Short Communication

Perceiving the facial correlates of sociosexuality: Further evidence

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ABSTRACT

Certain physical traits are associated with individuals' tendency towards short-term sexual relationships (as assayed by the Sociosexual Orientation Inventory). Observers may be able to accurately detect sociosexuality at zero acquaintance. Here we seek to assess whether accurate zero-acquaintance judgements are based on an awareness of the general tendency towards risky behaviour rather than a specific judgement of sociosexuality. Results replicate previous findings that the faces of individuals with an unrestricted sociosexual orientation are: accurately identified as having unrestricted sociosexuality if female, more masculine if male, and more attractive if female. Furthermore, perception of Sociosexual Orientation Inventory (SOI) in female faces was not due to an awareness of general risk taking behaviour.

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1. Introduction

Individual differences exist, in both sexes, in willingness to engage in short-term sexual encounters. This variation is typically assessed using the Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991) which distinguishes between 'unrestricted' (high SOI scores) and 'restricted' (low SOI scores) orientations. Sociosexuality is related to physical characteristics, which suggests an adaptive function for this variation. For instance, more symmetric men may have higher SOI scores (Thornhill & Gangestad, 1994; Simpson, Gangestad, Christensen, & Leck, 1999), suggesting that higher 'quality' males are able to engage in sex with a greater number of women and with less investment in relationships (although women may not wish to have relationships with high SOI men: Boothroyd, Jones, Burt, DeBruine, & Perrett, 2008). Averaged faces of unrestricted men are more masculine than averaged faces of restricted men (Boothroyd et al., 2008), suggesting that sociosexuality may in part be driven by male testosterone. Furthermore, higher SOI scores in women are also associated with greater attractiveness (Boothroyd et al., 2008) and self-reported attractiveness (Clark, 2004). However, evidence for an association between sociosexuality and femininity in females is mixed (Boothroyd et al., 2008; Clark, 2004; Rhodes, Simmons, & Peters, 2005).

Given the high stakes involved in sexual relationships, for instance the costs to females of abandonment following conception, and the costs to males associated with competitive pursuit of sexual partners, it might be adaptive for individuals of both sexes to be able to assess sociosexuality rapidly. Indeed, observers can identify high SOI scoring males from silent video footage of them in conversation (Gangestad, Simpson, DiGeronimo, & Bick, 1992). Boothroyd et al. (2008) found a tendency for observers to correctly identify more versus less restricted individuals (of both sexes) from facial appearance alone. This latter finding is part of a suite of evidence that we are able to judge certain traits accurately from the face at zero acquaintance (e.g. deceptiveness: Berry & Wero, 1993; cheating: Yamagishi, Tanida, Mashima, Shimoma, & Kanazawa, 2003; personality: Penton-Voak, Pound, Little, & Perrett, 2006). The question remains, however, how we come to hold these accurate stereotypes and what in the face drives these perceptions.

Recent evidence suggests that a general tendency to engage in risky, impulsive behaviour may drive both sociosexuality and aggressive behaviour (Cross, 2007, submitted). Given that observers may be able to rapidly learn associations between physical traits and behavioural information (e.g. Lewicki, Hill, & Czyzewska, 1997), it is possible that accuracy in sociosexuality judgements arises from a learned association between certain physical traits and generally impulsive/risky behaviour.

The purpose of this study was therefore to replicate Boothroyd et al.'s (2008) results regarding perceptions of sociosexuality and further to evaluate one possible mechanism for such judgements: namely that they reflect a tendency to consider the faces of high SOI individuals to be generally risky and impulsive. As in Boothroyd et al.'s (2008) Study 1, we utilised a facial composite method. When shape and colour are averaged across faces, individual 'noise' in the data is removed and the final image displays more clearly any traits which are common to that group of faces. Thus composites can allow more sensitive comparisons between groups. Furthermore, the composite method allows us to focus on the behaviour of the observers, rather than the variation across faces.

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2. Method

2.1. Initial photograph and data collection

Eighty-two females (mean age 19.1 yrs., s.d. = 1.2) and 31 males (mean age 20.0 yrs., s.d. = 3.1) were recruited through the Psychology, Biology and Mathematics departments of Durham University. Participants were photographed with neutral expressions, under standardised conditions. Photographs were taken in the laboratory, or by the Biology departmental photographer during course registration. All photographs were taken with digital SLR cameras, with diffuse light from two flash guns. In all composite images, equal numbers of images from each batch was used to prevent differences between photographers affecting results.

After being photographed, participants completed a questionnaire including: *Sociosexuality (SOI)*: the 7-item Sociosexual Orientation Inventory (Simpson & Gangestad, 1991).

Risky impulsivity (RI): Campbell and Muncer's (2009) 10-item Risky Impulsivity scale measures the tendency to do potentially dangerous things without prior thought, such as "Have another drink even though I am already drunk" and "Drive too fast when I am feeling upset". Participants rated how likely they were to do each of these things on impulse on a scale from 1 (very unlikely) to 5 (very likely). In order to allow for non-completion of some items, scores were averaged across all items.

Aggression: Participants indicated how many times in the last 12 months they had engaged in each of 16 direct aggression behaviours taken from Archer and Webb (2006) to someone of their own sex and to someone of the opposite sex on an ordinal scale from 0 ("never") to 4 ("more than 10 times"). Mean responses for each sex of target were calculated to give same-sex aggression (SSAgg) and opposite-sex aggression (OSAgg).

Thirty-six female participants also responded to questions about whether they were wearing makeup in the photographs. One was wearing lipstick, nine wore foundation and 20 wore eye makeup. Sociosexuality was associated with neither foundation nor eye makeup use.

Initial analyses showed that, concordant with Cross (2007, submitted) SOI, RI, SSAgg, and OSAgg were all significantly correlated in women. Among males, however, RI was correlated with SOI and SSAgg, but SOI and aggression scores were not correlated (see Table 1 for results).

2.2. Stimulus construction

All photographs were delineated using 179 landmark points and connecting lines using the processing package Psychomorph 8.1. The 17 highest and lowest scoring females and the 14 highest and lowest scoring males for SOI were then selected (with proportion of images from each photograph 'batch' matched between

Table 1
Intercorrelations between sociosexuality, risky impulsivity and aggression in the photographed individuals (females above the diagonal, males below the diagonal).

		SOI	RI	SSAgg	OSAgg
SOI	r	–	.447**	.233*	.369**
	p		.000	.036	.001
RI	r	.354	–	.331**	.304**
	p	.051		.003	.006
SSAgg	r	.283	.425*	–	.714**
	p	.123	.017		.000
OSAgg	r	−.004	.087	.658**	–
	p	.985	.643	.000	

* $p < 0.05$ level.
** $p < 0.01$ (2-tailed).

Table 2
SOI, RI, and aggression scores for individuals in high and low SOI composites.

Sex	Scale	Mean scores		t	p (2-tailed)
		Low SOI group	High SOI group		
Female df = 33	SOI	10.19	60.96	−7.246***	0.000
	RI	1.91	2.64	−6.449***	0.000
	SSAgg	0.46	0.94	−3.250***	0.003
	OSAgg	0.47	1.10	−3.921***	0.000
Male df = 27	SOI	26.02	48.38	−3.558**	0.001
	RI	2.42	2.59	−1.004	0.324
	SSAgg	1.22	1.64	−1.462	0.155
	OSAgg	0.74	0.75	−0.036	0.972

** $p < 0.01$.
*** $p < 0.001$.

high and low groups in each sex), and composite images were created of each group by calculating the average spatial location of each landmark and the average red/green/blue colouration at each pixel point (Rowland & Perrett, 1995). Texture was added using wavelet analysis (Tiddeman, Burt, & Perrett, 2001). Comparison of group scores confirmed that high and low female groups differed significantly on all behavioural measures, while the high and low male groups differed only on SOI scores and not impulsivity or aggression, despite the correlation across the whole sample between SOI and RI scores (see Table 2).

2.3. Image rating

Forty four observers (27 female) aged 19–38 yrs. (mean 25.6 yrs.) were recruited by word-of-mouth and, using an internet display program, were shown the high and low SOI composite in pairs (one female pair, one male pair) and asked to choose which in each pair was more attractive, and how much more so. Responses were recorded on an 8-point scale from 0 (low SOI face much more attractive) to 7 (high SOI face much more attractive) where 3.5 indicated no preference either way. Order of pairs and left–right positions were randomised. Participants then compared the faces on the following further traits in order: masculinity (vs femininity), sociosexuality (which would be more open to sex without love and one night stands?), impulsivity (which would be more likely to take risks on impulse? e.g. driving fast while upset, or taking drugs if offered them) and aggression. There was some participant attrition over the trials, in particular just before ratings for sociosexuality as some participants stated that they were uncomfortable making such distinctions and so ceased participation. However, those who completed all trials did not differ from other participants in terms of their age or their earlier ratings of the faces (all $t < 1.3$, all $p > 0.2$). Maximum numbers were therefore maintained for each comparison to increase statistical power wherever possible.

3. Results and discussion

3.1. Perceptions of sociosexuality, impulsivity and aggression

Table 3 shows the mean ratings for the male and female pairs of faces, for each trait, with attractiveness ratings split between same- and opposite-sex judges. Observers showed a significant tendency to accurately view the high SOI female face as being more likely to display unrestricted sociosexuality (i.e. they gave higher SOI ratings to the high SOI composite, $t_{29} = 2.345$, $p < 0.05$); they were not on average able to identify the unrestricted male face, however ($t_{29} = 0.856$). Ratings of the other behavioural traits showed that observers inaccurately viewed the high SOI female

Table 3
Mean scores for participants' perception of the male and female high vs low SOI composite faces, where 0 = low SOI strongly shows that trait and 7 = high SOI face strongly shows that trait, while 3.5 indicates no difference.

	Trait rated	Mean score	S.E.	t	df	p (2-tailed)
Female faces	Attractiveness–same sex	4.32	0.37	2.214[*]	27	0.035
	Attractiveness–opposite sex	4.94	0.40	3.612[**]	17	0.002
	Masculinity	3.14	0.30	−1.190	41	0.241
	Sociosexuality	4.13	0.27	2.345[*]	29	0.026
	Impulsivity	2.76	0.35	−2.120[*]	28	0.043
	Aggression	3.46	0.38	−0.093	27	0.926
Male faces	Attractiveness–same sex	4.61	0.42	2.638[*]	17	0.017
	Attractiveness–opposite sex	3.79	0.40	0.715	27	0.481
	Masculinity	4.07	0.30	1.894[†]	41	0.065
	Sociosexuality	3.20	0.35	−0.856	29	0.399
	Impulsivity	3.59	0.34	0.252	28	0.803
	Aggression	4.18	0.45	1.493	27	0.147

[*] $p < 0.05$.
[**] $p < 0.01$.
[†] $p < 0.1$.

face as *less* impulsive than the low SOI face ($t_{28} = 2.120$, $p < 0.05$), while in fact the high SOI female group were more impulsive. Observers did not consider the male composites to differ in impulsivity, nor did they consider either the male or female composites to vary on aggression. Furthermore, correlational analyses showed that degree of accuracy regarding the sociosexuality judgements was not related to perceptions of impulsivity or aggression in either sex of face (all $r < 0.28$, all $p > 0.12$).

These results support those of Boothroyd et al. (2008) insofar as they provide further evidence that observers are able to detect facial correlates of sociosexuality in female faces. The data also show that these accurate perceptions are not driven by an insight into the underlying association between sexual behaviour and risk taking: instead, they appear to be specific to sexual behaviour. Observers perceived SOI more accurately in female than male faces. Although this might be related to the smaller pool of male faces available from which to construct a composite face, the same pattern was found in Boothroyd et al.'s data (Study 1b only), in which equal numbers of male and female faces were used. One possible reason for this is that the translation of unrestricted desires and attitudes into unrestricted sexual behaviour is dependent on the availability of willing partners, which may be more limiting for men than for women (Ostovich & Sabini, 2004). This might serve to make SOI a less unitary trait for men than for women and therefore attenuate correlations between SOI and facial appearance. Using the revised SOI scale (Penke & Asendorpf, 2008) would perhaps enable closer examination of which facets of SOI are most strongly related to facial appearance.

3.2. Sociosexuality and masculinity

As predicted, the high SOI male face was perceived by observers as more masculine than the low SOI face ($t_{41} = 1.894$, one-tailed $p = 0.033$) while the female faces were not perceived to differ in masculinity/femininity. This is again concordant with the results of Boothroyd et al., who found consistent evidence for SOI and masculinity being positively related in male composite faces, but not in female composite faces. These results continue to support the proposition that unrestricted sociosexuality may be associated with a tendency towards higher testosterone during craniofacial development. Importantly, however, perceptions of masculinity did not relate to sociosexuality judgements ($r_{30} = 0.184$, $p = 0.330$).

3.3. Sociosexuality and attractiveness

Consistent with previous studies (Boothroyd et al., 2008; Clark, 2004) the high SOI female composite was considered to be more

attractive than the low SOI female composite (male observers: $t_{17} = 3.612$, $p < 0.01$; female observers: $t_{27} = 2.214$, $p < 0.05$), which suggests that opportunities for sexual relationships amongst female student populations may be associated with attractiveness (see also Rhodes et al., 2005), despite the predictions of evolutionary theory that high quality females should be more likely to extract relationship investment from males.

Importantly, although the high SOI male composite was seen as more attractive than the low SOI composite by male observers ($t_{17} = 2.638$, $p < 0.05$), female observers showed no preference for either face ($t_{27} = 0.715$, $p = 0.481$). This is concordant with the results of Boothroyd et al. (2008) who showed, even in short-term contexts, that women have no positive preference for high SOI male faces. While it may seem surprising that males reporting more sexual partners and more interest in sexual partners would not at least be seen as attractive for short term encounters, it may be the case that only females who are explicitly biased towards a short term relationship at the point of making the choice would find such males attractive while other women would avoid males who are less likely to engage in relationship investment behaviours. It may, therefore, be interesting to compare women's preferences for facial cues to sociosexuality across the menstrual cycle or between women differing in sociosexuality themselves.

4. Conclusion

In summary, the current study has replicated certain key findings from Boothroyd et al. (2008) using comparable methods: that observers can accurately detect sociosexuality in female faces, that sociosexuality is associated with attractiveness in females and with masculinity in males, and that women do not prefer the faces of unrestricted males. We have also replicated the results of Cross (2007, submitted) that risky impulsivity may underlie both sociosexuality and aggressive behaviours. However, the key finding of this study is that observers' accurate perceptions of sociosexuality are specific to sexual behaviour and are not due to a generalised ability to detect more impulsive individuals (indeed, evidence from the female faces who did differ in impulsivity suggests observers are unable to detect this broader trait). Further research can consider other factors which may underlie perceptions of sociosexuality.

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