



Few sex differences in dark side personality scale domains and facets

Adrian Furnham^{a,*}, Simmy Grover^b

^a Norwegian Business School (BI), Nydølveien, Oslo, Norway

^b Department of Experimental Psychology, University College London

ARTICLE INFO

Keyword:

Sex
Personality
Traits
Disorders
Effect size
Bright/dark side

ABSTRACT

This study examined sex differences in domain *and* facet scores on a new dark-side personality test (Hogan Development Survey: Form 5) measuring sub-clinical personality disorders. Over 50,000 adults completed the new HDS which assesses eleven dark-side traits and three facets of each. Comparing males and females on the 11 domains and 33 facets using t-tests and binary regressions we found that there were many significant differences on these scores, which replicated other studies. However, the Cohen's *d* statistic showed very few (5 out of 44) differences >0.20 . The biggest difference was on Reserved (Schizoid) and few differences on Excitable (Borderline). Implications for researchers interested in assessment and selection are discussed along with limitations of the study.

Introduction

Many researchers are interested in gender differences in personality (Del Giudice, 2009, 2012; Feingold, 1994; Furnham & Treglown, 2021; Schmitt, 2015; Schmitt et al., 2008, 2015; Weinberg et al., 2011). There is often much dispute between biological and evolutionary psychologists compared to social psychologists in how they conceptualise, research and interpret sex/gender difference studies.

Furnham and Treglown (2021) noted that researchers of this topic can be described as *maximizers vs minimizers*. Maximizers try to find and explain the (many large) differences between the sexes while the minimisers want to stress how few real and meaningful differences there are (Furnham, 2017). Much depends on the data and also the interpretation of Cohen's *d*, which is an indicator of difference usually labelled as: none, trivial, small, medium, large and very large. This means that if two groups' means differ by $d < 0.2$ the difference is usually considered trivial, even if it is statistically significant. However, these cut off points have been disputed with some believing a *d* of around 0.2 to be small to moderate (Greewald et al., 2015).

In this study we are concerned with sex differences in the dark-side traits which has attracted some attention particularly from those who suggest that any differences found are a function of item wording or other diagnostic error (de Cos, 2015; Jane et al., 2007; Widiger & Spitzer, 1991). There are indeed a large number of studies using the Hogan Development Survey to measure dark side traits which we use in this study (Furnham et al., 2012; 2016; Furnham & Sherman, 2021; Hogan et al., 2021; Nei et al., 2018; Palaïou et al., 2016a,b; Woo et al., 2016; Yankov et al., 2019; Zibarras et al., 2008). The HDS *does not* mea-

sure personality disorders, which are manifestations of mental disorder (Wille et al., 2013). High scorers obtain broadly similar features with individuals who meet the criteria but to smaller effect (Harms et al., 2011). That is, they could be conceived of as sub-clinical indicators of the personality disorders. However, the authors are eager to point out that it is a non-clinical measure and does not measure disorders.

Sex and the dark side

There have been various early reviews of sex differences in personality disorders (Corbitt & Widiger, 1995; Paris, 2004) as well as specific studies comparing many disorders, which are related to the HDS measure used in this study and which give important clues to when and where one may expect to find sex differences.

Golomb et al. (1995) used both a self-rating measure and clinical assessments and found on both measures men were likely to be higher on Antisocial and Narcissistic Disorder. Ekselius et al. (1996) found males higher on Antisocial and Narcissistic and females higher on Borderline. Grilo (2002) using a structured diagnostic questionnaire on 145 outpatients found no evidence of sex differences. Klonsky et al. (2002) looked at gender role and the PDs. They found feminine men exhibited more features of all the personality disorders except antisocial PD and that dependant traits were associated with higher femininity and lower masculinity. Antisocial traits were associated with masculinity. For both sexes those who typically behaved consistent with their gender had more Narcissistic and Histrionic features, while those who typically behaved unlike their gender had more features of the Cluster A personality disorders. Essentially the early results were equivocal but that

* Corresponding author.

E-mail address: adrian@adrianfurnham.com (A. Furnham).

may be due to the reliability of the instruments or the relatively small populations

In a review of this area a decade ago, Oltmans and Powers (2012) concluded that only antisocial disorder consistently showed large sex differences, with men showing a lifetime rate of approximately 5%, while women show a rate of approximately 1%. They suggested that gender differences in PDs reflect gender differences in normal personality traits, where men tend to score higher on traits such as assertiveness and excitement seeking, while women score higher on traits such as anxiousness, depression, vulnerability, and warmth.

More recently Schulte Holthausen and Habel (2018) noted that studies on sex differences in personality disorders remain sparse and mainly limited to Antisocial and Borderline personality disorder, where men are over-represented compared to women on the former and under-represented on the latter. They argued that research on the sparsely investigated PDs should be intensified to understand sex differences in prevalence, manifestation, and therapeutic outcome of PDs. They also noted that it would be of special interest to follow up on the well-established differences in borderline and antisocial PD which could help understanding sex-specific alterations and communalities on social and emotional functioning.

In a study more relevant to this and looking at sub-clinical PDs, Furnham and Trickey (2011) examined 18,366 British adults Hogan Development Survey data and found sex differences on most disorders particularly Avoidant, Schizoid and Antisocial with males scoring higher on the latter two. Females scored higher on Borderline, Avoidant, Passive-Aggressive, Obsessive Compulsive and Dependant. The smallest sex differences were for Paranoid, Obsessive Compulsive, Schizotypal, Passive Aggressive and Histrionic disorders.

Thus, the studies using different measures of the PDs show that there are small systematic differences on the PDs between the sexes but that the most consistent and investigated differences are on Anti-Social and Borderline disorders.

This study

This study is on sex differences in dark-side personality using the updated Hogan Development Survey Form 5 (HDS) which now has three facets for each disorder. The HDS assesses dysfunctional interpersonal themes which reflect distorted beliefs about others. These emerge when people encounter stress or stop considering how their actions affect others (Hogan, 2014; Hogan et al., 2007). Over time, these dispositions may become associated with a person's reputation and can impede job performance and career success. The HDS assesses essentially self-defeating expressions of normal personality.

The HDS Form 5 has increasingly attracted the attention particularly by work psychology researchers interested in management derailment. There have been few studies using this measure an exception being Furnham (2021) who found, as predicted, some Cluster B PDs were related to work success. There are however well over 120 published studies using earlier versions of the HDS which does not measure traits at the facet level.

This study has two important features to investigate the problem. First, it uses a measure of all dark-side traits not only at the domain but also the facet level. This allows for a finer grain analysis to investigate more subtle differences in particular PDs. Second, we have a large (normal) adult population to explore these differences.

Based on previous studies we believe there will be many but relatively small sex differences in dark-side traits (Furnham & Treglown, 2021; Schulte Holthausen & Habel, 2018). However we also hypothesise that the biggest differences will be on Anti-Social (Mischievous) and Borderline (Excitable) and their facet scores where (Oltmans & Powers, 2012) where males would score higher than females on the former, but the reverse on the latter.

Method

Participants

In total 50,815 adults took part in this study. Data was collected from individuals from all over the world, but the majority that reported their current location reported living in the United Kingdom. Of those that recorded their gender, 14,987 participants were females (30%) and 31,146 were males (60%). The mean age of participants that reported age ($n = 40,142$) was 44.4 years ($SD = 8.34$ years) with the range being between 17 and 77 years.

Instruments

The Hogan Development Survey Form 5 is a self-administered questionnaire 154 items that are dichotomous (true-false). It has 11 scales with 14 items each, so that each facet is assessed by 4 or 5 items. The manual gives evidence of test-retest reliability of between 0.64 and 0.75, as well as evidence of clear and predictable factor structure. There is considerable evidence of concurrent and construct validity with the test being compared to many established measures including the CPI, 16PF, JPI-R, Neo PI-R and the IPIP. The subscales of the new version are shown in Table 1.

Procedure

Participants were tested by well-established British-based psychological consultancies where they attended assessment centres and their data was logged. They came from a wide range of organisations in the private and public sector. Participants agreed to take part in research and anonymised data was used in the analysis with their permission. Data sets were given to the authors for analysis with all tests scored which means we could not calculate alphas, though we have no reason to believe there were any problems with them (Hogan et al., 2007). Ethics permission was requested and received (CEHP: 2017; 514).

Results

Data was first screened for random responding, missing data, and other errors. First we looked at the internal reliability of the scales. These are shown in Table 2, alongside those shown in the manual. At first it may seem that these are unacceptably low given the usual cut-off of 0.7, however it should be noted that these are the alphas for the *three* facets only. The alpha for each scale is not the alpha of all the items for the trait itself. Given this they seem acceptable, noting that a high alpha may be interpreted as an index of redundancy.

Table 3 shows the t tests and Cohen's d for each scale (in Bold) and the facets. A negative t indicates that females scored higher than males and vice versa for a positive correlation. In all, 9/11 domains and 30/33 facets showed significant differences. However, only four analyses showed a $d > 0.20$. Females scored higher than males on three domain: Leisurely (Passive Aggressive), Diligent (OCD) and Dutiful (Dependant) while males scored higher on Cautious (Avoidant), Reserved (Schizoid), Bold (Narcissistic), Mischievous (Anti-Social), Colourful (Histrionic) and Imaginative (Schizotypal).

Table 3 shows that for the most part, the facet sex differences were consistent, though there were some important exceptions (e.g. Mischievous and Colourful) where the results went in contrary directions. For the Domain scores the three biggest differences were on Reserved, Imaginative and Cautious. The facets with the biggest differences were Tough, Fearful and Risky.

This was followed by a binary regression of all facets shown in Table 4. Eight of the largest differences are highlighted. They were very similar to the results in Table 3 with Fearful and Standards showing where females scored most different from males, and Tough and Public Confidence showing where males scored most different from females.

Table 1
The new structure of updated version of HDS.

Higher order factors	HDS	Subscales	Definitions
Moving Away	Excitable	Volatile	Moody, often angered or annoyed, easily upset and hard to soothe.
		Easily Disappointed	Initial passion for people and projects, who inevitably disappoint, and passion then turns to rejection.
		No Direction	Lacking few well defined beliefs or interests, but with regrets about past behaviour.
	Sceptical	Cynical	Prone to doubt others' intentions and assume they have bad ulterior motives.
		Mistrusting	Generalized mistrust of people and institutions; being alert for signs of perceived mistreatment.
		Grudges	Holding grudges and being unwilling to forgive real or perceived wrongs.
	Cautious	Avoidant	Avoiding new people and situations to avoid imagined potential embarrassment.
		Fearful	Afraid of being criticized for making mistakes and being reluctant to act independently or make decisions.
		Unassertive	Unwilling to act assertively and therefore prone to being overlooked or ignored.
	Reserved	Introverted	Valuing one's private time and preferring to work alone.
		Unsocial	Keeping others at a distance, limiting close relationships, and being generally detached.
		Tough	Indifferent to the feelings and problems of others, focused on tasks rather than people.
Leisurely	Passive Aggressive	Overtly pleasant and compliant but privately resentful and subversive regarding requests for improved performance.	
	Unappreciated	Believing that one's talents and contributions are ignored; perceiving inequities in assigned workloads.	
	Irritated	Privately but easily irritated by interruptions, requests, or work related suggestions.	
Moving Against	Bold	Entitled	Feeling that one has special gifts and accomplishments and, consequently, deserves special treatment.
		Overconfidence	Unusually confident in one's abilities; belief that one will succeed at anything one chooses to undertake.
		Fantasized Talent	Believing that one has unusual talents and gifts and that one has been born for greatness.
	Mischievous	Risky	Prone to taking risks and testing limits; deliberately bending or breaking inconvenient rules.
		Impulsive	Tending to act impulsively without considering the long term consequences of one's actions.
		Manipulative	Machiavellian tendencies-using charm to manipulate others and no remorse about doing so.
	Colourful	Public Confidence	Expecting others to find one's public performances fascinating and not knowing when to be quiet.
		Distractible	Easily distracted, minimal focus, needing constant stimulation, confusing activity with productivity.
		Self-Display	Wanting to be the centre of attention and using dramatic costumes and gestures to attract attention to oneself.
	Imaginative	Eccentric	Expressing unusual views that can be either creative or merely strange; tendency to be absorbed in these ideas.
		Special Sensitivity	Believing that one has special abilities to see things others don't and understand things others can't.
		Creative Thinking	Believing that one is unusually creative; easily bored and confident in one's imaginative problem solving ability.
Moving Towards	Diligent	Standards	Having exceptionally high standards of performance for oneself and others.
		Perfectionistic	Perfectionistic about the quality of work products and obsessed with the details of their completion.
		Organized	Meticulous and inflexible about schedules, timing, and rules and procedures.
	Dutiful	Indecisive	Overly reliant on others for advice and reluctant to make decisions or act independently.
		Ingratiating	Excessively eager to please one's superiors, telling them what they want to hear, and never contradicting them.
		Conforming	Taking pride in supporting one's superiors and following their orders regardless of one's personal opinion.

Table 2
Descriptive statistics and Cronbach's alpha of the updated version of HDS.

HDS scales	HDS subscales	Mean	Std. Dev	Cronbach's Alpha
Excitable	Volatile	1.26	1.15	0.51 (0.78)
	Easily Disappointed	1.10	1.14	
	No Direction	0.86	0.97	
Sceptical	Cynical	1.33	1.07	0.58 (0.76)
	Mistrusting	0.72	0.98	
	Grudges	1.59	1.36	
Cautious	Avoidant	0.89	0.97	0.62 (0.73)
	Fearful	0.79	1.06	
	Unassertive	1.96	1.30	
Reserved	Introverted	1.32	0.94	0.56 (0.66)
	Unsocial	1.58	1.46	
	Tough	1.28	1.24	
Leisurely	Passive-Aggressive	1.83	1.23	0.40 (0.58)
	Unappreciated	1.00	1.05	
	Irritated	0.79	0.94	
Bold	Entitled	2.23	1.32	0.65 (0.69)
	Overconfidence	1.59	1.30	
	Fantasized Talent	3.66	1.21	
Mischievous	Risky	2.72	1.46	0.56 (0.59)
	Impulsive	1.76	1.28	
	Manipulative	2.37	1.12	
Colourful	Public Confidence	2.63	1.42	0.54 (0.72)
	Distractible	2.28	0.85	
	Self-Display	1.99	1.26	
Imaginative	Eccentric	1.02	1.15	0.54 (0.64)
	Special Sensitivity	3.60	1.32	
	Creative Thinking	3.00	1.51	
Diligent	Standards	3.66	0.85	0.56 (0.65)
	Perfectionistic	2.88	1.38	
	Organized	2.79	1.22	
Dutiful	Indecisive	2.08	1.10	0.45 (0.50)
	Ingratiating	2.48	1.27	
	Conforming	2.76	1.20	

The Alpha in brackets refers to the Alpha shown in the Hogan and Hogan (2009) manual based on the results from 1532 men and 322 women.

Discussion

The most important overall result confirmed the recent findings of Furnham and Treglown (2021) who examined six different personality tests and noted many significant differences, but few important effect sizes. In fact, the results show no large or even average differences, and relatively few small differences. Whilst for only two domains (Excitable, Sceptical) and three facets (Volatile, Mistrusting, Organised) there was no significant differences, the t-tests showed clear and significant differences, though this needs not to be over-interpreted given the size of the *d*.

There were some predictable results but also surprises. That is, males scored higher than females on all the Cluster B disorders (dramatic, emotional and erratic) called by Hogan as “Moving Away from People”, and the “Moving Against People” profile (Bold, Mischievous, Colourful and Imaginative) and lower on Cluster C disorders (anxious and fearful) labelled “Moving Toward People” (Diligent, Dutiful). There were however some surprises namely no sex difference on Excitable (Borderline) which has consistently shown differences in the literature. Further, the biggest difference on facets was for Reserved (Schizoid) not Mischievous (Anti-Social) (Oltmanns & Powers, 2012).

Clinicians seeing these results might question the extent to which these dark-side variables are indeed assessing the personality disorders given the finding that neither the domain Excitable nor one of its facets showed significant differences. It is clear from the literature that of all the PDs, Excitable/Borderline has attracted most academic attention (Furnham, 2022). The question remains as to whether there is a sex difference on this dark-side trait or whether this measure is actually assessing this disorder. Certainly, there is an extensive literature using the HDS to suggest that all the measures are indeed measuring sub-clinical disorders as set out by various DSM manuals.

One issue concerns revisiting each question and facet to determine whether there was any inherent sex bias in the question wording and

Table 3
Sex difference on Domain and Facet Scores.

	Male (N = 31,194)		Female (N = 15,014)		t	d
	Mean	SD	Mean	SD		
Excitable	3.21	2.25	3.19	2.40	0.721	
Volatile	1.26	1.13	1.25	1.84	0.797	
Easily Disappointed	1.10	1.11	1.06	1.15	3.785**	0.035
No Direction	0.85	0.95	0.88	0.99	-3.621**	-0.031
Sceptical	3.61	2.54	3.63	2.54	-0.679	
Cynical	1.34	1.10	1.28	1.01	6.105**	0.057
Mistrusting	0.72	0.97	0.72	0.97	0.090	
Grudges	1.56	1.34	1.64	1.373	-5.983**	-0.059
Cautious	3.50	2.43	3.87	2.68	-14.032**	-0.144
Avoidant	0.90	0.97	0.87	0.96	3.002**	0.031
Fearful	0.69	0.98	0.96	1.17	-24.549**	-0.250
Unassertive	1.92	1.27	2.04	1.35	-9.166**	-0.092
Reserved	4.35	2.72	3.78	2.55	22.114**	0.216
Introverted	1.32	0.95	1.29	0.89	3.568**	0.033
Unsocial	1.64	1.47	1.43	1.42	14.937**	0.145
Tough	1.39	1.25	1.06	1.17	27.446**	0.273
Leisurely	3.58	2.20	3.64	2.1	-3.030**	-0.028
Passive Aggressive	1.81	1.24	1.84	1.22	-2.218*	-0.024
Unappreciated	0.97	1.05	1.03	1.03	-5.490**	-0.058
Irritated	0.79	0.91	0.77	0.91	2.061**	0.022
Bold	7.57	2.95	7.34	2.90	7.936**	0.079
Entitled	2.27	1.31	2.16	1.32	8.302**	0.083
Overconfidence	1.62	1.33	1.55	1.25	5.291**	0.054
Fantasized Talent	3.69	1.20	3.63	1.23	4.388**	0.049
Mischievous	6.99	2.81	6.61	2.8	13.434**	0.135
Risky	2.84	1.42	2.5	1.48	23.418**	0.234
Impulsive	1.74	1.28	1.81	1.26	-5.456**	-0.055
Manipulative	2.41	1.14	2.3	1.07	9.448**	0.099
Colourful	7.02	2.58	6.75	2.57	10.189**	0.105
Public Confidence	2.73	1.40	2.47	1.44	18.274**	0.183
Distractible	2.26	0.86	2.33	0.81	-8.838**	-0.084
Self Display	2.03	1.26	1.95	1.25	6.123**	0.064
Imaginative	7.80	2.86	7.31	2.90	17.238**	0.170
Eccentric	1.05	1.16	0.96	1.12	8.253**	0.079
Special Sensitivity	3.63	1.31	3.54	1.32	6.940**	0.068
Creative Thinking	3.11	1.47	2.8	1.55	20.566**	0.205
Diligent	9.24	2.57	9.48	2.53	-9.411**	-0.094
Standards	3.62	0.85	3.75	0.82	-15.703**	-0.156
Perfectionistic	2.83	1.38	2.95	1.40	-8.943**	-0.086
Organized	2.79	1.24	2.78	1.18	1.142	
Dutiful	7.24	2.44	7.49	2.48	-10.177**	-0.102
Indecisive	2.03	1.09	2.18	1.11	-14.421**	-0.136
Ingratiating	2.41	1.26	2.60	1.27	-15.625**	-0.150
Conforming	2.8	1.2	2.70	1.17	8.884**	0.084

whether if these were removed the overall d would decline even more. This is not to deny or reduce differences that exist but rather trying to reduce artefacts arising from question selection. Certainly, with changes in society, particularly with reference to sex and gender differences, questionnaire wording could cause both offence and differences in interpretation unless they are constantly updated.

From a practical perspective, one issue worth considering is the impact of sex differences at the tails of the distribution, in particular those individuals that fall above the 90th percentile which is considered high risk and is often probed in selection and development settings. For those traits with significant sex differences there may be a greater ratio of individuals in the high risk category from one group compared to the other. For example, looking at the trait imaginative, if we assume a normal distribution for males and females with similar standard deviation but with males having a significantly greater mean than females, then at the 90th percentile the ratio of males to females will be greater than at the 50th percentile. This difference at the tails could explain why certain personality traits are seen to be more masculine – at the highest extreme there are more males than females

that display the trait and at the lowest extreme there are more females and less males. However, in order to examine this specifically future research should investigate the pattern of gender differences across the distribution.

This study, like all others, has limitations. Most participants were British adults taking part in a compulsory assessment centre and they may have been tempted by impression management; yet there is no reason to suspect that there were sex differences in this behaviour. The sample was thus biased in terms of age, education and class and the question remains whether a more representative sample of people from a wider age range and social class background would have shown more or fewer sex differences. It has been argued that personality changes over time and it may be that sex differences and similarities in personality are different for young, middle-aged and older participants (Roberts et al., 2006). Finally, there is always the possibility that there are sex differences in self-report behaviours and biases, such that females exhibit more humility and males more hubris and that therefore some observed differences are more due to other factors and artefacts than actual personality differences.

Table 4
Results of the Binary Regression.

	B	S.E	Wald	Sig.	Exp(B)
Volatile	−0.050	.013	15.846	.000	0.95
Easily Disappoint	−0.034	.014	5.946	.015	0.97
No Direction	−0.011	.013	0.677	.411	0.99
Cynical	−0.063	.015	18.577	.000	0.94
Mistrusting	.050	.014	12.153	.000	1.05
Grudges	.082	.012	44.554	.000	1.09
Avoidant	−0.134	.014	90.879	.000	0.89
Fearful	.235	.013	326.693	.000	1.26
Unassertive	−0.033	.011	8.511	.004	0.97
Introverted	.004	.014	0.097	.756	1.04
Unsocial	−0.126	.014	81.905	.000	0.88
Tough	−0.283	.014	406.561	.000	0.75
Passive Aggressive	.008	.009	0.754	.385	1.01
Unappreciated	.080	.013	41.033	.000	1.08
Irritated	−0.070	.013	27.616	.000	0.93
Entitled	−0.039	.011	13.702	.000	0.96
Overconfidence	−0.002	.012	0.028	.867	0.99
Fantasized Talent	.062	.012	25.772	.000	1.06
Risky	−0.171	.010	284.769	.000	0.84
Impulsive	.176	.012	225.524	.000	1.19
Manipulative	−0.061	.012	23.507	.000	0.94
Public Confidence	−0.193	.015	164.718	.000	0.82
Distractible	.152	.011	204.141	.000	1.17
Self Display	.028	.012	5.267	.022	1.02
Eccentric	−0.009	.012	0.658	.417	0.99
Special Sensitivity	−0.018	.011	2.816	.093	1.00
Creative Thinking	−0.128	.011	145.896	.000	0.88
Standards	.231	.015	239.198	.000	1.26
Perfectionistic	.085	.011	56.101	.000	1.09
Organized	−0.049	.009	31.309	.000	0.95
Indecisive	.095	.011	73.283	.000	1.10
Ingratiating	.099	.010	89.437	.000	1.11
Conforming	−0.175	.012	230.048	.000	0.84

Credit author statement

Adrian Furnham: Visualisation, Writing – review & editing
Simmy Grover: Data analysis, Proofing

Declaration of Competing Interest

There is no conflict of interest in this research or paper

Data Availability

This is obtainable from the first author upon request Registration:
This paper was not pre-registered with the journal

Ethics

This was sought and obtained (CEHP/514/2017) Informed Consent:
participants gave consent for their anonymised data to be analysed and published There is no conflict of interest

Compliance with Ethical Standards

Committee approved (CEHP/2017/514)

Ethics Approval

UCL Psychology Dept number CEHP/514.2013 granted permission
for this study to be done,

Data

A full SPSS data file is available from the second author upon request

References

- Corbitt, E., Widiger, T., 1995. Sex differences among the personality data: an Exploration of the data. *Clin. Psychol.: Sci. Practice* 2, 225–238.
- de Cos, E.G., 2015. Gender Differences in Personality Disorders. In: Sáenz-Herrero, M. (Ed.), *Psychopathology in Women*. Springer, Cham doi:10.1007/978-3-319-05870-2_30.
- Del Giudice, M., 2009. On the real magnitude of psychological sex differences. *Evolutionary Psychology* 7 (2), 264–279. doi:10.1177/14740490900700209.
- Del Giudice, M., Booth, T., Irwing, I., 2012. The distance between Mars and Venus: measuring global sex differences in personality. *PLoS One* 7 (1), e29265. doi:10.1371/journal.pone.0029265.
- Ekselius, L., Bodlund, O., von Knorring, L., Lindstrom, E., Kullgren, G., 1996. Sex Differences in DSM-III-R, Axis II – Personality Disorders. *Pers. Individ. Dif.* 20, 457–461.
- Feingold, A., 1994. Gender differences in personality: a meta-analysis. *Psychol. Bull.* 116, 429–456. doi:10.1037/0033-2909.116.3.429.
- Furnham, A., 2017. Biological Sex and Cognitive Development. In: Nadal, K. (Ed.), *The SAGE Encyclopaedia of Psychology and Gender*. SAGE Publications, Inc. doi, Thousand Oaks, CA, pp. 150–152. doi:10.4135/9781483384269.n55.
- Furnham, A., 2021. Dark Side subscales and Work Success. *Int. J. Clin. Psychol.* 1 (1). doi:10.31579/ijcp.2021/001.
- Furnham, A., 2022. The Bright and Dark Side of Personality: the relationship between Personality Traits and Personality Disorders. In: Lusk, D., Hayes, T. (Eds.), *The Good, the Bad, and the Human Dark Side at Work*. SIOP.
- Furnham, A., Treglown, L., 2021. Sex differences in personality scores on six scales: many significant, but mostly small, differences. *Current Psychol.* doi:10.1007/s12144-021-01675-x.
- Furnham, A., Trickey, G., 2011. Sex differences in the dark side traits. *Pers. Individ. Dif.* 50 (4), 517–522. doi:10.1016/j.paid.2010.11.021.
- Furnham, A., Trickey, G., Hyde, G., 2012. Bright aspects to dark side traits: dark side traits associated with work success. *Pers. Individ. Dif.* 52, 908–913.
- Furnham, A., Trickey, G., Hyde, G., 2016. Sex and personality differences in job value preferences. *Psychology* 7 (5), 672–677. doi:10.4236/psych.2016.75069.
- Furnham, A., Sherman, R., 2021. Dark side personality and safety-related traits. *Pers. Individ. Dif.* 17, 1–6. doi:10.1016/j.paid.2020.110510.
- Golomb, M., Fava, M., Abraham, M., Rosenbaum, J.F., 1995. Gender differences in personality disorders. *Am. J. Psychiatry* 152 (4), 579–587. doi:10.1176/ajp.152.4.579.
- Greenwald, A.G., Banaji, M.R., Nosek, B.A., 2015. Statistically small effects of the Implicit Association Test can have societally large effects. *J. Pers. Soc. Psychol.* 108 (4), 553–561. doi:10.1037/pspa0000016.
- Grilo, C., 2002. Are there gender differences in DSM-IV personality disorders? *Comprehensive Psychiatry* 43, 427–430.
- Harms, P.D., Spain, S.M., & Hannah, S.T. (2011). Leader development and the dark side of personality. *The Leadership Quarterly*, 22, 495–509. doi:10.1016/j.leaqua.2011.04.007
- Hogan, R., 2014. *Hogan Developmental Survey: Technical Supplement, Form 5*. Hogan Press, Tulsa, OK.
- Hogan, R., Hogan, J., Warrenfeltz, R., 2007. *The Hogan Guide: Interpretation and Use of Hogan Inventories*. Hogan Press, Tulsa, OK.
- Hogan, R., Kaiser, R.B., Sherman, R.A., Harms, P.D., 2021. Twenty years on the dark side: six lessons about bad leadership. *Consulting Psychol. J.: Practice Res.* 73, 199–213. doi:10.1037/cpb0000205.
- Jane, J.S., Oltmanns, T.F., South, S.C., Turkheimer, E., 2007. Gender bias in diagnostic criteria for personality disorders: an item response theory analysis. *J. Abnorm. Psychol.* 116, 166–175. doi:10.1037/0021-843X.116.1.166.
- Klonsky, E.D., Jane, J.S., Turkheimer, E., Oltmanns, T.F., 2002. Gender role and personality disorders. *J. Pers. Disord.* 16 (5), 464–476. doi:10.1521/pedi.16.5.464.22121.
- Oltmanns, T.F., Powers, A.D., 2012. *Gender and personality disorders*. In: Widiger, T.A. (Ed.), *The Oxford Handbook of Personality Disorders*. Oxford University Press, New York, NY, pp. 206–218.
- Nei, K.S., Foster, J.L., Ness, A.M., Nei, D.S., 2018. Rule breakers and attention seekers: personality predictors of integrity and accountability in leaders. *Int. J. Sel. Assess.* 26, 17–26. doi:10.1111/ijsa.12201.
- Palaiou, K., Zarola, A., Furnham, A., 2016a. The dark side of personality predicts positive and negative work attitudes. *Pers. Individ. Dif.* 88, 12–16. doi:10.1016/j.paid.2015.08.029.
- Palaiou, K., Sykes, J., Welford, C., Furnham, A., 2016b. Work personality (Wave), intelligence and the dark side at work. *Psychology* 7 (13), 1531. doi:10.4236/psych.2016.713149.
- Paris, J., 2004. *Gender differences in personality traits and disorders*. *Current Psychiatry Reports* 6, 71–74.
- Schmitt, D.P., Realo, A., Voracek, M., Allik, J., 2008. Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures. *J. Pers. Soc. Psychol.* 94 (1), 168–182. doi:10.1037/0022-3514.94.1.168.
- Roberts, B. W., Walton, K. E., Viechtbauer, W., 2006. Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. *Psychological bulletin* 132 (1), 1.
- Schmitt, D.P., 2015. The evolution of culturally-variable sex differences. In: Weekes-Shackelford, V.A., Shackelford, T.K. (Eds.), *The Evolution of Sexuality*. Springer, New York, NY, pp. 221–256. doi:10.1007/978-3-319-09384-0_11.
- Schulte Holthausen, B., Habel, U., 2018. Sex differences in personality disorders. *Curr. Psychiatry Rep.* 11 (12), 107. doi: 10.1007.
- Weisberg, Y.J., De Young, C.G., Hirsh, J.B., 2011. Gender differences in personality across the ten aspects of the Big Five. *Front Psychol* 2, 178. doi:10.3389/fpsyg.2011.00178.
- Widiger, T.A., Spitzer, R.L., 1991. Sex bias in the diagnosis of personality disorders: conceptual and methodological issues. *Clin. Psychol. Rev.* 11, 1–22. doi:10.1016/0272-7358(91)90135-H.

- Wille, B., DeFruyt, F., DeClecq, B., 2013. Expanding and Reconceptualizing aberrant personality at work: validity of Five-Factor Model aberrant personality tendencies to predict career outcomes. *Pers. Psychol.* 66, 173–223.
- Woo, S.E., Chae, M., Jebb, A.T., Kim, Y., 2016. A closer look at the personality turnover relationship criterion expansion, dark traits, and time. *J. Manage.* 42 (2), 357–385. doi:10.1177/0149206315622985.
- Yankov, G.P., Davenport, N., Sherman, R., 2019. Locating mental toughness in factor models of personality. *Pers. Individ. Dif.* 151, 1–9.
- Zibarras, L.D., Port, R.L., Woods, S.A., 2008. Innovation and the 'dark side' of personality: dysfunctional traits and their relation to self-reported innovative characteristics. *J. Creative Behav.* 42, 201–215.