Who Punishes Promiscuous Women? Both Women and Men are Prejudiced Towards Sexually-Accessible Women, but Only Women Inflict Costly Punishment.

Naomi K. Muggleton[a,b], Sarah R. Tarran[b], Corey L. Fincher[b,*]

[a] *Warwick Business School, University of Warwick, Coventry, UK*
[b] *Department of Psychology, University of Warwick, Coventry, UK*

Abstract

Across human societies, female sexuality is suppressed by gendered double standards, slut shaming, sexist rape laws, and honour killings. The question of what motivates societies to punish promiscuous women, however, has been contested. Although some have argued that men suppress female sexuality to increase paternity certainty, others maintain that this is an example of intrasexual competition. Here we show that both sexes are averse to overt displays of female sexuality, but that motivation is sex-specific. In all studies, participants played an economic game with a female partner whose photograph either signalled that she was sexually-accessible or sexually-restricted. In study 1, we found that men and women are less altruistic in a Dictator Game (DG) when partnered with a woman signalling sexual-accessibility. Both sexes were less trusting of sexually-accessible women in a Trust Game (TG) (study 2); women (but not men), however, inflicted costly punishment on a sexually-accessible woman in an Ultimatum Game (UG) (study 3). Our results demonstrate that both sexes are averse to overt sexuality in women, whilst highlighting potential differences in motivation.

Keywords: Sexual suppression, Sexist attitudes, Intrasexual competition, Evolutionary psychology, Economic games

1. Introduction

Amongst human freedoms, how often one has sex and with whom is basal and level with the freedom to think any thoughts, speak any words, and worship any object or being. But, in fact, not every one is allowed these freedoms. Across human cultures there exists a sexual double standard. Whereas young men are encouraged to "sow wild oats" (Crawford & Popp, 2003; Hadfield, 2011), young women and girls are at risk of slut shaming, female genital cutting, and honour killings (Doğan, 2016; Gruenbaum, 2005; Tate, 2016) for the same behaviours.

*Corresponding author

Due to the importance of sexual freedom and the commonality across human societies of sexual double standards, several economic, sociological, and political models have been proposed to explain this gender imbalance. The present report seeks to inform the discovery of the ultimate causes of human sexual double standards by asking: who suppresses female sexuality, and why? In answering this we propose a more nuanced version of sexual control theory than existed previously.

1.1. Evidence for Male-Driven Suppression

Given that men have historically dominated women politically and economically, it is logical to suggest that they have also dominated women sexually (Travis & White, 2000). By enforcing gendered double standards, men can monopolise sexual access to their mate(s) yet gain further access to additional females via extra-pair copulation (EPC) and thereby enhance their reproductive success. Therefore, men suppress female sexuality to maximise paternity certainty and, in so doing, ensure that property is inherited by legitimate male heirs (Buss, 2003; Coontz & Henderson, 1986). More recently, Rudman and colleagues have argued that men are more likely than women to endorse the sexual double standard, which they attribute to hostile sexism and belief in male entitlement (Rudman et al., 2013; Rudman & Mescher, 2012).

Yet despite intuitive appeal, this argument has several flaws. Although coupled men should be motivated to choose romantically faithful mates, single men could benefit from *promoting* female promiscuity. Empirical evidence supports this view, showing that men are more open to casual sex than women (Petersen & Hyde, 2010). What's more, whereas female peer groups pressure their friends to not go too far sexually (Crawford & Popp, 2003; Eder et al., 1995; Kreager & Staff, 2009), adolescent males don't mind if a female peer is sexually experienced (Crawford & Popp, 2003; Coleman, 1961) and will actively encourage girlfriends to become more sexually experienced (e.g., Miller & Benson 1999; see also Gámez-Guadix et al. 2011). Counter to patriarchal models, none of the aforementioned studies found evidence to suggest that men stifle their partners' sexuality.[1]

1.2. Evidence for Female-Driven Suppression

At first glance the suggestion that women should self-regulate their behaviour in such a way that limits their choices and freedoms seems irrational. Yet on closer inspection, there is overwhelming evidence that women judge promiscuity harshly among their peers. Consider malicious gossip and slut shaming. A cursory glance at women's magazines and tabloids will demonstrate prejudice towards women deemed too sexy or showing too much skin. This trend is reflected in women's perceptions of sexual double standards. When asked which sex judges sexually-accessible women more harshly, 46% of women

[1] Although men do not stifle their female partners' sexuality, both men and women use mate guarding tactics to prevent EPC (see Chapais, 2009; Gavrilets, 2012).

reported that other women were harsher, but just 12% identified men as the harsher sex (Milhausen & Herold, 1999). From the view of male control theory, this is a strange and unnecessary behaviour. If men suppress female promiscuity, we should expect high levels of disapproval among men but indifference among women.

But consider this: more than 200 million girls and women alive today have been the victims of female genital cutting, with 3 million at risk each year (United Nations Children's Fund, 2013). Genital cutting is carried out to prevent women from enjoying sexual intercourse, thus restricting victims from engaging in pre-marital sex or EPC. Nevertheless, these practices are carried out by mothers and grandmothers (Hicks, 1996; Lightfoot-Klein, 1989), with fathers typically excluded from the process (Boddy, 1989). Do potential husbands demand cutting of their brides? On the contrary, Sudanese men prefer uncut wives (Abdalla et al., 2012; Shandall, 1979). What's more, uncut, Western wives are often favoured in regions with high female genital cutting prevalence, with men stating that they want a wife who enjoys sex (Lightfoot-Klein, 1989).

This is difficult to reconcile with models of male-driven suppression; why should women maintain a practice that restricts their collective sexuality, and is actively disliked by men? The notion of 'biological markets' was first outlined by Noë & Hammerstein (1994, 1995) to describe interactions between organisms (or 'traders') that involve the exchange of goods, such as food, shelter, and gametes, or services, such as protection, pollination, and warning calls. As goods and services become scarce (*demand outstripping supply*), organisms become increasingly competitive and will offer a higher sum for a given utility. More recently, Baumeister and colleagues have developed the concept of biological markets as a possible explanation for female sexual suppression. Sexual economics theory (Baumeister & Vohs, 2004) starts from the assumption that sex is a valuable 'product' that women supply and men demand (Baumeister et al., 2001). In societies where men dominate economically and socially, sexual access represents one of the few commodities that women control. In this view, to access sex men must offer benefits such as commitment, money, or status (Lu et al., 2015). Where sexual access can be bartered for benefits, women are at an advantage when the cost of sex is high. Crucially, this position of power is diminished when other women grant sexual access at a lower cost (Baumeister et al., 2002). As such, women are incentivised to maintain a price floor, through the control of women's sexuality, to keep the price of sexual access high.

Nonetheless, there are several issues with sexual economics theory. First, Baumeister and colleagues' (Baumeister & Twenge, 2002; Baumeister & Vohs, 2004) theory is based largely on a literature review and non-current meta-analyses (Oliver & Hyde, 1993; for more recent reviews, see Petersen & Hyde, 2011, 2010) rather than direct empirical tests. Second, given that men (vs. women) hold more negative attitudes about other women (Swim et al., 2010), it seems unlikely that they are champions of women's sexual liberation. For example, men are more likely to objectify sexualised women (Vaes et al., 2011), which is associated with sexual aggression (Rudman & Mescher, 2012). Finally, some aspects of sexual economics theory seem paradoxical. Baumeister & Vohs (2004)

claim that when a woman wears sexy clothing she is signalling that the cost of sex with her would be high. But given that women who wear sexually revealing clothes are perceived as more promiscuous (Goetz et al., 2016), we argue that provocative clothing should be interpreted as signalling a lower cost of sexual access. This conforms with the conventional wisdom that young women should refrain from "showing off the goods", that is, by wearing revealing clothing.

1.3. Uncovering Motives for Sexual Suppression

Conflicting models offer different accounts of female sexual suppression. Male control theories propose that men suppress women's sexuality to achieve status (Travis & White, 2000), increase paternity certainty (Buss, 2003), or maintain property rights for male heirs (Coontz & Henderson, 1986). Female control theories suggest that women suppress their own sexuality to maintain a price floor (Baumeister et al., 2002; Baumeister & Vohs, 2004), or as a form of intrasexual competition (Keys & Bhogal, 2016; Vaillancourt & Sharma, 2011). Although useful, it is unlikely that either theoretical approach captures the complexity of female sexual suppression. Instead, a review of the literature suggests that both men and women are prejudiced toward sexualised women, but in different contexts (e.g., Rudman & Mescher, 2012; Blake et al., 2018b; Keys & Bhogal, 2016; Vaes et al., 2011).

In the present report we provide further evidence that female sexual suppression cannot be attributed to one sex exclusively. Instead, we show that both sexes demonstrate prejudice, albeit via different mechanisms and for different reasons. We present findings from three studies designed to disentangle the role of each sex in suppressing women's sexuality.

1.4. The Present Report

We argue that male-driven suppression is associated with a need to secure a sexually-faithful mate. That is, men are motivated to suppress female sexuality as a form of mate guarding and to raise paternity certainty. Owing to concealed ovulation and internal fertilisation, paternity is always less than certain. Men can, however, increase the likelihood of paternity via mate guarding, sexual jealousy, and choosing women who are sexually faithful (Bendixen et al., 2015; French et al., 2017; Haselton & Gangestad, 2006; Leivers et al., 2014; Prokop & Pazda, 2016). From this perspective, men should demonstrate prejudice towards sexually-accessible women (prediction 1a). If men's prejudice is motivated by a desire to raise paternity certainty, then men should view sexually-accessible women as being less trustworthy (prediction 2a). Finally, men's prejudiced behaviour should be specific to mates or potential mates. That is, although men may seek to punish promiscuous behaviour in their partner(s), they are not incentivised to punish sexual-accessibility in women that they are not romantically involved with (prediction 3a). To summarise, men should favour non-sexualised women, but do not benefit from punishing sexually-accessible women.

At the same time, we argue that female-driven suppression is associated with intrasexual competition. In species where males invest in offspring, females may

compete for high-quality mates (Stewart-Williams & Thomas, 2013). In our own species, intrasexual competition among women can take the form of competitor derogation (Fisher et al., 2003; Keys & Bhogal, 2016), malicious gossip about a rival's promiscuity (Buss et al., 1990; Laidler & Hunt, 2001), and aggression (Vaillancourt & Sharma, 2011). Consequently, women should demonstrate prejudice towards sexually-accessible women (prediction 1b). Previous research has found that women perceive rivals as more likely to poach a potential mate (Fink et al., 2014) or sabotage their sexual strategies by providing deliberately misleading romantic advice (Fisher & Cox, 2011; Russell et al., 2017). Given this, we predict that women will be less trusting of rivals who signal sexual-accessibility (prediction 2b). Finally, we predict that women will regulate their competitors' sexual behaviour by inflicting costly punishment on those signalling sexual accessibility (prediction 3b).[2]

To test our predictions, we conducted three experiments based on three standard economic games. In all games, although the participants were told that they were playing the opponent in real time, they were playing against a computerised opponent, who was either wearing a provocative or conservative outfit. In study 1, we recruited 400 participants to interact in the Dictator Game (DG). Unknown to the participant, all individuals were assigned to the role of Dictator. In study 2, 314 participants chose a financial sum to invest in a sexually-accessible or -restrictive woman. In study 3, 318 participants were assigned the role of 'Responder' in an Ultimatum Game (UG), choosing whether to accept (coöperate) or reject (inflict costly punishment on their game partner). All three experiments used a 2 (male vs. female participant) x 2 (sexually-accessible vs. sexually-restricted partner) between-subjects design, with four conditions: (a) male participant paired with accessible woman; (b) female participant paired with accessible woman; (c) male participant paired with restrictive woman, and; (d) female participant paired with restrictive woman.

2. Methods and Materials

2.1. Stimuli production

We conducted a pilot study to develop and validate photographic stimuli that signalled whether a confederate was either sexually accessible or sexually restrictive. Participants rated six photographs for promiscuity, sociosexuality, and attractiveness. Three female models were recruited to produce experimental stimuli. For the sexually-accessible condition, all women wore bold, red outfits (Prokop & Pazda, 2016; Keys & Bhogal, 2016), copious make-up (Coutinho et al., 2007), tight-fitting clothes (Goetz et al., 2016), and - in one photograph - bore a tattoo (Swami & Furnham, 2007). In the sexually-restrictive condition, women wore neutral colours, natural make-up, did not have a visible tattoo,

[2]The argument that moral judgements are best described in terms of strategic interests, and not from abstract moral ideology, is supported by work exploring the evolution of morality (Weeden et al., 2016; Weeden & Kurzban, 2013; Kurzban et al., 2010; Weeden et al., 2008).

and wore loose clothing.[3] To avoid issues surrounding intrasexual competition among female participants (Vaillancourt & Sharma, 2011) or attraction effects among male participants (Miller et al., 2007; Solnick & Schweitzer, 1999) we sought to ensure that women in the sexually-accessible and sexually-restrictive conditions were matched for attractiveness. Finally, to control for racial prejudice (Stanley et al., 2011) we recruited models from three ethnic backgrounds: British-Caribbean, British-Caucasian, and British-Lebanese.

To enhance the believability of the cover story, all photographs resembled an informal, online profile picture. Photographs were taken in a kitchen environment that matched those found in a University's halls of residence or a bedsit. Photographs were taken using an iPhone 6S camera that was mounted on 100.4cm tripod stand. For each photograph, the model was instructed to stand on a marked spot that was 250cm from the camera. This distance allowed for a full body shot of the model.

Thirty-one participants (men = 23; women = 8) were recruited in an online study using Prolific Academic. Each participant viewed all six photographs. That is, participants saw each of the three models twice: once in the sexually-accessible context, and again in the sexually-restricted context. Presentation of all photographs was counterbalanced.

For each photograph, participants were asked to rate the following question on a Likert-scale from 1 (not at all) to 7 (extremely): "How promiscuous do you think this woman is? Promiscuous means that a person engages in frequent, non-committed sexual activity". Photographs were also rated from 1 to 7 for attractiveness ("How attractive is this woman?"). Finally, we administered an adapted version of the revised Sociosexual Orientation Inventory (SOI-R) questionnaire (Penke & Asendorpf, 2008). Items were changed from a first-person perspective (e.g., "With how many different partners have you had sex within the past 12 months?") to a third-person perspective ("With how many different partners do you think this woman has had sex within the past 12 months?"). The modified SOI-R questionnaire is outlined in the supplementary materials. The to-be-rated photographic stimuli remained present on the screen throughout testing.

Overall, participants reported that the models in the sexually-accessible context had a higher SOI-R score, $F(1, 29) = 33.56$, $p = .002$, $\eta^2_G = .29$. When explicitly asked to rate the models' level of promiscuity, scores were greater in the sexually-accessible context, $F(1, 29) = 18.14$, $p < .001$, $\eta^2_G = .023$. But participants' ratings of attractiveness were matched in both conditions, $F(1, 29) = 0.00$, $p = .95$, $\eta^2_G = .001$. For all dependent variables sex and the Sex x Context interaction were not significant (all Fs < 1, ps $> .30$), indicating that both sexes perceived the sexually-accessible and sexually-restrictive photographs in a comparable manner. For all measures the Model x Context interaction was not significant (all Fs < 1.68, ps $> .19$), suggesting that the effect of provocative clothing was consistent across each model.

[3]For photographic stimuli, please contact the corresponding author.

2.2. Experimental set-up

For each experiment participants were told that they were taking part in an "Economic Decision-Making Game". They were asked to log in at a specific time, as they were to play an online opponent in real time. But rather than competing against a human opponent, participants were unknowingly interacting with computerised responses. Participants were told: "You are now being matched with a partner, who could be located anywhere in the world. This could take 2-5 minutes". The instructions stated that, if a match could not be made within five minutes, the study would be terminated and the participant would receive their participation fee. In fact, the waiting time was standardised at 30 seconds for all participants. During this time, a loading wheel was presented and participants were asked to wait while a partner was identified.

Participants were required to pass a comprehension task before proceeding to the task, to ensure that they understood the rules of the economic game. This task was repeated until they successfully completed the comprehension task. Next, participants chose an online screen-name and were given the opportunity to upload a profile picture of themselves. Participants then viewed a 'profile picture' of their opponent, whose screen-name was 'Emily'. The pre-coded picture was randomly selected from the six photographs outlined in section 2.1, and indicated that their opponent was sexually-accessible or sexually-restrictive (counterbalanced between participants).

Participants then continued onto one of the three economic games that are outlined below. Finally, to ensure that answers were incentive-compatible, participants were told that they would be entered into a prize draw to earn the sums determined by the game. In fact, a randomly selected participant received the full £20 sum, independent of their actions during the game.

3. Study 1

3.1. Introduction

The aim of study 1 was to test whether men and women were less altruistic towards sexually-accessible, relative to sexually-restrictive, women. To test this, we presented participants with a DG. In DGs, two players are randomly paired and assigned the roles of *Dictator* and *Receiver*. The Dictator is initially given a sum of money (σ), but the Receiver is given nothing. Next, the Dictator can choose to give a share (δ) of her portion to the Receiver, such that $0 \leq \delta \leq \sigma$. This results in:

$$\begin{aligned} &\text{Dictator's payoff} = \sigma - \delta \\ &\text{Receiver's payoff} = \delta \end{aligned} \tag{1}$$

From an economic perspective, the Dictator should always give the sum $\delta = 0$, so as to maximise her payoff. But empirical evidence suggests that the majority of Dictators choose to offer the Recipient a non-zero sum (Edele et al., 2013). This sum is determined by the Dictator's liking of their partner

(Wu et al., 2011; Brañas-Garza et al., 2011; Whitt & Wilson, 2007). As such, participants who judge their partner favourably should give a higher sum than to those they dislike.

The aim of study 1 was to establish whether men and women offer smaller monetary sums to sexually-accessible women. In an online study, participants engaged in a DG with a female player. Unknown to participants, they were matched with a computerised player whose responses were pre-coded. The computerised player had a profile picture to signal that she was either sexually-accessible or sexually-restrictive. We predicted that both men and women would offer lower sums to women in the sexually-accessible outfit (Predictions 1a and 1b).

3.2. Method

3.2.1. Participants

Based on effect sizes observed in the pilot study ($\eta_p^2 = .02$), an a priori power analysis indicated that a sample of 401 participants was needed to detect a significant Sex x Context interaction with sufficient power, $1 - \beta = .9$, $\alpha = .05$ (easypower; McGarvey, 2015). Four hundred British participants (men = 203; women = 197) were recruited in a Prolific Academic study. Participants were diverse with respect to age, ($18 - 44$; $M = 30.45$; $SD = 6.94$), relationship status (single = 29.4%, in a relationship = 23.5%, married / engaged = 44.4%, divorced or widowed = 2.7%), and education (high school or less = 9.3%, college or higher education = 75.8%, masters or professional degree = 15.0%). Most participants were heterosexual (90.9%), homosexual (4.2%), or bisexual (3.2%); 1.7% answered "other" or "prefer not to say". All participants were financially reimbursed for their time.

3.2.2. Design

In a between-subjects design, Participant Sex (male, female) and Context (sexually-accessible, sexually-restrictive) were the independent variables. The dependent variable was the sum offered to the partner.

3.2.3. Procedure

Following the experimental set-up (section 2.2), participants received instructions about the DG. Participants were told that they would be randomly assigned to the role of *Giver* (i.e., Dictator) or *Receiver*.[4] However, all participants were assigned to the Giver role. The participant was given a sum of £20 and asked to decide how much (if anything) he or she would like to share with the Receiver.

[4]The label Giver was favoured over Dictator, as a means of avoiding loaded language that might prime authoritarian behaviour (Gomes & McCullough, 2015; Shariff & Norenzayan, 2007).

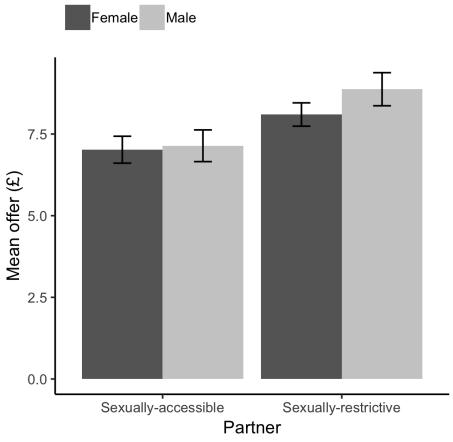

Figure 1: Mean offer in the Dictator Game (DG) as a function of Context and Participant Sex. *Note.* Error bars denote standard error.

3.3. Results

Do sexually-accessible women receive a smaller payout in a Dictator Game? To analyse the effect of female promiscuity on participants' DG offers, we performed a 2 (context) x 2 (sex) factorial ANOVA.

Figure 1 plots the sum given to Recipients as a function of context (sexually-accessible, sexually-restrictive) and participant sex. The main effect of context was significant, $F(1, 396) = 9.01$, $p = .003$, $\eta_p^2 = .02$, $\text{BF}_{01} = 0.12$, providing "substantial evidence" that sexually-accessible women receive lower offers than sexually-restrictive women (cf. Wagenmakers et al., 2011). Specifically, the mean offer fell from £8.44 95% CIs [7.79, 9.08] in the sexually-restrictive condition, to £7.09 95% CIs [6.48, 7.69] in the sexually-accessible condition.

However, neither the main effect of participant sex, $F(1, 396) = 0.90$, $p = .344$, $\eta_p^2 < .01$, $\text{BF}_{01} = 7.88$, nor the interaction term, $F(1, 396) = 0.52$, $p = .470$, $\eta_p^2 < .01$, $\text{BF}_{01} = 3.66$ reached significance. Given that $3 < \text{BF}_{01} < 10$ provides "substantial evidence" for the null prediction (Wagenmakers et al., 2011), we concluded that participant sex does not moderate offers made to (sexually-accessible) opponents in the DG.

One possibility is that the observed findings of lower altruism towards sexually-accessible women is moderated by relationship status. That is, women in relationships might be more hostile than single women, as they stand to lose more (i.e., a romantic partner) to a sexually-accessible woman. We found, however, that neither participants' relationship status (Fs < 1.93, ps $> .12$). Additionally, the effect of sexual orientation did not reach significance (Fs < 1.08, ps $> .36$).

3.4. Discussion

In study 1, participants assumed the role of Dictator and chose how much of their budget - if anything - they'd like to share with a recipient. As predicted, both men and women offered lower sums when their partner signalled sexual-accessibility (predictions 1a and 1b). Given the anonymous nature of the game, participants' behaviour could not have been driven by perceptions about socially desirable behaviour. Further, participants were told that this was a 'one-shot game', meaning the Recipient could not deliver punishment. Hence, we can conclude that the observed effect was caused by prejudicial behaviour towards women wearing an outfit that signalled sexual-accessibility.

4. Study 2

4.1. Introduction

The purpose of study 2 was to test whether men and women are less trusting of sexually-accessible, relative to sexually-restrictive, women. To test this we presented participants with a Trust Game (TG). In this task participants are paired and each player is randomly assigned the role of *Investor* or *Trustee*. The Investor is initially given a sum of money (σ), but the Trustee is given nothing. The Investor can choose to invest a share (δ) of her portion with the Trustee, such that $0 \leq \delta \leq \sigma$. This results in:

$$\begin{aligned} \text{Investor's sum} &= \sigma - \delta \\ \text{Trustee's sum} &= \delta \end{aligned} \tag{2}$$

The Experimenter subsequently triples the amount that the Investor gives to the Trustee, such that the Trustee's sum is $3 \times \delta$. The Trustee then decides how much - if anything - to return to the Investor. Investing in the Trustee is a high risk strategy. If the Trustee is honest, the Investor can increase their earnings by maximising their investment; if the Trustee is dishonest, the Investor could stand to lose their invested sum. The sum invested is therefore a proxy for measuring the extent to which an individual trusts their game partner. The TG is a useful tool when experimenters wish to examine the "give-and-take" pattern of social relationships (Cronk, 2007). Levels of investing in the TG has variously predicted investment among resettled (vs. non-resettled) villagers in Zimbabwe (Barr, 2004), gift-giving obligations among the Maasai community (Cronk, 2007), and self-reported general trust (Gobin & Freyd, 2014). In the domain of sexual behaviour, Stirrat & Perrett (2010) found that men higher in testosterone were more likely to cheat their opponent and received lower investment sums than men lower in testosterone. In sum, the literature suggests that one's trust in an agent's propensity to 'play fair' and adhere to social norms of reciprocity is captured by one's willingness to risk a financial sum, in the hope of fair play, in the TG.

Based on the previous finding that performance in the TG is associated with real-world trust, we predicted that men and women would be less trusting of women signalling sexual accessibility (predictions 2a and 2b).

4.2. Methods

4.2.1. Participants

Based on the effect sizes observed in study 1 ($\eta_p^2 = .02$), an a priori power analysis indicated that a sample of 81 participants per condition would be sufficient to detect a medium-sized Sex x Context interaction with sufficient power, $1-\beta = .8,\ \alpha = .05$ (easypower; McGarvey, 2015). Owing to six participants failing to complete the task, recruitment was marginally lower than our target of 320 participants. One-hundred fifty-eight men and 156 women were recruited in a Prolific Academic study. Participants were from 25 unique countries and ranged from 18-73 ($M = 31.41,\ SD = 10.07$). Of these, 40% were single, 37% were in a relationship or engaged, 23% were married, and 1% were divorced. Most participants were heterosexual (90.5%). The rest were homosexual (3.8%), bisexual (2.5%), or selected "other" or "prefer not to say" (1.9%). All participants were financially reimbursed for their time.

4.2.2. Design

In a between-subjects design, participant sex (male, female) and context (sexually-accessible, sexually-restrictive) were the independent variables. The dependent variable was the sum offered to the partner.

4.2.3. Procedure

Following the experimental set-up and exposure to stimuli (section 2.2), participants were told that they would be randomly assigned to the role of *Investor* or *Trustee*. In fact, all participants were assigned to the role of Investor. The participant was given a sum of £20 and asked to decide how much (if anything) he or she would offer to the *Trustee*.

4.3. Results

Do men and women differ in their trust of sexually-accessible women? A two-way ANOVA yielded a main effect for condition, $F(1, 310) = 5.75$, $p = .017$, $\text{BF}_{01} = 0.58$, $\eta_p^2 = .02$, indicating that women signalling sexual-accessibility were endowed with less money in the TG ($M = 10.3,\ SD = 5.78$) than those signalling sexual-restrictiveness ($M = 11.8,\ SD = 5.94$; Figure 2). The main effect of participant sex was not significant, $F(1, 310) = 0.33$, $p = .567$, $\text{BF}_{01} = 6.90$, $\eta_p^2 = .001$. The interaction effect was not significant, $F(1, 310) = 3.66$, $p = .057$, $\text{BF}_{01} = 3.93$, $\eta_p^2 = .01$.

As with study 1, we explored the role of participants' relationship status and sexual orientation as potential moderators. Neither participants' relationship status (Fs $< 1.42,\ p$s $> .22$), nor sexual orientation (Fs $< 0.83,\ p$s $> .51$), however, reached significance.

4.4. Discussion

In study 2, participants were assigned the role of Investor and chose how much, if anything, to invest with a Trustee. Our prediction was confirmed; participants invested less when their game partner signalled sexual-accessibility

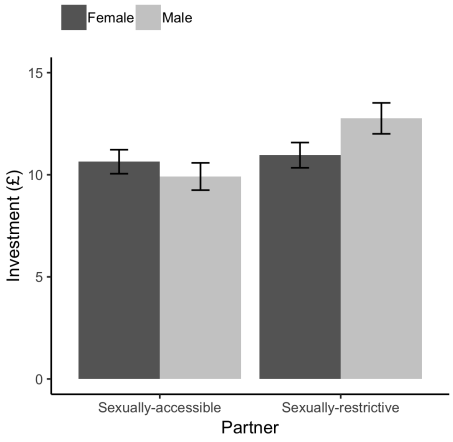

Figure 2: Mean investment in the Trust Game (TG) as a function of Context and Participant Sex. *Note.* Error bars denote standard error.

(prediction 2). The design of the task was incentive-compatible, meaning participants believed there could be financial repercussions for their actions in the game. As such, it appears that both sexes believe that sexually-accessible women are less trustworthy than sexually-restrictive women.

More broadly, the finding that sexually-accessible women are deemed less trustworthy is consistent with Bourdage et al.'s (2007) finding that Honesty-Humility negatively correlates with sociosexuality. This association can be understood when we view Honesty-Humility as one's propensity to play fair, or an aversion to cheat or exploit others. Viewed through this lens, the findings in study 2 are consistent with our view that sexually-accessible women are perceived as more likely to cheat on mates or poach the mates of others.

5. Study 3

5.1. Introduction

Study 3 uses an Ultimatum Game (UG) to test whether women (vs. men) are more willing to inflict costly punishment on sexually-accessible women. The UG bears close resemblance to the DG. A pair is allocated a sum of money (σ), and the Proposer chooses how much - if anything - to offer to the Responder (δ), resulting in:

$$\begin{aligned} \text{Proposer's share} &= \sigma - \delta \\ \text{Responder's share} &= \delta \end{aligned} \tag{3}$$

The Responder now has the chance to accept or reject the Proposer's offer. If he accepts, the money is split according to equation 3. But if he rejects,

both the Proposer and Receiver receive nothing. Classical economic accounts argue that the Responder should accept any value of $\delta > 0$, as it increases his net earnings (Camerer, 2003). Yet previous studies show that Responders will reject any offer that is deemed unfair (Fehr & Gintis, 2007) and that third-parties will punish the Proposer when she makes an unfair offer (Fehr et al., 2002; Gintis et al., 2003). Rejecting an unfair offer can be viewed as costly punishment, as the Responder is foregoing payment δ to ensure that the Proposer receives nothing.

The aim of study 3 was to test whether men and women inflict costly punishment when their game partner signals that she is a sexually-accessible women. We predicted that women, but not men, would inflict costly punishment on sexually-accessible women (predictions 3a and 3b).

5.2. Method

5.2.1. Participants

Based on the small to medium effect sizes observed in studies 1 and 2, an a priori chi-squared power analysis indicated that a sample of 320 would be needed to detect a count-based, Sex x Context interaction with sufficient power, $1-\beta = .8$, $\alpha = .05$. Three hundred and eighteen participants (men = 132; women = 186) were recruited in an online study. Of these, 200 were recruited using Prolific Academic. The remaining 118 participants were recruited via email and social media, as part of an undergraduate dissertation. All participants were aged 18-75 ($M = 41.33$; $SD = 53.86$) and varied in educational attainment (high school or less = 10.38%, college or higher education = 68.87%, masters or professional degree = 20.75%). Most participants reported that they were heterosexual (91.5%), homosexual (2.5%), or bisexual (2.5%); the rest answered "other" or "prefer not to say" (3.5%).

5.2.2. Design

In a between-subjects design, participant sex (male, female) and partner (sexually-accessible, sexually-restrictive) were the independent variables. The dependent variable was the participant's response to the offer (accept, reject).

5.2.3. Procedure

Following the experimental set-up (section 2.2), participants were allocated the role of Responder. All participants received an unfair offer of £2 from the Responder (i.e., 10% of the total sum) and decided whether to accept or reject the offer.

5.3. Results

Are men or women more likely to inflict costly punishment to sexually-accessible partners? We used chi-squared tests to predict the frequency of responses. The main effect of sex was significant, $\chi^2(1,\ N = 318) = 6.19,\ p = .013$, $\mathrm{BF}_{01} = 0.24$, with women significantly more likely than men to reject an offer. The main effect of condition, however, was not significant, $\chi^2(1,\ N =$

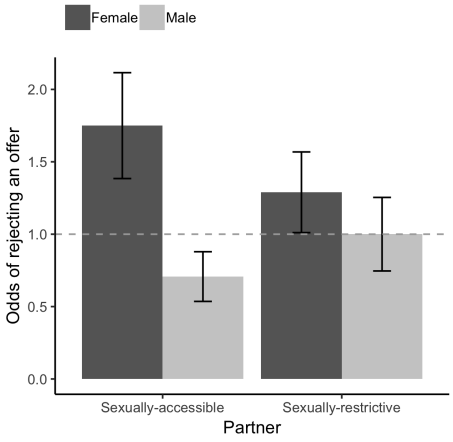

Figure 3: Odds for accept-reject rates in the Ultimatum Game (UG), as a function of Context and Participant Sex. *Note.* Error bars standard error. Dashed line reflects the point of indifference between accept and reject, OR = 1.

318) = 0.00, $p = .983$, $\text{BF}_{01} = 7.11$, signalling that sexually-accessible and sexually-restricted women did not differ in levels of punishment received. To explore the Sex x Condition interaction, we used the Cochran-Mantel-Haenszel (CMH) test with continuity correction to predict the frequency of responses. The CMH test is a variant of the chi-square test and is used for multiple chi-square tests across multiple groups. In the CMH test, participant sex, condition, and choice (accept, reject) were our factors. The CMH revealed a significant interaction, $\chi^2_{\text{MH}}(1) = 6.15$ $p = .01$. The common odds ratio across groups was not equal to 1, OR = 1.81 95% CIs [1.15, 2.84], indicating that there was a significant association between participant sex and outcome across conditions (Figure 3).

5.3.1. Post hoc analysis

A chi-square test of independence was performed to examine the relationship between participant sex and willingness to accept an unfair offer from a sexually-accessible woman (Table 1). The relation between these variables was significant, $\chi^2(1,\ N = 169) = 8.15$, $p = .004$, $\text{BF}_{01} = 0.10$. Women were 2.46 95% CIs [1.32, 4.65] times more likely than men to reject an offer from a sexually-accessible woman.

In the sexually-restrictive condition, however, men and women were equally likely to accept an offer from a sexually-restrictive woman, $\chi^2(1,\ N = 149) = 0.58$ $p = .45$, $\text{BF}_{01} = 3.77$ (Figure 3). Women were no more likely than men to inflict costly punishment on a sexually-restrictive woman, OR = 1.29 95% CIs [0.67, 2.49].

Table 1: Results from chi-square tests, as a function of Participant Sex and Condition.

Sex	Condition	Outcome	Observed	Expected	Δ	χ^2	p
Male	Accessible	Accept	41	35.0	−6.0	2.06	.151
		Reject	29				
	Restricted	Accept	31	31.0	0.0	0.00	1.00
		Reject	31				
Female	Accessible	Accept	36	49.5	13.5	7.36	.007
		Reject	63				
	Restricted	Accept	38	43.5	5.5	1.39	.238
		Reject	49				

5.4. Discussion

In study 3, participants assumed the role of Responder and chose whether to accept or reject an unfair offer. As predicted, women accepted offers from sexually-restrictive partners at chance (see 95% CIs, Figure 3), but were more likely to reject offers made by sexually-accessible women (prediction 3b). But men did not choose to punish sexually-accessible women (prediction 3a), and accepted offers at chance.

Taken together, these findings indicate that men are not incentivised to punish sexually-accessible women, so are not willing to incur a cost to do so. Women, however, adopt costly punishment, such that they are willing to incur a £2 fine to ensure that their partner did not receive £18.

6. General Discussion

To date, conflicting models have offered differing accounts for the origins of women's sexual suppression. In the present report, however, we found that both men and women are prejudiced towards sexualised women. Independent of own sex, participants were less altruistic in sharing a financial endowment when paired with a sexually-accessible woman (study 1). Prejudice was also observed in study 2, where participants were less likely to trust a sexually-accessible woman with a financial investment. In study 3, however, women, but not men, were willing to inflict costly punishment on sexually-accessible women.

6.1. Sex-Specific Motives for Prejudice

These findings suggest that, although men are less generous towards sexually-accessible women (study 1), they do not seek to actively punish them (study 3). Although more research is needed to understand the exact process, this bias can be viewed as pragmatic: when women offer low paternity certainty, men should invest low sums to gain sexual access; when paternity certainty is high, men should be more willing to invest. But it is non-rational to inflict costly punishment on a woman that he is not romantically involved with, as he is unaffected by an unknown woman's sexual behaviour. As such, men's punishment

behaviour is not affected by a target woman's sexual-accessibility.[5]

These findings are difficult to reconcile with male control theories of female sexual suppression. Proponents of this view have typically argued that men suppress women as a class, and are motivated to punish all forms of female sexuality (Travis & White, 2000; Rudman et al., 2013). Our findings, however, suggest a more nuanced approach is needed. As we have seen, men seem disinterested in suppressing women's sexual autonomy by means of costly punishment. Although prejudice undoubtedly exists, the evidence suggests that men's behaviour is more flexible than has been previously assumed by male suppression theories.

Our findings also suggest that women are motivated to punish sexually-accessible rivals. This conforms with the suggestion that women coördinate to keep the cost of sex high (Baumeister et al., 2002; Baumeister & Vohs, 2004). To achieve this, they contend, women must coöperate by restricting sexual access. This is undermined if some women lower the cost of sex. For example, if all women demand marriage as a prerequisite for sex, more men will be willing to invest early in relationships. But if some women offer access to casual sex, men can choose either short- or long-term relationships. Consequently, a woman who offers sexual access, but at a high cost (e.g., after marriage), may find her bargaining power diminished.

It is interesting to note that there was a main effect of participant sex, such that women were more likely than men to punish their opponent, independent of the experimental condition. This might reflect that intrasexual competition is present even when female participants are paired with a non-sexualised opponent (Sutter et al., 2009). Alternatively, this might reflect chivalric behaviour among male participants towards female partners (Eckel & Grossman, 2001).

6.2. Theoretical Implications

Taken together, these findings undermine the view that prejudice towards sexualised women are solely attributable to either sex. Instead, both sexes perpetuate and maintain prejudiced evaluations of sexually-accessible women, but for different reasons. Therefore, we propose a theory of female sexuality that acknowledges that men and women have different routes to reproductive success, and that both men and women can attempt to control a woman's sexuality simultaneously. This complements previous evidence that men and women are motivated to objectify sexualised women via different mechanisms (Vaes et al., 2011).

A key implication of these findings is the need to recognise the foundational role of the local ecology and circumstances for whether female control or male control is more dominant or whether they are equivalent for the actual shaping of a woman's sexual behaviour at a given point in time. This is not a new

[5]The finding that men's behaviour is not moderated by his relationship status suggests that men's aversion to female promiscuity is not limited to his mate: instead, males tended to show a generalised aversion to overt sexuality in women.

observation, and speaks to a wider finding that ecological factors shape sexual suppression (Price et al., 2014; Baumeister & Mendoza, 2011; Schacht & Bell, 2016). Blake et al. (2018b,a) recently highlighted how aspects of the local mating ecology can shape both men and women's endorsement of female sexual suppression. In support of female-driven suppression, there is recent evidence that women are more likely to sexually-objectify themselves under ecological conditions of income inequality (although not gender inequality; see Blake et al., 2018a). This could indicate that economic volatility induces women to use sexualisation as a form of intrasexual competition.

More broadly, our results find that sexual suppression cannot be described as being either male- or female-driven, and that more nuanced models are needed to understand society's propensity to suppress female sexuality. The sex difference in the derogation of a sexually-accessible women highlights the value of an evolutionary framework, which seeks to understand variation between male and female motives. If society is to understand and overcome the sexual double standard, interventionists should seek to uncover how men and women vary in their attitudes towards sexualised women.

6.3. Limitations and Future Research

This report has several limitations. First, Studies 1 and 2 recruited participants exclusively from the UK. The UK is relatively low in the global gender gap index (ranked 20 out of 144 countries) (World Economic Forum, 2016), offers statutory maternity and paternity pay, plus welfare support that does not discriminate between single and married mothers. As such, women's economic reliance on men is relatively low in the UK. This might result in weaker prejudice among women. Men's prejudice might also be weaker in the UK. That is, if women are increasingly independent, it may be less costly to mate and reproduce. Yet despite this, we still observed that men and women were prejudiced towards sexually-accessible women. This limitation could be corrected by collecting data from less gender-equal societies.

A second limitation was the reliance on photographic stimuli, rather than face-to-face interactions. Photographs were chosen because they allowed for stimuli validation, and standardised interactions across participants. But it's unclear whether participants' judgements of brief photographic stimuli are comparable with their perceptions of physically meeting a woman dressed in provocative clothing. Related to this is the role of context. Had a confederate worn the outfits presented in the lab, she would likely receive a different reaction than if she had been in a bar. Indeed, some readers might believe that the photographs displayed are not too dissimilar from many young women's profile pictures on Facebook or Instagram. As such, participants in the present report may not have judged their partners as harshly as, say, in a real-world context. Nonetheless, despite this limitation, we observed prejudice towards the sexually-accessible (vs. sexually-restrictive) stimuli.

In the present report, we provided sex-specific reasons for participants being less trusting of sexually-accessible women. There are, however, alternative explanations for this finding. It is possible that women high in sociosexuality

are viewed as less trustworthy in all exchange relationships. Related to this is the finding that sociosexuality is associated with honesty-humility (Bourdage et al., 2007). de Vries and colleagues similarly argue that those low in honesty-humility are more likely to seek out opportunities to access both sex and money (de Vries et al., 2016). Given that those high in sociosexuality are reported as being more arrogant and phoney (Bourdage et al., 2007), we might see that sexualised women are viewed as less trustworthy exchange partners, independent of sexual fidelity. Future research is needed to uncover whether the observed findings are associated with issues of paternity certainty or fear of exploitation in exchange relationships.

It is also worth noting that our methodology provides an indirect test of prejudice, rather than a direct measurement of participants' motivations to suppress female sexuality. Economic games benefit from providing a quantifiable measure of concepts like altruism, trust, and costly punishment. What's more, these methods provide participants with a financial incentive to 'tell the truth', which has contributed to their popularity among evolutionary psychologists (Fehr & Fischbacher, 2004; Eisenbruch et al., 2016). Nonetheless, provide a caveat that economic games provide an indirect observation of participants' hidden strategies and underlying prejudices.

There is some evidence that sexual suppression is moderated via contextual factors, such as local levels of gender equality (Baumeister & Mendoza, 2011) and women's economic reliance on men (Price et al., 2014; Stanik & Ellsworth, 2010). In a recent paper, Blake et al. (2018b) found plasticity in sexual suppression, such that support of the Islamic veil is higher among men, as well as women with a higher number of sons relative to daughters. Taken together, these findings indicate that, in certain situations, female sexual suppression can be strategically advantageous for both men and women. Future work should consider additional moderating factors, such as women's economic dependence on men, sex ratio (that is, skewed supply and demand), and ecological factors that influence moral norms (e.g. Weeden & Kurzban, 2013; Fincher & Thornhill, 2012; Rand et al., 2013). Nonetheless, we should be cautious of attempting to infer cognitive motivations for participants' observed behaviour. Further research is needed to develop our understanding of the specific mechanisms that promote female sexual suppression.

6.4. Conclusions

The present report develops a novel theory to understand what motivates individuals to suppress female sexuality. We show that sex-specific theories provide a better fit for the data than both male control theory and female control theory. By providing a more coherent theory for female suppression, society can begin to address harmful practices, such as slut-shaming, female genital cutting, and honour killings.

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