Mirror, mirror, on the wall, who is the most masculine of them all? The Dark Triad, masculinity, and women's mate choice

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ABSTRACT

Although the Dark Triad of personality (i.e., Machiavellianism, narcissism, and psychopathy) has been researched widely, few studies have looked at women's preferences for men who are high and low in Dark Triad. Further, it is not clear what the relationships between the Dark Triad and facial masculinity are. We investigated female preference for computer manipulated Dark Triad male faces in two on-line studies (Study 1: $n = 125$; Study 2: $n = 1633$). We found that women rated the high psychopathy and narcissistic faces the most masculine (Study 1). We also found that women showed a low preference for the high morphs in both long and short term relationships, and that preference for masculinity was correlated with a preference for narcissism (Study 2). We discuss the results in terms of male and female mating strategies.

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1. Introduction

The Dark Triad (i.e., Machiavellianism, narcissism and psychopathy) is a constellation of seemingly aversive personality traits, characterised by selfish manipulation of others in order to achieve one's own goals (Paulhus & Williams, 2002). The Dark Triad has been proposed as a male-typical adaptation for pursuing a short-term mating strategy (Jonason, Li, Webster, & Schmitt, 2009; although see also Carter, Campbell, & Muncer, 2014b). Evidence for the short-term mating orientation comes from studies that have shown a preference for short-term relationships (Jonason, Luevano, & Adams, 2012), increased sex drive (Baughman, Jonason, Veselka, & Vernon, 2014), and willingness to get caught when engaging in extra-pair relationships (Adams, Luevano, & Jonason, 2014). Although men who are high in the Dark Triad report a good short-term mating success (Jonason, Koenig, & Tost, 2010; Jonason et al., 2009), it is questionable whether self-reports are a reliable source of information, especially as Dark Triad may relate to impression management (Rauthmann, 2011). There are very few studies on actual mating success of these men (although see Rauthmann, Kappes, & Lanzinger, 2014). Further, few studies have looked at whether women actually prefer high Dark Triad characteristics in men. In the present study, we looked at female choice, as this may reveal something about the credibility of the self-reported short-term mating success associated with men high in the Dark Triad. If the self-reported mating success is not accurate, we would expect that women do not have a preference for high Dark Triad males.

Women's short-term mating interests may be driven by subconscious desire to obtain genetic benefits for their offspring (Li & Kenrick, 2006). It is possible that the mating success reported by men high in the Dark Triad is based on female preference for these traits as indicators of good genes. If this is the case, it would be expected that women have an increased preference for the high Dark Triad men in short-term rather than in long-term relationships. In the long-term relationships, women may risk desertion and decreased provisioning, reducing the desirability of the high Dark Triad men as long-term partners. Another possibility is that women do not prefer these men in short-term relationships, but that the short-term success is based on sexual coercion and manipulation (Jones & Olderbak, 2014). Short-term mating confers considerable risk to women in terms of risk of injury, and aggression and sexual violence (e.g., date rape) is a relatively common experience to young women who engage in casual sex (Gross, Winslett, Roberts, & Gohm, 2006). Further, Dark Triad traits (especially psychopathy) are associated with sadistic sexual offenses and even sexual homicide (see Williams, Cooper, Howell, Yuille, & Paulhus, 2009). When choosing a partner for

casual sex, women would have to weight any putative genetic benefits against risking an injury, or indeed, death.

Previous studies on mate appeal of the Dark Triad traits have utilised diverse methods, such as dating adverts and vignettes (e.g., Aitken, Lyons, & Jonason, 2013; Carter, Campbell, & Muncer, 2014a; Rauthmann & Kolar, 2013), observations of naturalistic interactions (Dufner, Rauthmann, Czarna, & Denissen, 2013; Rauthmann et al., 2014), and ratings of photographs (Holtzman & Strube, 2013). Some of the findings suggest that women do have a preference for high Dark Triad male characteristics (Aitken et al., 2013; Carter et al., 2014a), especially in short-term mating context (Aitken et al., 2013). Conversely, Rauthmann and Kolar (2013) found that all the three traits were aversive in both long and short term context, with narcissistic vignettes obtaining higher short-term mate value ratings than the other two traits. However, this study did not distinguish between the sexes, making it difficult to evaluate the idea that Dark Triad is a male-typical mating adaptation (Jonason et al., 2009). In the present study, we aim to add to the existing literature by using a method common in masculinity research – the facial morphing methodology (see Tiddeman, Burt, & Perrett, 2001). Previous work on facial morphs suggests that Dark Triad is visible and detectable in the craniofacial morphology of an individual (Holtzman, 2011), but there is currently no research investigating whether women prefer high morphs as potential partners depending on the mating context.

Further, it is not clear how Dark Triad relates to masculinity. Masculinity is a hormonal face marker, a proxy for testosterone exposure during puberty (Johnston, 2006). Women perceive masculine faces as unfriendly, dominant, hostile, and manipulative (Johnston, Hagel, Franklin, Fink, & Grammer, 2001), all of which are typical to high Dark Triad individuals. It is generally thought that women choose characteristics associated with testosterone because these traits indicate high immunocompetence, which may be beneficial in terms of genetic inheritance for the offspring (see Rantala et al., 2012). If women's choice for Dark Triad is similar to the choice for masculinity, it may be that the Dark Triad traits are associated with high pubertal testosterone exposure.

In summary, the present study expands on the current literature on female choice for Dark Triad men. We investigate, using the facial morphing methodology, (i) whether the high Dark Triad faces are rated as more masculine than their low counterparts (Study 1), (ii) whether relationship context is related to the mate appeal of male faces that are high and low in Dark Triad, and (iii) whether women who prefer facial masculinity also prefer high Dark Triad faces (Study 2).

2. Method Study 1

2.1. Participants and procedure

We recruited 125 (M_{age} = 26.50, SD = 10.43 range 16–64 years; 53 hormonal contraceptive-users) women to participate in an on-line survey advertised as "facial attractiveness study". These women were recruited from a student pool at a university in North West England, via an on-line participation website, as well as through social media advertising. After reading an online participant information sheet, and giving consent, participants were directed to a page where Dark Triad facial morph prototypes (six in total: high and low photograph for each trait) were presented in a random order. The prototypes were created by Holtzman (2011), who morphed pictures of individuals scoring highest and lowest on the Mach IV scale (Christie & Geis, 1970), the Narcissistic Personality Inventory (Raskin & Terry, 1988), and the Self-Rated Psychopathy scale (Paulhus, Neumann, & Hare, in press). The prototypes consisted of 10 highest and 10 lowest scoring males (see Holtzman, 2011, for more details on how the prototype morphs were created). Participants were asked to rate how masculine they thought the faces were (1 = *Not masculine at all*, 7 = *Very masculine*). The data were analysed with a 2 (face type: high, low) × 3 (Dark Triad trait: psychopathy, narcissism, Machiavellianism) × 2 (contraceptive user vs non-contraceptive user) mixed ANOVA to investigate the perceptions of masculinity for different types of faces (see Fig. 1 for error bars).

3. Results and discussion Study 1

Overall, the high Dark Triad faces were rated as more masculine than the low faces ($F(1, 123)$ = 10.86, $p < .00$, η_p^2 = .08; see also
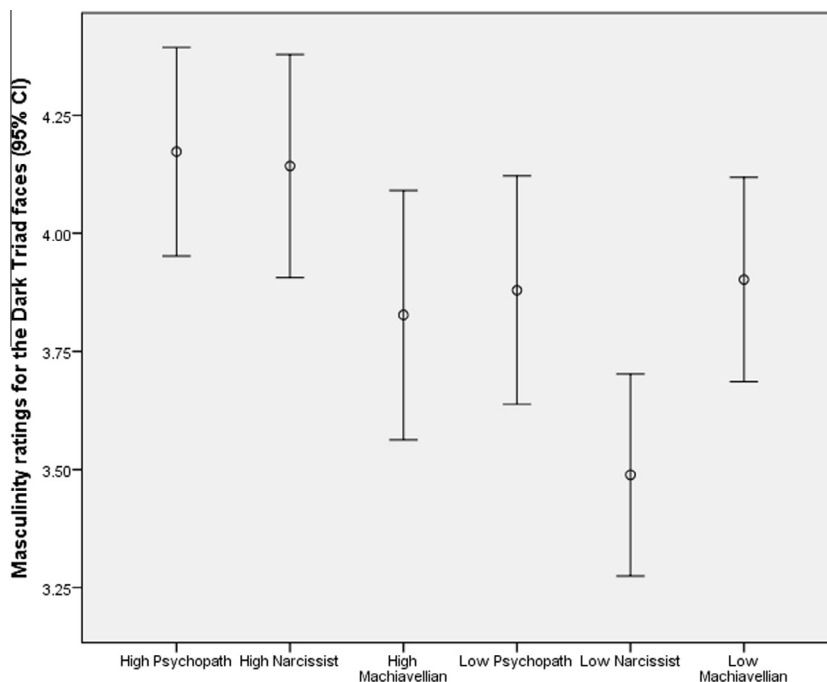

Fig. 1. Mean masculinity ratings for high and low Dark Triad morphs.

Fig. 1). We found a significant interaction between the face type and the Dark Triad Trait ($F(2, 126) = 3.18$, $p < .05$). The high narcissist ($t(1, 124) = 4.55$, $p < .001$) and the high psychopath ($t(1, 124) = 2.50$, $p < .05$) face was rated more masculine than their low counterparts. There were no differences in masculinity ratings for high and low Machiavellian face. Further, the high psychopathy ($t(1, 124) = 2.86$, $p < .05$) and narcissist ($t(1, 124) = 2.63$, $p < .05$) faces were rated as more masculine than the high Machiavellian face. Contraceptive use did not have any main effects or interactions with masculinity ratings.

The results of the pilot study indicated that women distinguish between different face types, rating high Dark Triad facial morphs as more masculine than the low faces. This was especially true for faces high in narcissism and psychopathy, suggesting that these two traits may be more similar to masculinity than Machiavellianism is. In order to investigate how masculinity preference relates to Dark Triad preference, as well as the role of relationship context (i.e., short and long-term mating), we conducted a second study with a larger number of participants and stimulus pictures.

4. Method Study 2

4.1. Participants

An on-line study was advertised through e-mail adverts at several universities in Finland, and on a major daily Finnish newspaper. The final sample for our study consisted of 1633 Finnish participants ($M_{age} = 31.68$, $SD = 7.37$; age range 17–45; 584 hormonal contraceptive users).

4.2. Stimuli

We used the prototype high and low Dark Triad faces from Holtzman (2011) to create six facial morphs for each trait. We also created six masculine/feminine versions of the same male faces. Stimuli prototypes were created by adding or subtracting 50% of difference between high and low trait morphs to the base faces with the PsychoMorph Programme (Tiddeman et al., 2001) of randomly selected male pictures from previous study (Rantala et al., 2012) (Fig. 2).

4.3. Procedure

After giving on-line consent, and filling in demographic details and personality/attachment measures (not reported in this paper), participants were directed to experimental blocks where they had to choose between a high and low morph in alternative forced choice (2-AFC) trials. All participants completed two blocks, one for long-term, and the other for short-term relationships, presented in a random order for different participants. Before each block participants read the description of short- or long-term mating context (for the description, see Little, Cohen, Jones, & Belsky, 2007), and answered a question asking whether the definition was clear for them.

Each block consisted of 24 slides. On each slide high and low feature prototype face was depicted side by side (six pairs for each of the Dark Triad trait, and six pairs for masculine/feminine versions of those faces) in a randomised order. Participants picked a face that they found more attractive in the mating context that was described at the beginning of the block. Scores for preference were computed by taking an average from 6 choices per feature, ranging from 0 – only low feature choices to 1 – only high feature choices.

4.4. Data analysis

Whether women preferred low or high faces, and whether the preference was modified by mating context was examined using discrete choice modeling (Allison, 2012) in SAS statistical package version 9.4 (SAS Institute Ins, Cary, NC, USA, 2002–2013). For each trait, we fitted a separate conditional logit model (McFadden, 1974) where morph (high or low), mating context (short- or long-term), contraceptive use (yes or no) and their two-way interactions were included as predictors. Please note that contraceptive use cannot be entered as a main term into the discrete choice model because there is no within-women variation in this variable (Allison, 2012). Participant and male face identities were entered as stratification variables to specify a set from which each choice was made (Allison, 2012).

5. Results and discussion Study 2

In Table 1, we report descriptive statistics and one-sample *t*-tests (against a chance, 0.5) for preference for Dark Triad traits in long- and short-term mating contexts, where preference was measured as the average number of times that the participants chose a high morph over a low morph. Participants had a significantly lower preference for high Dark Triad traits as both long and short-term partners, and lower preference for high masculine faces as short-term partners (see Table 1). Our findings suggest that the high versions of the Dark Triad faces may be somewhat aversive, as women chose the low feature faces more than would be predicted by chance alone.

The discrete choice modeling indicated that participants had a preference for low Machiavellian and narcissistic faces irrespective of mating context and contraceptive use (Table 2). With respect to psychopathic faces, participant's preference differed among mating contexts but not according to contraceptive use (Table 2). A repeated measures ANOVA showed that women disliked high psychopathy faces more in the short-term ($M = .42$, $SD = .22$) than in the long-term ($M = .44$, $SD = .22$) context ($F(1, 1632) = 11.94$, $p < .01$). For masculine faces, participant's preference differed according to mating context and contraceptive use (Table 2).

Finally, in order to investigate whether preference for masculinity was associated with preference for Dark Triad, we conducted two regression analyses (for long and short-term context), where masculine face preference was entered as an outcome variable, and preference for all the three Dark Triad faces were entered simultaneously as the predictor variables. In the both contexts, preference for psychopathic (short-term: $\beta = -.20$, $t = -8.97$, $p < .001$, long-term: $\beta = -.23$, $t = -10.74$, $p < .001$) and Machiavellian (short-term: $\beta = -.09$, $t = -4.13$, $p < .001$, long-term: $\beta = -.08$, $t = -3.65$, $p < .001$) faces emerged as negative predictors for masculinity preference, whereas preference for narcissistic faces (short-term: $\beta = .44$, $t = 20.04$, $p < .001$, long-term: $\beta = .45$, $t = 21.00$, $p < .001$) emerged as a strong positive predictor. This indicates that women who prefer masculinity irrespective of the relationship context also prefer narcissistic faces, but have a slight dislike for Machiavellian and psychopathic faces. This suggests that masculinity shares common variance with narcissism, but not with the other two traits.

6. Discussion

The key findings of our two studies suggest that (i) psychopathy and narcissism are more related to masculinity than Machiavellianism is, (ii) women do not prefer high Dark Triad faces in either mating context, and (iii) women who prefer masculine faces have an increased preference for narcissistic, and a decreased

	Low	High

Fig. 2. Example of Dark Triad and masculine faces used in Study 2.

Table 1
Descriptive statistics and one-sample *t*-tests for female preferences for Dark Triad traits according to mating context.

	Long-term mean (*SD*)	*t*-Value	Short-term mean (*SD*)	*t*-Value
Machiavellianism	.45 (.23)	−8.60**	.45 (.23)	−8.59**
Narcissism	.45 (.24)	−8.37**	.44(.24)	−9.03**
Psychopathy	.44 (.22)	−10.33**	.42 (.23)	−14.78**
Masculine	.49 (.29)	−0.89	.47 (.23)	−3.79**

** $p < .001$.

preference for psychopathic and Machiavellian faces. Interestingly, this opposes some of the existing literature that has used dating adverts (Aitken et al., 2013; Carter et al., 2014), meta-analysis (Holtzman & Strube, 2010), naturalistic interactions a (Dufner et al., 2013), and photographs (Holtzman & Strube, 2013), all of which have suggested that men high in the Dark Triad are viewed

Table 2
Results of conditional logit models for the Dark Triad traits and masculinity.

Trait	β	SE	χ^2	p
Machiavellianism				
Morph	−.33	.03	90.92	<.001
Mating context	−0.01	.03	.01	.95
Morph × mating context	.01	.03	.0003	.99
Contraceptive use × morph	.05	.04	2.13	.14
Contraceptive use × mating context	.001	.04	0.001	.97
Narcissism				
Morph	−.25	.03	54.04	<.001
Mating context	.009	.03	0.07	.80
Morph × mating context	−.03	.03	.70	.40
Contraceptive use × morph	−.043	.04	1.42	.23
Contraceptive use × mating context	.01	.04	0.06	.80
Psychopathy				
Morph	−.39	.04	108.62	<.001
Mating context	.10	.04	6.48	.01
Morph × mating context	−.17	.04	19.59	<.001
Contraceptive use × morph	−.07	.04	3.43	.06
Contraceptive use × mating context	−.01	.04	0.07	.79

as appealing, especially as short-term partners. Our research indicates that there may be something aversive in the craniofacial morphology of high Dark Triad faces. It is possible that individuals who are high in the Dark Triad are good at enhancing their looks via adornments such as hairstyle and clothing, which may result in increased attractiveness ratings (Dufner et al., 2013; Holtzman & Strube, 2013). Thus, the Dark Triad probably is not associated with craniofacial features indicating genes that women may be looking for in short-term mating.

The low preference for high Dark Triad traits in our study indicate that men who possess these traits could be lying and exaggerating when asked about their success in the mating arena. The Dark Triad is associated with increased frequency of lying (Jonason, Lyons, Baughman, & Vernon, 2014), as well as experiencing more positive emotions when lying (Baughman et al., 2014). This suggests that deceptiveness could also translate to exaggerating the number of sexual partners in self-report surveys. The actual mating success of men high in the Dark Triad should be further investigated by observational methods and peer-reports of success.

Another explanation for the conflict between our findings, and those that have linked the Dark Triad with an increased short-term mating success (e.g., Jonason et al., 2009) could be that the high Dark Triad men use coercive mating strategies. The low Dark Triad preference in our study could be related to craniofacial visibility of personality traits that are aversive in nature (see Holtzman, 2011), and future studies should seek to investigate morphometric differences between the faces of individuals who are high and low in these traits. The Dark Triad has been related to inter-personal outcomes that may carry substantial fitness costs for women in both short and long-term mating, such as bullying (Baughman, Dearing, Giammarco, & Vernon, 2012), violence (Pailing, Boon, & Egan, 2013), sexual coaxing and coercion (Jones & Olderbak, 2014), and unprovoked aggression (Buckels, Jones, & Paulhus, 2013). Thus, if information about these types of behaviours can be gleaned from the facial structure, it would be adaptive to avoid these men due to risk of violent injury, or in extreme cases, death.

There clearly is a need for replication of these findings. For example, studies on facial masculinity have found that women sometimes express a preference for masculinised (e.g., Johnston et al., 2001), and sometimes for feminised (e.g., Burriss, Marcinkowska, & Lyons, 2014; Perrett et al., 1998) male faces. These differences could depend on a host of factors, such as menstrual cycle (Penton-Voak et al., 1999), and individual differences in socio-sexuality (Waynforth, Delwadia, & Camm, 2005). Individual differences have a major influence on masculinity

preference (DeBruine et al., 2006), and could potentially affect preference for Dark Triad faces as well. Future studies should investigate whether individual differences in traits such as socio-sexuality affect women's choice for Dark Triad faces in a similar manner as has been found for masculinity preference.

In Study 1, high psychopathy and narcissist faces were rated as the most masculine ones, supporting previous studies that have found that psychopathy and narcissism (but not Machiavellianism) relates to other and self-perceived dominance (Rauthmann, 2012; Rauthmann & Kolar, 2013), and ruthless self-advancement in status competition (Jonason, Honey, & Semenyna, 2014). Although the association between psychopathy and prenatal testosterone is still somewhat unclear (Blanchard & Lyons, 2010), previous studies have found that high psychopathy and narcissism relate to increased testosterone, sometimes as a response to stressful social situations (Glenn, Raine, Schug, Gao, & Granger, 2011; Lobbestael, Baumeister, Fiebig, & Eckel, 2014; Welker, Lozoya, Campbell, Neumann, & Carré, 2014). Future studies should try to elucidate the links between the Dark Triad in relation to prenatal and circulating testosterone.

In Study 2, females who expressed a preference for masculinity also had enhanced preference for high narcissist faces, but aversion towards high Machiavellian and psychopathic faces (although the beta values for Machiavellianism were quite low). It is possible that narcissism is related to friendly dominance, as opposed to hostile dominance exhibited by individuals high in psychopathy (Rauthmann & Kolar, 2013). Perhaps narcissism and masculinity share some aspects of dominance, leading to similar preferences among women who favour masculinity in male faces.

Further, although women in Study 1 rated high psychopathy morphs as being more masculine than the low morphs, in Study 2, women who had a preference for high masculine faces had a lower preference for high psychopathy faces. Although the high psychopathy faces may seem as more masculine, the faces obviously have other components too, which women who liked facial masculinity did not prefer. A study by Stillman, Maner, and Baumeister (2010) showed that people are tuned into recognising cues of potential for violence in other's faces. The authors suggested that women may be sensitive to facial cues of masculinity that indicate propensity for violence directed towards the woman, and propensity for violence that is used in protecting the woman. Perhaps the high psychopathy faces, albeit being rated as masculine, contain cues to aggression towards the woman, which could be costly in terms of injury or death. Future work should elucidate whether there are facial cues to pro-social and anti-social types of masculinity, and how the Dark Triad relates to these cues.

In conclusion, we showed that women have a low preference for high Dark Triad traits across different mating contexts. We suggest that the self-reported mating success of men high in the Dark Triad may be based on sexual coaxing and coercion, rather than female preference for good genes. In a similar way to masculinity research, future studies should incorporate measures of individual differences when investigating women's choice for morphed faces. Whatever influences the self-reported short-term mating success of high Dark Triad men, it clearly is not manifested in women's preferences towards bare, unadorned, computer-manipulated faces. Future research should investigate the relationship between Dark Triad and masculinity further, using anthropometric measurements in disentangling the similarities and differences.

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