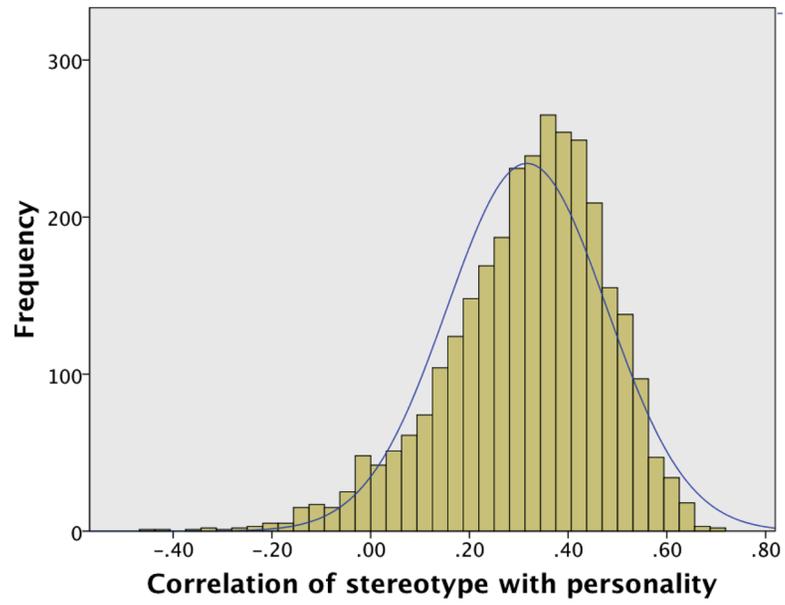
**Figure 6.** Mean perceptions of adolescents, adults, and the old on the facets of Agreeableness. Solid black bars represent self-report personality data from McCrae et al. (2005).



**Figure 7.** Mean perceptions of adolescents, adults, and the old on the facets of Conscientiousness. Solid black bars represent self-report personality data from McCrae et al. (2005).



**Figure 8.** Scatterplot of the difference score between adult stereotypes and adolescent stereotypes in *T*-scores (*x*-axis) against the difference score between observer reports of adult personality and adolescent personality (*y*-axis).



**Figure 9.** Distribution of correlations between profiles for personal-level age stereotypes of personality and mean self-reported personality from McCrae et al. (2005).

Table 1

Sample Characteristics by Country

Country	Language	N	Age	%Male	Adolescence				Adulthood		Old Age		Accuracy
					Start	End	Start	End	Start	End	$r^a$	$r^b$	
Argentina	Spanish	128	23.2	15	13.4	22.3	27.1	59.7	62.9	.65	.82		
Australia	English	90	21.6	21	12.2	18.5	20.3	62.6	61.0	.67	.84		
Chile	Spanish	87	19.4	51	13.5	20.2	25.9	59.0	62.6	.67	.86		
Croatia	Croatian	96	21.0	16	14.3	21.3	24.0	57.7	61.0	.63	.77		
Czech Republic	Czech	215	22.5	22	13.4	20.2	21.2	58.9	59.6	.67	.71		
United Kingdom	English	93	20.2	20	12.3	18.4	20.8	65.9	63.6	.69	.75		
Estonia	Estonian	110	22.1	28	13.7	21.2	21.3	63.3	58.6	.70	.75		
France	French	100	22.3	24	12.0	18.5	20.8	64.4	64.0	.71	.77		
Hong Kong	Chinese	162	20.7	62	13.9	23.1	24.4	55.4	57.9	.65	.72		
India	English	49	19.4	0	16.3	24.8	25.8	43.1	53.5	.54	.34		
Iran	Farsi	113	28.0	42	12.6	19.0	30.5	53.6	57.4	.70	. <u>c</u>		
Italy	Italian	151	29.9	41	13.2	19.9	24.0	63.2	66.6	.63	.78		
Japan	Japanese	271	19.8	17	15.8	23.7	23.1	56.1	61.5	.65	.58		
Mainland China	Chinese	91	21.6	40	12.9	20.8	21.8	50.7	57.9	.70	.74		
Malaysia	Malay	100	22.0	29	14.4	23.0	23.5	42.5	47.6	.54	.82		
New Zealand	English	94	19.2	26	12.3	18.2	20.6	58.9	59.3	.66	.65		
Peru	Spanish	136	19.0	45	13.6	19.9	24.8	51.9	59.2	.71	.80		
Poland	Polish	193	23.5	28	14.5	21.3	22.8	54.1	62.5	.61	.72		
Portugal	Portuguese	89	23.4	22	12.3	17.5	19.3	63.5	62.7	.73	.49		
Russia	Russian	94	22.9	27	12.5	17.5	24.2	52.8	55.9	.65	.36		
South Korea	Korean	118	25.8	46	13.6	19.7	21.5	59.5	62.9	.68	.66		
Serbia	Serbian	94	20.5	17	13.3	20.6	26.1	55.5	58.4	.64	.80		
Slovakia	Slovak	138	20.0	31	13.3	19.8	20.9	59.4	61.2	.68	.76		
Switzerland	French	97	20.9	20	12.8	19.7	22.2	65.7	64.2	.70	.77		
Uganda	English	98	22.9	46	12.5	19.0	19.0	49.8	49.8	.59	.71		
United States	English	316	23.2	43	11.7	18.0	21.1	55.1	58.7	.63	.83		
Total		3,323	22.3	31	13.4	20.3	22.7	56.9	59.8	.74	.85		

Country	Language	N	Age	%Male	Adolescence		Adulthood		Old Age		Accuracy
					Start	End	Start	End	Start	End	
Mean		127.81	22.1	30	13.3	20.2	23.0	57.0	59.6	.66	.71
Median		100.00	21.8	28	13.3	19.9	22.5	58.3	60.3	.67	.75
SD		60.49	2.6	14	1.1	1.9	2.7	6.2	4.3	.05	.14

<sup>a</sup>Correlation ( $N = 90$ ) of perceived trait level for each age group on each facet with corresponding means from American self-report data (McCrae, Martin, et al., 2005).

<sup>b</sup>Correlation ( $N = 30$ ) across the 30 facets of the mean adult-adolescent stereotype difference with the mean adult-student observer rated personality difference in that country (McCrae, Terracciano, et al., 2005).

<sup>c</sup>Observer-rated personality difference data were not available from Iran.

**Table 2**  
NCS Means by Age, Interrater Reliability, Agreement with Criterion, and Exaggeration Ratios

Trait	Mean T-score			ICC		$r_{pa}$ with NEO-PI-3	Exaggeration Ratio	
	Adolescent	Adult	Old	(1,1)	(1,k)		All ratings	First rating
N <sub>NCS</sub> : Neuroticism	56.87	47.73 <sup>a</sup>	47.84 <sup>a</sup>	.04	.85	.53	2.05	1.73
E <sub>NCS</sub> : Extraversion	53.72	50.37	40.77	.07	.91	.62	1.41	1.07
O <sub>NCS</sub> : Openness	59.50	50.71	42.28	.08	.93	.60	2.00	1.60
A <sub>NCS</sub> : Agreeableness	46.56	47.77	54.06	.06	.89	.54	0.84	0.77
C <sub>NCS</sub> : Conscientiousness	41.52	55.19	52.08	.04	.84	.56	2.35	2.06
N1 <sub>NCS</sub> : Anxiety	51.83	50.73	47.88	.07	.91	.49	1.14	0.80
N2 <sub>NCS</sub> : Angry hostility	54.58	49.30 <sup>a</sup>	49.45 <sup>a</sup>	.06	.90	.50	0.98	0.87
N3 <sub>NCS</sub> : Depression	48.96 <sup>a</sup>	48.75 <sup>a</sup>	52.25	.05	.87	.46	1.08	0.65
N4 <sub>NCS</sub> : Self-consciousness	52.43	46.67	47.50	.05	.89	.48	3.30	2.80
N5 <sub>NCS</sub> : Impulsiveness	58.13	47.72	42.54	.02	.71	.54	3.16	2.62
N6 <sub>NCS</sub> : Vulnerability	57.11	49.05	53.79	.04	.84	.49	1.67	1.27
E1 <sub>NCS</sub> : Warmth	49.01 <sup>a</sup>	48.78 <sup>a</sup>	51.04	.07	.90	.48	1.48	1.46
E2 <sub>NCS</sub> : Gregariousness	51.00	49.94	43.05	.04	.83	.53	1.45	1.01
E3 <sub>NCS</sub> : Assertiveness	50.63	53.84	48.30	.02	.75	.48	1.01	0.63
E4 <sub>NCS</sub> : Activity	53.75	52.83	41.26	.08	.92	.56	2.29	1.72
E5 <sub>NCS</sub> : Excitement Seeking	56.62	47.52	37.63	.06	.91	.77	1.14	0.99
E6 <sub>NCS</sub> : Positive Emotions	52.50	48.49	44.95	.10	.93	.53	1.51	1.08
O1 <sub>NCS</sub> : Fantasy	58.98	45.91	43.45	.05	.88	.62	1.79	1.38
O2 <sub>NCS</sub> : Aesthetics	48.26	50.16	49.42	.12	.95	.46	0.39	0.18
O3 <sub>NCS</sub> : Feelings	51.48	50.08	49.35	.08	.92	.48	0.38	0.24
O4 <sub>NCS</sub> : Actions	60.42	52.14	42.87	.03	.80	.53	2.96	2.43
O5 <sub>NCS</sub> : Ideas	52.92	51.07	44.61	.08	.92	.54	1.49	1.08
O6 <sub>NCS</sub> : Values	60.02	53.03	44.28	.02	.72	.50	2.84	2.42
A1 <sub>NCS</sub> : Trust	55.28	47.02	49.53	.03	.80	.35	1.19	0.74
A2 <sub>NCS</sub> : Straightforwardness	48.23	49.49	55.75	.03	.80	.56	0.86	0.84

Trait	Mean T-score			ICC		$r_{pa}$ with NEO-PI-3		Exaggeration Ratio	
	Adolescent	Adult	Old	(1,1)	(1,6)	All ratings	First rating	All ratings	First rating
	47.70	50.14	52.81	.05	.86				
A3 <sub>NCS</sub> : Altruism	47.70	50.14	52.81	.05	.86	.51	1.24	1.25	1.24
A4 <sub>NCS</sub> : Compliance	44.62	48.46	53.93	.03	.81	.55	0.83	1.03	0.83
A5 <sub>NCS</sub> : Modesty	44.77	49.06	54.48	.05	.88	.54	1.18	1.48	1.18
A6 <sub>NCS</sub> : Tender-Mindedness	47.23	48.11	50.06	.10	.93	.47	0.81	0.87	0.81
C1 <sub>NCS</sub> : Competence	42.94	53.30	46.17	.03	.87	.53	1.77	1.99	1.77
C2 <sub>NCS</sub> : Order	44.98	54.60 <sup>a</sup>	54.92 <sup>a</sup>	.01	.63	.55	1.73	2.06	1.73
C3 <sub>NCS</sub> : Dutifulness	43.57	52.60	53.39	.05	.87	.56	1.38	1.54	1.38
C4 <sub>NCS</sub> : Achievement Striving	46.39	54.01	45.40	.03	.79	.49	2.62	3.47	2.62
C5 <sub>NCS</sub> : Self-Discipline	44.96	52.83	51.35	.04	.86	.53	1.32	1.49	1.32
C6 <sub>NCS</sub> : Deliberation	42.05	54.01	57.02	.03	.77	.58	2.00	2.38	2.00
Facet:									
Mean				.05	.85	.52	1.34	1.66	1.34
Median				.05	.87	.53	1.21	1.48	1.21
Minimum				.01	.63	.35	0.18	0.38	0.18
Maximum				.12	.95	.77	2.80	3.47	2.80

Note.  $N = 3,323$ . Exaggeration ratios =  $SD_{stereotype} / SD_{self-report}$  for the three age groups.

<sup>a</sup> Difference between means *n.s.*