

## Digit ratio (2D:4D) predicts facial, but not voice or body odour, attractiveness in men

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*Digit ratio predicts face attractiveness*

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**attractiveness in men**

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**Abstract**

24

25 There is growing evidence that human second-to-fourth digit ratio, or 2D:4D, is related  
26 to facial features involved in attractiveness, certainly mediated by *in utero* hormonal effects.

27 The present study extends the investigation to other phenotypic, hormone-related,

28 determinants of human attractiveness: voice and body odour. Pictures of faces with a neutral

29 expression, recordings of voices pronouncing vowels, and axillary odour samples captured on

30 cotton pads worn for 24 hours, were provided by 49 adult male donors. These stimuli were

31 rated on attractiveness and masculinity scales by two groups of 49 and 35 females,

32 approximately half of these in each sample using hormonal contraception. Multivariate

33 regression analyses showed that males' lower (more masculine) right 2D:4D ratio and lower

34 right minus left 2D:4D (Dr-l) were associated with a more attractive, and in some cases more

35 symmetrical, but not more masculine face. However, 2D:4D and Dr-l did not predict voice

36 and body odour masculinity or attractiveness. The results were interpreted in terms of

37 differential effects of prenatal and circulating testosterone, male facial shape being

38 supposedly more dependent on foetal levels (reflected by 2D:4D ratio), whereas body odour

39 and vocal characteristics could be more dependent on variation in adult circulating

40 testosterone levels.

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43 **Keywords:** Mate choice; Finger Ratio; Testosterone; Face Symmetry; Masculinity.

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## 45 1. INTRODUCTION

46

47 The relative length of the second (index) and fourth (ring) fingers, or 2D:4D ratio, is  
48 sexually dimorphic in several species, with lower 2D:4D ratios for males than females in  
49 mammals [1,2], while in birds it appears to be the reverse [3]. Although the precise genetic  
50 mechanism explaining this sexual dimorphism is still unclear, there is compelling evidence  
51 that *in utero* foetal testosterone and foetal estrogen influence 2D:4D ratio in humans [1,4-6].  
52 For example, males suffering from congenital adrenal hyperplasia (CAH), an enzymatic  
53 deficiency that entails excessive levels of androgens during the foetal period, have  
54 particularly low 2D:4D ratio [7]. More generally, men exposed to high levels of prenatal  
55 androgens develop low 2D:4D ratio [4,7].

56

57 Androgens such as testosterone are also involved in the development and maintenance of  
58 secondary sexual characters and thereby in mate choice [8,9]. Because maintaining a high  
59 level of testosterone is costly for males [e.g., 10,11], those that display enhanced sexual  
60 characters without suffering too much from immunosuppression are considered as high  
61 quality males [12]. Therefore, women should ultimately increase their reproductive success  
62 by choosing mates displaying testosterone-dependent sexual traits [12,13]. In humans, men  
63 with higher levels of circulating testosterone have voices with lower fundamental frequency  
64 [14] and more masculine faces [15,16], two traits that are preferred by women when they  
65 become sexually mature (see [17] for voices, and [18] for faces).

66

67 Since the growth of the 4<sup>th</sup> finger is dependent on the level of prenatal androgen, and  
68 since some authors have hypothesized a positive correlation between prenatal and adult  
69 testosterone levels [1,19], 2D:4D ratios might correlate negatively with some other

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70 testosterone-dependent traits [1]. If these traits such as voices and faces are sexually selected,  
71 then measures of 2D:4D should be a good predictor of men's attractiveness. To date,  
72 investigations of these putative relationships are scarce and remain principally focused on  
73 face and body masculinity of men (e.g. [20]) since this trait is testosterone-dependent [16]  
74 and preferred by women in a mate choice context [18]. Moreover, results from these studies  
75 are conflicting. For example, Neave *et al.* [20] found a negative correlation between 2D:4D  
76 ratios of the left and right hand and the female perception of male facial dominance and  
77 masculinity but Koehler *et al.* [21] failed to repeat these results and found no relationship  
78 between 2D:4D and body and face masculinity. Furthermore, some authors found a link  
79 between 2D:4D and attractiveness [22-24], whereas others did not [20].

80  
81 To date, studies testing relationships between 2D:4D ratios and sexually selected traits  
82 are only focused on men's bodies and faces although there is evidence that women use  
83 multiple testosterone-dependent cues to select mates, such as voice [25] and body odour  
84 [26,27]. As for faces [15], voice frequency and thus attractiveness are related to the level of  
85 salivary testosterone [14]. Similarly, androgen level is likely to influence body odour since  
86 steroid compounds of axillary odour such as androstadienone are more present in males [28]  
87 and are products of testosterone transformation by underarm bacteria [29,30].

88  
89 In this study, for the first time, we investigated in three sensory modalities involved in  
90 human mate choice (voice, body odour and face) whether second-to-fourth digit ratio of left  
91 and right hands, and digit ratio difference between the two hands (Dr-I, also related to  
92 prenatal testosterone sensitivity [31,32]), can predict men masculinity and attractiveness. We  
93 predicted that 2D:4D ratio and Dr-I would be negatively correlated with face, voice and  
94 odour masculinity and attractiveness, as evaluated by females. As voice frequency and face

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95 symmetry influence women preference for men (deeper voices are preferred [33]; more  
96 symmetrical faces are more attractive [34,35]), we also measured these two factors and linked  
97 them to 2D:4D ratios. Finally, we controlled for the use of hormonal contraceptives by the  
98 female raters, since this could alter women preference for various male features such as body  
99 odour, face and voice [36,37].

100

101

102 **2. METHODS**

103

104 **(a) Participants**

105 Participants were 49 Caucasian male donors aged between 18 and 33 years old  
106 (Mean  $\pm$  SD = 22.3  $\pm$  4.0 yrs), recruited among students of the University of Liverpool. From  
107 these, we obtained 2D:4D measures, a voice sample and a facial photograph. Axillary odour  
108 samples were collected for 28 of them who were non-smokers, as is standard in odour rating  
109 research because of the influence of smoking on body odour quality [38,39].

110 Male axillary odour samples were evaluated by 49 Caucasian female students of the  
111 University of Liverpool, aged between 19 and 34 years old (Mean  $\pm$  SD = 21.8  $\pm$  3.2 yrs). Of  
112 these, 26 reported taking hormone-based contraception (hereafter named 'pill users') and 23  
113 were not (hereafter named 'non-pill users'). Each odour sample was rated fresh by nine to ten  
114 women during one of five rating sessions at the University of Liverpool, between November  
115 2007 and February 2008. Men's faces were judged by 27 of these women (Mean  $\pm$  SD =  
116 21.8  $\pm$  3.4 yrs, 14 'pill users', 13 'non-pill users'). Due to experimental constraints, the voices  
117 were evaluated later (November and December 2010) by a separate group of female students  
118 of the University of Stirling ( $n$  = 35, Mean  $\pm$  SD = 20.1  $\pm$  3.5, range: 18 to 34 yrs, 20 'pill  
119 users', 15 'non-pill users', Caucasian). Although both groups of raters were similar in terms

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120 of age, culture (British) and occupation (students), we controlled for consistency of their  
121 evaluations. Hence, we asked the voice raters to rate the men's faces, previously rated by the  
122 Liverpool group. Rating of both groups were highly consistent for face short-term  
123 attractiveness (Intra-class Correlation Coefficient:  $ICC = 0.944, p < 0.001$ ), long-term  
124 attractiveness ( $ICC = 0.942, p < 0.001$ ), masculinity ( $ICC = 0.923, p < 0.001$ ) and symmetry  
125 ( $ICC = 0.889, p < 0.001$ ). Therefore, both groups were considered as equivalent. All  
126 participants gave their written informed consent, and the study was approved by the  
127 Committee on Research Ethics of the University of Liverpool and of the University of  
128 Stirling.

129

**(b) Voice samples**

131 Participants' voice was recorded on a digital recorder (M-Audio Microtrack 24/96) with  
132 a cardioid condenser microphone (Technica ATR55 Telemike Shotgun), in a quiet room at  
133 about 15 cm from the microphone. Participants were required to recite two sentences of *the*  
134 *rainbow passage* [40] and the monophthong vowels "eh", "ee", "ah", "oh" and "oo". This  
135 sequence was then repeated once. Female ratings and measure of voice frequency were  
136 performed on the second repetition (when participants are more relaxed) and on the three  
137 vowels in middle ("ee", "ah", "oh"; see Supplementary Material 1) to limit intonation  
138 variations. Voice frequency  $F_0$  was measured with Praat 4.6 ([www.praat.org](http://www.praat.org)). Voice  
139 attractiveness and masculinity ratings were collected on 1-to-7 scales with E-Prime Software  
140 (2.0, Psychology Software Tools), after equalizing the samples in intensity (in Matlab 7.10)  
141 and length (2 sec, in Praat).

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143 **(c) Axillary odour samples**

144 Axillary odour samples were collected on cotton pads (9.5 x 6.5 cm, Boots UK Ltd)  
145 fastened onto both axillae for 24 hours. Participants were instructed to refrain from eating  
146 strong food, drinking alcohol, smoking, doing sport and having sexual intercourse, 2 days  
147 before and during odour collection. They were also required to shower with a non-perfumed  
148 soap before fastening the pads, and not to use any scented products such as perfume or  
149 deodorant. Samples were presented fresh to female raters a few hours (range: 2-8 hours) after  
150 pads were removed from the armpits. Odour samples were placed in glass flasks, presented in  
151 a random order to the raters, and evaluated for attractiveness and masculinity on 9-point  
152 scales. The variable used in this study was the average ratings of the right and left side. For  
153 more details about the procedure of odour collection and rating, see [38].

154

155 **(d) Face samples**

156 Full face pictures of the male participants were taken in standardized conditions of light  
157 with a Canon Powershot camera. Participants were asked to have a neutral expression and to  
158 look at the camera without any vertical or horizontal tilt of the head. Distance to the camera  
159 was constant and participants wore a dark gown. Images were resampled to 400x480 pixels  
160 with resolution 72 dpi. Using Psychomorph 8.4 (Perrett & Tiddeman, University of St  
161 Andrews, UK), faces were normalized according to pupils and mouth position, and face  
162 symmetry was computed using 7 bilateral points (pupils, outermost and innermost eye  
163 corners, leftmost and rightmost points of the nose, mouth corners, cheekbones and jaws;  
164 Supplementary Material 2). The asymmetry index was the sum of the vertical and horizontal  
165 asymmetry indices. Vertical and horizontal asymmetries were respectively the sum of  
166 differences in vertical and horizontal locations of each of the seven facial features (see details  
167 in [41]). Placement of the points and computation of the asymmetry index were performed



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168 twice, and averaged since the two asymmetry indices were highly consistent (ICC = 0.876,  
169  $p < 0.001$ ). Men's faces were presented in random order with a java applet. Female  
170 participants were asked to rate the faces for short-term attractiveness (i.e., considering the  
171 person as a dinner date or holiday romance), long-term attractiveness (i.e., considering the  
172 person as a long-term partner), masculinity and symmetry of the faces on 1-to-7 scales. They  
173 were asked to skip the ratings of the men they knew.

174

175 **(e) Measures of 2D:4D**

176 The length of index and ring fingers of the male participants was measured to the nearest  
177 0.1 mm using Vernier callipers, directly on fingers (more reliable than indirect measures  
178 performed on a photocopy of the hands [42]). Measurement was taken from the most  
179 proximal ventral crease of the digit to the tip of the finger. To limit measurement errors, the  
180 procedure was repeated three times, and as the measures were highly correlated  
181 (ICC = 0.986,  $p < 0.001$ ) they were averaged. The index-to-ring ratio (2D:4D) for the left and  
182 right hand separately were then computed, as well as the difference between right and left  
183 2D:4D (Dr-l).

184

185 **(f) Data analysis**

186 All variables had normal distributions (assessed by Kolmogorov-Smirnov tests) and  
187 parametric statistics were thus used. In addition, no extreme values were to be removed  
188 before performing analyzes. Tests were two-tailed and were conducted using Statistica 9.0  
189 and SPSS 18.0. The link between 2D:4D and visual, auditory, and olfactory stimuli was  
190 investigated using multivariate simple regressions, with face, voice, and odour characteristics  
191 (masculinity, attractiveness, etc.) as dependent variables and 2D:4D as predictor. The  
192 difference between 'pill users' and 'non-pill users' was tested with paired  $t$ -tests and the

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193 relation between masculinity, attractiveness and other dimensions was assessed with Pearson  
194 correlation coefficients.

195

196

197 **3. RESULTS**

198

199 **(a) Voice**

200 First, correlations between male voice frequency and both rated attractiveness and rated  
201 masculinity were significantly negative ( $r = -0.69$  and  $r = -0.63$ , respectively,  $n = 48$ ,  
202  $p < 0.001$ ). Attractiveness and masculinity correlated positively ( $r = 0.77$ ,  $n = 48$ ,  $p < 0.001$ ).  
203 'Pill users' gave slightly higher attractiveness ratings than the 'non-pill users' ( $t_{47} = 2.14$ ,  
204  $p = 0.038$ ), but the two groups did not differ on the masculinity ratings ( $t_{47} = 0.95$ ,  $p = 0.35$ )  
205 (Supplementary Material 3).

206 Multivariate simple regressions were performed to determine whether 2D:4D ratio of  
207 right hand, 2D:4D of left hand, and difference between right and left 2D:4D (Dr-l), were  
208 significant predictors of voice frequency, and rated attractiveness and masculinity. Voice  
209 frequency and voice attractiveness were predicted neither by the right 2D:4D ratio, Dr-l (table  
210 1) nor left 2D:4D (Supplementary Material 4). Voice masculinity was predicted only by left  
211 hand 2D:4D when 'non-pill users' were taken into account (Supplementary Material 4).

212

213 **(b) Body odour**

214 The correlation between masculinity and attractiveness of males' body odours was  
215 significantly negative ( $r = -0.54$ ,  $n = 28$ ,  $p = 0.003$ ). Average ratings of the 'pill users' and  
216 'non-pill users' did not differ (attractiveness:  $t_{27} = 0.44$ ,  $p = 0.66$ ; masculinity:  $t_{27} = 0.01$   
217  $p = 0.99$ ; Supplementary Material 3).

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218 As for voice ratings, multivariate simple regressions were performed to determine  
219 whether 2D:4D ratio of right and left hand were significant predictors of body odour  
220 attractiveness and masculinity. There were significant effects for 2D:4D of the right hand  
221 only. Although masculinity was not predicted by 2D:4D (right, left, Dr-l), attractiveness was  
222 (by right 2D:4D) when only ‘non-pill users’ were taken into account (table 1, Supplementary  
223 Material 4).

224

225 **(c) Face**

226 First, masculinity was correlated neither with attractiveness (short-term attractiveness:  
227  $r = 0.15, p = 0.30$ ; long-term attractiveness:  $0.24, p = 0.10; n = 47$ ) nor with face symmetry  
228 (perceived by females:  $r = 0.20, p = 0.17$ ; measured in Psychomorph:  $r = 0.05, p = 0.73$ ;  
229  $n = 47$ ). Long-term and short-term attractiveness were highly correlated ( $r = 0.96, n = 47$ ,  
230  $p < 0.001$ ), and symmetry rated and perceived were correlated too ( $r = 0.39, n = 47$ ,  
231  $p < 0.01$ ). Attractiveness was correlated with perceived face symmetry (short-term  
232 attractiveness:  $r = 0.67, p < 0.001$ ; long-term attractiveness:  $0.66, p < 0.001; n = 47$ ), but not  
233 or only marginally with measured face symmetry (short-term attractiveness:  $r = -0.22$ ,  
234  $p = 0.14$ ; and long-term attractiveness:  $r = -0.28, p = 0.06; n = 47$ ). Contrary to odours, mean  
235 face ratings of the ‘pill users’ and ‘non-pill users’ significantly differed. Compared to ‘pill  
236 users’, ‘non-pill users’ gave higher attractiveness (short-term:  $t_{46} = 1.99, p = 0.052$ ; long-  
237 term:  $t_{27} = 6.06, p < 0.001$ ), higher masculinity ( $t_{27} = 4.59, p < 0.001$ ) and higher symmetry  
238 ratings ( $t_{27} = 8.03, p < 0.001$ ) (Supplementary Material 3).

239 As for voice and odour ratings, multivariate simple regressions were performed to  
240 determine whether right 2D:4D, left 2D:4D, and Dr-l were significant predictors of face  
241 attractiveness and masculinity. There were significant effects for 2D:4D of the right hand and  
242 for the right-left difference Dr-l (table 1). Long-term and short-term attractiveness were

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243 significantly predicted by right 2D:4D and by Dr-l. Perceived symmetry was predicted by  
244 right 2D:4D only, and face masculinity was not predicted by any of the 2D:4D variables.  
245 These results remained unchanged when ‘pill users’ and ‘non-pill users’ are analyzed  
246 separately.

247

**248 4. DISCUSSION**

249

250 In this study, we tested whether second-to-fourth digit ratio (2D:4D) of left hand, right  
251 hand and right minus left hand Dr-l, can predict men masculinity and attractiveness for three  
252 sensory modalities involved in human mate choice: voice, body odour and face. Our main  
253 finding is that right hand 2D:4D and Dr-l are significant predictors of attractiveness but not  
254 masculinity of male faces, whether they are considered as short-term or long-term potential  
255 partners. Right hand 2D:4D also predicts perceived facial symmetry. The link between  
256 2D:4D and facial attractiveness is consistent with previous studies investigating either self-  
257 evaluated attractiveness [22,23] or men’s attractiveness rated by women [22,24]. This  
258 illustrates a female preference for low 2D:4D men, possibly driven by the fact that these have  
259 more symmetrical faces. Such a preference might have evolved because it increases females’  
260 reproductive success by gaining benefits from partners who are physically more robust [1]  
261 and who have more fertile ejaculates [43,44].

262 Our results differ from other studies that found significant relationship between  
263 dominant/masculine personality traits and 2D:4D [45], and from a study by Neave *et al.* [20]  
264 who report a similar negative association between 2D:4D ratio (of both hands) and  
265 masculinity, but not attractiveness. However, ours and Neave *et al.*’s results are not  
266 necessarily contradictory. Indeed, men who are able to pay costs of high levels of testosterone  
267 (see [12]), will consequently develop masculine phenotypes [15]. At the same time,

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268 symmetric faces are likely to be found in individuals who have a better developmental  
269 stability [13], which reflects a better resistance to parasites and poor environmental  
270 conditions [46]. Therefore, some particularly good quality males should express  
271 simultaneously masculine and symmetric faces. Thus, one could expect 2D:4D to predict  
272 both face masculinity and symmetry, and the fact that only one of these predictions were  
273 found in our and Neave *et al.*'s study might be an effect of sampling or of differences in  
274 2D:4D measurement procedure. These effects are likely to be subtle since other studies  
275 failed, as we did, to find a link between 2D:4D ratio and masculinity features [21].

276 Replication of our findings, the direction of which contradicts another study on 2D:4D  
277 and facial symmetry [47], would thus be worthwhile. Furthermore, future research will be  
278 necessary to better understand the relationship between prenatal androgen exposure and adult  
279 face attractiveness. Our study cannot directly address the mechanism underlying this  
280 relationship, and the present results provide no evidence that prenatal testosterone is the  
281 causal factor of both low 2D:4D and high attractiveness (via face symmetry). Indeed, it may  
282 be possible that the causal factor that explains the relationship between 2D:4D and  
283 attractiveness is situated at another level. For example, a high level of parental attractiveness,  
284 because it reflects genetic quality, might provide the foetus both with 'good genes' (high  
285 level of testosterone) and a healthy prenatal environment allowing high developmental  
286 stability.

287

288 The significant link between male facial attributes and 2D:4D ratio we found was  
289 observed for the right hand only, which has a more male-like ratio than the left hand (right:  
290  $M = 0.97$ ,  $SD = 0.03$ ; left:  $M = 0.98$ ,  $SD = 0.02$ ;  $t_{48} = 3.57$ ,  $p < 0.001$ ). This result supports the  
291 assumption of Tanner (1990, cited in [1]), according to which "sexually dimorphic traits tend  
292 to be expressed in the male form more strongly on the right side of the body". This side-

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293 related difference is also supported by Manning *et al.* [43], who found stronger association  
294 between testosterone levels and 2D:4D ratios on the right hand compared to the left hand, as  
295 well as by other authors [4]. The authors hypothesize a stronger action of androgens on the  
296 digits of the right hand (see [48] for a meta-analysis).

297

298 Surprisingly, we found a positive relationship between 2D:4D ratios of men and the  
299 evaluation of their body odour attractiveness and voice masculinity by the ‘non-pill users’.  
300 This result is contrary to our predictions and deserves further investigation, especially taking  
301 into account the impact of cycle stage on this kind of evaluations. In this respect, we found  
302 that spontaneously ovulating women gave higher facial attractiveness, masculinity and  
303 symmetry ratings than ‘pill users’, which is concordant with previous studies showing that  
304 fertile women prefer less feminized [49] and more symmetrical male faces ([50] but see  
305 [51]). However, this result was not confirmed in the second group of females who evaluated  
306 the faces, which might be due to the proportion of women being in their fertile phase during  
307 data collection, a factor that we did not control.

308

309 The fact that 2D:4D does not reliably predict voice and body odour attractiveness or  
310 masculinity is not due to the fact that different groups of females rated faces and voices.  
311 Indeed, not only both groups were highly correlated, but we also performed the regressions of  
312 table 1 and Supplementary Material 4 again with the data of the ‘voice raters’ group and the  
313 results were replicated (the only difference being a lower level of significance for the effects  
314 in pill users, detail of the results not presented here). Rather, this absence of relationship  
315 between 2D:4D ratio and vocal and olfactory traits might stem from the fact that voice and  
316 body odour are by nature more variable than facial shape and more related to current  
317 circulating levels of testosterone in the adult individual (but see [52]). Consistent with this

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318 hypothesis, Evans *et al.* [14] found that voice frequency is related to the level of circulating  
319 testosterone but not to the indicator of prenatal testosterone level 2D:4D (see also [53,54]),  
320 whereas the reverse was found for faces ([20], but see [15]). All together, these results raise  
321 the question of the relative dissociation between organisational and activational effects of  
322 testosterone [8], organisational effects being irreversible and occurring during sensitive  
323 periods of early development, and activational ones being impermanent and occurring in  
324 adulthood. Foetal testosterone might serve to organize certain features of the face like bones  
325 (jaws and cheek bones) that will subsequently be activated during puberty and remain  
326 relatively stable thereafter. On the contrary, voice is produced by the larynx that is made of  
327 muscles and cartilage, and body odour consists in the degradation of products of the  
328 metabolism by skin bacteria: both of them are likely to change at anytime under the influence  
329 of circulating hormones. Indeed, voice quality significantly changes with therapeutic  
330 administration of testosterone (e.g. [55]) or more subtly with normal daily variations of  
331 testosterone concentration [14], and some major compounds of axillary odours are by-  
332 products of androgen substances [29].

333

334

335 **5. CONCLUSION**

336

337 Our study suggests that both right hand 2D:4D and right-minus-left 2D:4D (Dr-l) are  
338 good predictors of facial attractiveness in men, but not of their voice or body odour  
339 attractiveness. We showed, for the first time, that this effect might be supported by the link  
340 between 2D:4D and face symmetry, one indicator of male quality. Physical features closely  
341 linked to foetal levels of testosterone, such as face shape, are more likely to be correlated  
342 with second-to-fourth digit ratios than traits believed to be directly controlled by circulating

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343 level of testosterone later in life history (voice and body odour). We advocate that more  
344 research is needed to investigate the action of both early and adult testosterone levels on the  
345 development of sexually dimorphic traits involved in human attractiveness, including those  
346 we have examined here. The present study suggests that masculine and attractive features of  
347 voice and body odour might not be shaped *in utero* but later during life history: the timing  
348 (and even the existence, for body odour) of an action of testosterone on these two modalities  
349 remain to be elucidated in the future.

350

351

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358

359

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566 **TABLE CAPTION**

567

568 **Table 1** - Link between digit ratio (2D:4D) of the right hand and right hand minus left hand  
569 2D:4D (Dr-l), and voice, odour and face characteristics of 49 men, determined by a simple  
570 linear regression (voice pitch,  $R^2$ ) and multivariate linear regressions (other measures,  $\beta$ ). df:  
571 degrees of freedom; \*:  $p < 0.05$ ; \*\*:  $p < 0.01$ . A negative  $\beta$  value indicates an inverse  
572 relationship between 2D:4D ratio and the dependent variable. Results for left 2D:4D are  
573 presented in Supplementary Material 4.

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Modality	Raters	Dimension	Right 2D:4D				Right minus Left 2D:4D (Dr-l)				
			Wilks $\lambda$	$R^2/\beta$	$F(df)$	$P$	Wilks $\lambda$	$R^2/\beta$	$F(df)$	$P$	
Voice	n/a	Frequency		0.02	(1,46) 0.88	0.353		0.01	(1,46) 0.00	0.949	
		Total		0.19	(1,46) 1.78	0.198		0.05	(1,46) 0.10	0.749	
	'Pill users'	Attractiveness	0.96	0.17	(1,46) 1.43	0.237	0.98	-0.04	(1,46) 0.09	0.771	
		Masculinity		0.18	(1,46) 1.58	0.215	1.00	0.01	(1,46) 0.01	0.924	
	'Non-pill users'	Attractiveness	0.97	0.16	(1,46) 1.16	0.287		-0.02	(1,46) 0.02	0.881	
		Masculinity		0.20	(1,46) 1.82	0.183	0.96	0.09	(1,46) 0.37	0.547	
	Odour	Total	Attractiveness		0.25	(1,26) 1.78	0.193		0.09	(1,26) 0.24	0.632
			Masculinity	0.89	-0.32	(1,26) 2.98	0.096	0.93	-0.27	(1,26) 2.00	0.169
'Pill users'		Attractiveness		0.05	(1,26) 0.06	0.811		-0.04	(1,26) 0.05	0.831	
		Masculinity	0.90	-0.31	(1,26) 2.81	0.105	0.99	-0.06	(1,26) 0.11	0.745	
'Non-pill users'		Attractiveness		0.38	(1,26) 4.38	0.046 *		0.36	(1,26) 3.96	0.057	
		Masculinity	0.85	-0.10	(1,26) 0.25	0.618	0.86	-0.23	(1,26) 1.45	0.239	
Face		Total	Attractiveness ST <sup>a</sup>		-0.42	(1,45) 9.59	0.003 **		-0.33	(1,45) 5.51	0.023 *
			Attractiveness LT <sup>b</sup>		-0.43	(1,45) 10.49	0.002 **		-0.35	(1,45) 6.48	0.014 *
	Symmetry perceived		0.76 *	-0.41	(1,45) 9.17	0.004 **	0.86	-0.25	(1,45) 3.07	0.086	
	Asymmetry measured			0.29	(1,45) 4.05	0.050		0.20	(1,45) 1.78	0.188	
	'Pill users'	Masculinity		-0.20	(1,45) 1.79	0.187		-0.02	(1,45) 0.02	0.903	
		Attractiveness ST		-0.41	(1,45) 8.86	0.005 **		-0.30	(1,45) 4.61	0.037 *	
		Attractiveness LT	0.79 *	-0.41	(1,45) 9.26	0.004 **	0.81	-0.38	(1,45) 7.66	0.008 **	
		Symmetry perceived		-0.40	(1,45) 8.45	0.006 **		-0.25	(1,45) 3.00	0.090	
	'Non-pill users'	Masculinity		-0.21	(1,45) 2.17	0.148		-0.01	(1,45) 0.01	0.921	
		Attractiveness ST		-0.41	(1,45) 8.83	0.005 **		-0.34	(1,45) 5.94	0.019 *	
		Attractiveness LT	0.78 *	-0.44	(1,45) 10.89	0.002 **	0.88	-0.32	(1,45) 5.16	0.028 *	
		Symmetry perceived		-0.38	(1,45) 7.51	0.009 **		-0.23	(1,45) 2.47	0.123	
	Masculinity		-0.19	(1,45) 1.71	0.198		-0.05	(1,45) 0.11	0.737		

<sup>a</sup> ST: for a Short-Term partner; <sup>b</sup> LT: for a Long-Term partner