

2 **Reported Sexual Desire Predicts Men's Preferences for Sexually**
3 **Dimorphic Cues in Women's Faces**

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9 **Abstract** Recent studies investigating the relationship
10 between sexual desire and sexual attraction have found that
11 heterosexual women's reported sexual desire is positively cor-
12 related with their reported attraction to both own- and opposite-
13 sex individuals, but that heterosexual men's reported sexual
14 desire is positively correlated with their reported attraction to
15 opposite-sex individuals only. These findings have led to the
16 proposal that sexual desire is a generalized energizer of sexual
17 attraction in heterosexual women (i.e., influences women's
18 attraction to both men and women), but only energizes hetero-
19 sexual men's sexual attraction to women. Here we show that
20 heterosexual men's scores on the Sexual Desire Inventory-2
21 were positively correlated with their preferences for exagger-
22 ated sex-typical shape cues in opposite-sex, but not own-sex,
23 faces. Together with previous research showing that hetero-
24 sexual women's reported sexual desire is positively correlated
25 with their preferences for exaggerated sex-typical shape cues in
26 both own- and opposite-sex faces, our findings present novel
27 converging evidence for sex-specific relationships between

sexual desire and attractiveness judgments of own- and oppo- 28
site-sex individuals. 29

Keywords Sexual desire · Sex drive · 30
Attraction · Mate choice · Face perception 31
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Introduction 34

Recent work by Lippa (2006, 2007) has investigated the rela- 35
tionship between sexual desire and attraction by studying the 36
nature of the relationships between men's and women's 37
reported sexual desire and their reported attraction to own- and 38
opposite-sex individuals. In these studies, sex-specificity of 39
sexual attraction was assessed by having participants sepa- 40
rately rate the attractiveness of own- and opposite-sex indi- 41
viduals, rather than using the Kinsey scale. Lippa's studies 42
found that heterosexual women's reported sexual desire was 43
positively correlated with their reported attraction to both 44
men and women, but that heterosexual men's reported sexual 45
desire was positively correlated with their reported attraction 46
to women only. These results led Lippa to propose that sexual 47
desire is a generalized energizer of sexual attraction in hetero- 48
sexual women (i.e., increases the sexual attractiveness of 49
both men and women), but only energizes heterosexual men's 50
sexual attraction to women. 51

Further evidence in support of Lippa's (2006, 2007) pro- 52
posal comes from studies of the relationship between hetero- 53
sexual women's reported sexual desire and their preferences 54
for sexually dimorphic characteristics in men's and women's 55
faces (Welling, Jones, & DeBruine, 2008). Consistent with 56
Lippa's proposal that sexual desire is a generalized energizer 57
of sexual attraction in heterosexual women, Welling et al. 58
(2008) found that reported sexual desire was positively cor- 59
related with the strength of heterosexual women's preferences 60

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for both masculine characteristics in men's faces and feminine characteristics in women's faces.

Although Welling et al. (2008) presented converging evidence for Lippa's (2006, 2007) suggestion that sexual desire is a generalized energizer of sexual attraction in heterosexual women, they did not test for similar correlations between sexual desire and men's face preferences. To address this latter issue, we investigated the relationship between heterosexual men's reported sexual desire, assessed using the Sexual Desire Inventory-2 (SDI-2; Spector, Carey, & Steinberg, 1996), and their preferences for feminine characteristics in women's faces and masculine characteristics in men's faces. Given Lippa's proposal that sexual desire only energizes heterosexual men's sexual attraction to women, we predicted that heterosexual men's sexual desire would be positively correlated with their preferences for feminine characteristics in women's faces, but not their preferences for masculine characteristics in men's faces.

Method

Participants

A total of 70 heterosexual adult men took part in the study (age: $M = 26.1$ years, $SD = 6.3$ years, range = 18–44 years). The men were recruited for an online study of face preferences by following links from lists of web-based studies (e.g., psychology.org). Participants were not compensated for participating.

Measures and Procedure

Following previous studies of systematic variation in perceptions of masculine and feminine faces (e.g., Jones et al., 2007; Welling et al., 2007, 2008), we used prototype-based image transformations to objectively manipulate sexual dimorphism of 2D shape in digital face images. Although different methods for manipulating the masculinity of face images have been used in some other studies (e.g., Johnston, Hagel, Franklin, Fink, & Grammer, 2001), these methods have been shown to produce perceptual effects that are equivalent to those produced using the methods employed in our current study (DeBruine et al., 2006; DeBruine, Jones, Smith, & Little, 2010).

First, male and female prototype (i.e., average) faces were manufactured using established computer graphic methods (Rowland & Perrett, 1995; Tiddeman, Burt, & Perrett, 2001). Prototypes are composite images that are constructed by averaging the shape, color, and texture of a group of faces, such as male or female faces. These prototypes can then be used to transform images by calculating the vector differences in position between corresponding points on two prototype

images and changing the position of the corresponding points on a third image by a given percentage of these vectors.

Here, 50% of the linear differences in 2D shape between symmetrized versions of a male and a female prototype were added to or subtracted from face images of 20 young White male adults (age: $M = 19.5$ years, $SD = 2.3$ years) and 20 young White female adults (age: $M = 18.4$ years, $SD = .7$ years). This process created masculinized and feminized versions of the individual face images that differ in sexual dimorphism of 2D shape and that are matched in other regards (e.g., identity, skin color, and texture) (Rowland & Perrett, 1995). Examples of masculinized and feminized face images are shown in Fig. 1. Thus, 40 pairs of images were produced in total (each pair consisting of a masculinized and a feminized version of the same individual). Previous studies have demonstrated that this method for manipulating masculinity of 2D face shape affects perceptions of facial masculinity in the predicted manner (DeBruine et al., 2006; Jones et al., 2010; Welling et al., 2007, 2008). The 20 pairs of male faces and 20 pairs of female faces used in our study were the same set of stimuli that were used in Study 2 of Welling et al. (2008).

Each participant completed a face preference test in which they were shown the 40 pairs of faces (see above) and were asked to indicate which face in each pair they thought was



Fig. 1 Examples of masculinized (*left*) and feminized (*right*) versions of female and male faces used in our study

132 more attractive. Trial order and the screen side on which any
133 given image was presented were randomized across partici-
134 pants. This method for assessing individual differences in
135 men's preferences for masculine versus feminine face shape
136 characteristics has been used in previous studies (e.g., Jones
137 et al., 2007; Welling et al., 2008).

138 Each participant also completed the SDI-2, a 14-item ques-
139 tionnaire that assesses individual differences in sexual desire
140 (Spector et al., 1996). Previous research has shown that the
141 SDI-2 has very good internal consistency (Spector et al.,
142 1996), produces scores that are highly correlated with other
143 measures of sexual motivation (e.g., King & Allgeier, 2000),
144 and that individuals with high scores on the SDI-2 demonstrate
145 larger physiological responses to sexual stimuli than do
146 individuals with relatively low scores (Giargiari, Mahaffey,
147 Craighead, & Hutchison, 2005). Following Spector et al.
148 (1996), participants were instructed as follows: "This ques-
149 tionnaire asks about your level of sexual desire. By desire, we
150 mean interest in or wish for sexual activity. For each item,
151 please circle the number that best shows your thoughts and
152 feelings. Your answers will be private and anonymous." An
153 example question is "When you spend time with an attractive
154 person (for example, at work or school), how strong is your
155 sexual desire?", to which participants responded using a 0 (no
156 desire) to 8 (strong desire) scale.

157 The study was conducted online. Following recommen-
158 dations by Kraut et al. (2004), data were not recorded from
159 duplicate Internet Protocol (IP) addresses. Previous studies
160 comparing online and lab-based methodologies have dem-
161 onstrated that both methods produce equivalent findings for
162 both individual differences in men's preferences for mascu-
163 linized versus feminized versions of faces (e.g., Fraccaro et al.,
164 2010; Jones et al., 2007) and individual differences in their
165 sexual desire (e.g., Lippa, 2006).

166 Results

167 Responses on the face preference test were scored following
168 previous research (e.g., Jones et al., 2007). For each partici-
169 pant, we calculated the proportion of times he chose the
170 feminized female face as more attractive than the masculin-
171 ized version. We also calculated the proportion of trials on
172 which each participant chose the masculinized male face as
173 more attractive than the feminized version.

174 First, we used a one-sample *t*-test to compare the proportion
175 of trials on which men chose the feminized female face as more
176 attractive than the masculinized version with the chance value
177 .5. This analysis demonstrated that the men in our study chose
178 the feminized female faces significantly more often than the
179 masculinized versions, $t(69) = 15.20, p < .001, M = .81, SEM$
180 $= .02$. A corresponding analysis comparing the proportion of
181 trials on which men chose the masculinized male face as more

attractive than the feminized version with chance showed
no significant effect of face shape on men's attractiveness,
 $t(69) < 1, M = .47, SEM = .03$.

Scores on the SDI-2 were calculated following Spector
et al. (1996). High scores indicate high sexual desire. For our
sample of men, responses showed very good internal consis-
tency (Cronbach's alpha = .89) and scores ranged from 32 to
86 ($M = 60.9, SD = 12.6$).

SDI-2 scores were positively correlated with the proportion
of trials on which participants chose feminized versions of
female faces as the more attractive, $r = .30, N = 70, p = .011$,
but not the proportion of trials on which participants chose
masculinized versions of male face faces as the more attrac-
tive, $r = -.04, N = 70$. Steiger's test (Steiger, 1975) showed
that these correlations were significantly different, $z = 1.97$,
 $p = .049$. There were no significant correlations between age
and any of our other variables, all absolute r s $< .17$.

Discussion

Consistent with many previous studies of heterosexual men's
preferences for feminized versus masculinized versions of
women's faces (for a meta-analytic review, see Rhodes, 2006),
the men in our study also demonstrated this preference. Con-
sistent with some other studies of heterosexual men's prefer-
ences for masculinized versus feminized versions of men's
faces (e.g., Jones et al., 2007), the men in our study showed no
significant preference for either masculinized or feminized
versions of men's faces.

Heterosexual men's scores on the SDI-2 (Spector et al.,
1996) were positively correlated with their preferences for
feminized versions of women's faces. By contrast, the corre-
sponding correlation for judgments of men's faces was not
significant. Moreover, the correlation between men's scores
on the SDI-2 and their preferences for feminine women was
significantly stronger than the correlation between men's
scores on the SDI-2 and their preferences for masculine men.
This pattern of results was consistent with Lippa's (2006,
2007) finding that heterosexual men's reported sexual desire
was positively correlated with their reported attraction to
women, but not men. Lippa's studies also showed that hetero-
sexual women's reported sexual desire was positively cor-
related with their reported attraction to both women and men,
a finding complemented by subsequent research by Welling
et al. (2008) in which women's reported sexual desire was
positively correlated with the strength of their preferences for
exaggerated sex-typical cues in both men's and women's
faces.

Our current findings, together with those of Welling et al.,
suggest that the nature of the relationships between sexual
desire and preferences for exaggerated sex-typical shape cues
in own- and opposite-sex faces is different in heterosexual men

232 and women. These findings are then consistent with Lippa's
 233 proposal that sexual desire is a generalized energizer of het-
 234 erosexual women's sexual behaviors, but only energizes het-
 235 erosexual men's sexual attraction to women. That reported
 236 sexual desire predicts women's judgments of the attractiv-
 237 eness of both men's and women's faces (Welling et al., 2008),
 238 while men's reported sexual desire predicts their attractiveness
 239 judgments of women's faces only, is also consistent with a
 240 recent study by Lippa, Patterson, and Marelich (2010). In their
 241 study, heterosexual women reported sexual attraction to both
 242 female and male models, while heterosexual men reported
 243 sexual attraction to female, but not male, models, suggesting
 244 greater category specificity in men's than women's sexual
 245 attraction.

246 Lippa (2006) and Welling et al. (2008) have previously
 247 interpreted correlations between reported sexual desire and
 248 attraction as evidence that sexual desire is a generalized ener-
 249 gizer of heterosexual women's sexual attraction (i.e., increases
 250 sexual attractiveness of both men and women), but only
 251 energizes heterosexual men's sexual attraction to women.
 252 While it true that such correlations are certainly consistent with
 253 these proposals, it is also possible that attraction to men and
 254 women (among heterosexual women) and women (among
 255 heterosexual men) increases sexual desire or that the correla-
 256 tion between reported sexual desire and attraction is driven by
 257 the effects of other variables. Indeed, recent research has
 258 reported positive correlations between men's preferences for
 259 feminine shape cues in women's faces and the extent to which
 260 they demonstrate exaggerated sex-typicality on psychological
 261 measures (e.g., sensation seeking and systemizing) (Jones
 262 et al., 2007; Smith, Jones, & DeBruine, 2010), suggesting that
 263 correlated individual differences in attraction to feminine
 264 women and sexual desire among men may simply reflect
 265 individual differences in degree of masculinization. Research
 266 assessing the effects of experimentally manipulating sexual
 267 desire on face preferences and other aspects of attraction may
 268 shed light on the mechanisms and processes that shape the
 269 relationship between sexual desire and face preferences that
 270 were observed in the current study and Welling et al. (2008).

271 In summary, previous research has reported positive cor-
 272 relations between heterosexual women's reported sexual
 273 desire and their preferences for both feminine characteristics
 274 in women's faces and masculine characteristics in men's faces
 275 (Welling et al., 2008). Here we found that heterosexual men's
 276 reported sexual desire was positively correlated with their
 277 preferences for feminine characteristics in women's faces, but
 278 not their preferences for masculine characteristics in men's
 279 faces. Together, these findings complement reports of sex-
 280 selective relationships between sexual desire and reported
 281 attraction to own- and opposite-sex individuals (Lippa, 2006,
 282 2007).

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