



Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid



Sex differences in 30 facets of the five factor model of personality in the large public ($N = 320,128$)

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ARTICLE INFO

Keywords:

Personality traits

Sex

Measurement

Five factor model

ABSTRACT

The present study reports on the scope and size of sex differences in 30 personality facet traits, using one of the largest US samples to date ($N = 320,128$). The study was one of the first to utilize the open access version of the Five-Factor Model of personality (IPIP-NEO-120) in the large public. Overall, across age-groups 19–69 years old, women scored notably higher than men in Agreeableness ($d = 0.58$) and Neuroticism ($d = 0.40$). Specifically, women scored $d > 0.50$ in facet traits Anxiety, Vulnerability, Openness to Emotions, Altruism, and Sympathy, while men only scored slightly higher ($d > 0.20$) than women in facet traits Excitement-seeking and Openness to Intellect. Sex gaps in the five trait domains were fairly constant across all age-groups, with the exception for age-group 19–29 years old. The discussion centers on how to interpret effects sizes in sex differences in personality traits, and tentative consequences.

Psychological differences between men and women have always been a fascinating as well as a provocative topic. Even professionals do not agree on what scope or size in individual differences between sexes are to be considered trivial or highly consequential (Del Giudice, Booth, & Irwing, 2012; Hyde, 2014). What is agreed on, however, is that personality traits in both sexes are heritable and fairly stable across the age-span (Polderman et al., 2015). They also importantly account for future life outcomes, such as educational selections or occupational choices (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). One question the current paper attempts to tackle is whether men and women are more different than alike, or in other words, how can we understand and interpret the size of sex differences in personality? Extending and updating this scientific discussion by investigating personality trait facets in more detail may help us progress in insight (see Ziegler & Bäckström, 2016). In the days ahead, the interested public and policy-makers may increasingly turn to psychological science for references and benchmarks in this matter.

The present study sought to improve on this topic by reporting on 30 detailed personality trait facets, using one of the largest public samples to date, consisting of $N = 320,128$ US participants. The present study made use of a public domain version of the arguably most used personality instrument, the Five Factor model (FFM; Costa & McCrae, 1995).

1. Psychological sex differences

One of the most informative meta-analyses on psychological differences between sexes encompasses an impressive 100 meta-analyses, and concludes that the overall difference between sexes is small (Cohen's $d = 0.21$) (Zell, Teeter, & Zell, 2015). An effect size of 0.2 standard deviations (d) would translate into approximately 58% of one sex having a higher score than the mean of the other (Cohen, 1992; See <http://rpsychologist.com/d3/cohend/> for calculations). Nevertheless, large apparent dissimilarities were also reported, such as mental rotation abilities ($d = 0.57$), and attitudes towards mate-beauty ($d = 0.53$). In general, sexual and physical aggression tends to be male dominated traits (e.g. Lippa, 2009). Along the same line, traits such as risk-taking and power motivation tend to be male-dominated ($d > 0.40$) (Byrnes, Miller, & Schafer, 1999), while affiliation motivation ($d = 0.45$) tend to be more female-dominated (Drescher & Schultheiss, 2016). In general, dispositions for care and benevolence are found to be higher in females ($d = 0.28$) (Jaffee & Hyde, 2000), and are considered female traits across 127 cultures (Schwartz & Rubel, 2005). Sex differences concerning personality traits have since long been established as be small to moderate, but consequential (Feingold, 1994).

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Table 1
Descriptive statistics of sex differences in personality traits.

	<i>M</i>	<i>SD</i>	<i>M_{Male}</i>	<i>SD_{Male}</i>	<i>M_{Female}</i>	<i>SD_{Female}</i>	(α)	(<i>d</i>)
Neuroticism	11.10	2.66	10.48	2.59	11.52	2.62	0.90	–0.40
N1_Anxiety	12.07	3.77	10.85	3.63	12.88	3.65	0.79	–0.56
N2_Anger	11.51	4.11	11.11	4.15	11.77	4.06	0.87	–0.16
N3_Depression	9.35	3.87	8.90	3.80	9.64	3.88	0.85	–0.19
N4_Self-conscious	11.69	3.64	11.44	3.64	11.85	3.63	0.72	–0.11
N5_Immoderation	11.94	3.44	11.64	3.42	12.14	3.43	0.72	–0.15
N6_Vulnerability	10.07	3.63	8.93	3.37	10.82	3.61	0.78	–0.54
Extraversion	13.69	2.36	13.68	2.42	13.69	2.32	0.89	–0.01
E1_Friendliness	14.48	3.60	14.32	3.66	14.58	3.55	0.81	–0.07
E2_Gregarious	12.36	4.02	12.24	4.04	12.44	4.00	0.80	–0.05
E3_Assertive	14.56	3.43	14.89	3.31	14.34	3.49	0.86	0.16
E4_Activity	12.84	3.15	12.38	3.16	13.15	3.11	0.71	–0.25
E5_Excitement	12.52	3.32	13.08	3.28	12.15	3.29	0.74	0.29
E6_Cheerfulness	15.35	3.20	15.14	3.30	15.49	3.13	0.80	–0.11
Openness	13.71	2.06	13.48	2.12	13.86	2.01	0.82	–0.19
O1_Imagination	14.60	3.41	14.81	3.34	14.46	3.44	0.75	0.10
O2_Artistic	14.67	3.58	13.95	3.73	15.14	3.40	0.75	–0.33
O3_Emotionality	15.20	3.01	14.07	3.07	15.94	2.72	0.66	–0.64
O4_Adventurous	12.28	3.26	12.47	3.24	12.15	3.26	0.71	0.10
O5_Intellect	14.50	3.55	14.97	3.50	14.18	3.55	0.74	0.22
O6_Liberalism	11.03	3.67	10.61	3.80	11.30	3.56	0.69	–0.19
Agreeableness	14.87	2.01	14.19	2.08	15.33	1.83	0.85	–0.58
A1_Trust	13.43	3.54	13.39	3.50	13.46	3.56	0.86	–0.02
A2_Morality	16.63	2.88	15.94	3.08	17.09	2.65	0.74	–0.40
A3_Altruism	16.72	2.56	15.95	2.70	17.23	2.31	0.73	–0.51
A4_Cooperation	15.10	3.49	14.42	3.52	15.55	3.40	0.69	–0.33
A5_Modesty	12.34	3.35	11.45	3.28	12.93	3.26	0.72	–0.45
A6_Sympathy	15.03	3.10	13.99	3.24	15.72	2.80	0.73	–0.57
Conscientiousness	14.95	2.34	14.77	2.36	15.06	2.32	0.90	–0.12
C1_Self-efficacy	16.32	2.40	16.38	2.40	16.29	2.40	0.77	0.04
C2_Orderliness	13.23	4.31	12.96	4.19	13.40	4.38	0.85	–0.10
C3_Dutifulness	16.32	2.57	16.02	2.66	16.51	2.50	0.67	–0.19
C4_Achievement	16.06	3.09	15.62	3.25	16.36	2.95	0.78	–0.24
C5_Self-discipline	14.07	3.16	13.86	3.19	14.20	3.13	0.72	–0.11
C6_Cautiousness	13.68	4.09	13.79	4.02	13.61	4.13	0.88	0.04

Note. *N* = 320,128. The raw scores of the 30 trait facets ranged from 4 (Min) to 20 (Max). *N_{Male}* = 127,695, *N_{Female}* = 192,433. 95% CI for effect sizes were ± 0.01 (rounded to two decimals). Bold numbers show above average effects ($d \geq 0.40$). A negative Cohen's *d* implies that men had lower scores than women.

2. Sex differences in personality traits

Personality traits are defined as consistencies in affect, thinking, and behavior that tend to be stable across situations and time-spans, developing predictably throughout life (Briley & Tucker-drob, 2014). The most used conceptualization is today the Five Factor Model (FFM) (McCrae, 2010). This model organizes personality into five trait factor domains (N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, and C = Conscientiousness), which in turn are composed by a number of specific trait facets. Facets help increase the precision and scope of personality, thus enabling more accurate predictions (Ziegler & Bäckström, 2016). For instance, knowing that someone scores high on trait factor Openness may not give us meaningful information on how this person would fare in specific situations. Instead, a specific facet such as Imagination may be more informative for instance in career choice, or facet Intellect in educational settings. Furthermore, facets may yield more information than trait domains when comparing groups. For instance, the trait factor Extraversion usually does not differ much between sexes, not even in adolescence (Borghuis et al., 2017); however, a facet underlying this such as Excitement-seeking is usually notably higher with males. See a full list of the 30 FFM trait facets in Table 1.

One of the early landmarks studies, using facets in the FFM, showed replicable differences between sexes across cultures (Costa Jr, Terracciano, & McCrae, 2001). Females were reported to be overall higher in the trait domains Agreeableness and Neuroticism, and in particular in facets Friendliness and Openness to Emotions. Recent

literature portrays that females universally score somewhat higher on all FFM traits and notably higher in Agreeableness (e.g., sympathy and altruism) and Neuroticism (e.g., anxiety and vulnerability) (Schmitt et al., 2016).¹ Similarly, implicit measures of FFM, where participants do not self-report through surveys but are allowed to react to cues, have shown similar results, especially in Agreeableness and Neuroticism (Vianello, Schnabel, Sriram, & Nosek, 2013). Sex and age differences in personality facet traits, seems to replicate cross-culturally, as reported in large samples across 22 nations (Kajonius & Mac Giolla, 2017). Not too many other studies have utilized facets of personality in very large samples.

The consensus today is that sex differences in FFM are often small but significant, and that males tend to vary more in personality traits than females (Borkenau, McCrae, & Terracciano, 2013). Also, the literature also portrays some agreement in that the more individualistic and equal society is, the larger the demonstrated sex differences (Costa Jr et al., 2001; Schmitt, Realo, Voracek, & Allik, 2008). In addition, this effect may be growing with increased individual freedom (cf. Skirbekk & Blekesaune, 2014). Sex differences also develop predictably across the life-span. Already in early adolescence both Agreeableness and Neuroticism traits are found to be higher in girls, while Conscientiousness is lower in boys (Borghuis et al., 2017). A meta-analysis

¹ Across 55 cultures, Neuroticism reported higher in females ($d = 0.40$), Agreeableness ($d = 0.15$), Conscientiousness ($d = 0.12$), and Extraversion ($d = 0.10$), while Openness was inconclusive; using the short version 44-item Big Five Inventory (BFI; Schmitt et al., 2008)

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