MECHANISMS BEHIND THE MORALISATION, AVOIDANCE, AND PUNISHMENT OF PROMISCUOUS WOMEN: INTEGRATING EVOLUTIONARY AND FEMINIST PERSPECTIVES

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Abstract

The suppression of female sexuality is a topic of much controversy, yet it is as relevant today as it was when the first legal codes were written. Across history and cultures, more scrutiny has been placed on women and their bodies and sexual lives than on men's. Two main psychological approaches seek to understand this phenomenon. The evolutionary approach argues female sexuality suppression is done in ways that favour both men's and other women's mating strategies. The feminist approach states that most societies have been founded on patriarchy, with laws and systems set in place by men and for men, who seek to keep women as subordinates. While these two theories are often antagonistic, this thesis seeks to describe and illustrate how they can be integrated and simultaneously tested, either to see if one receives more support, or if both can uniquely contribute in explaining female sexuality suppression. Chapter 1 focuses on providing a review on the literature of the evolutionary and feminist accounts, as well as two popular theories often raised when looking at who restricts female sexuality. Chapter 2 focuses on the moralisation of female promiscuity, as moralisation can be a precursor to behaviour, and tests which theory better predicts sex differences in moralisation. Chapter 3 focuses on disgust as an antecedent that is associated to both approaches. Finally Chapter 4 summarises my findings and the theoretical issues encountered along the way, with one last call for future research to integrate these competing theories.

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Declaration

I declare that the thesis is my own original work; that the research was conducted in accordance with the University Code of Research Ethics and that I have completed any compulsory training requirements associated with my programme of study

Abbreviations

Acronyms

BIS   Behavioural Immune System

FCT   Female Control Theory

FGM   Female Genital Mutilation

MCT   Male Control Theory

MWD   Madonna-whore dichotmoy

LTM   Long-term Mating

RHM   Rozin-Haidt-McCaueley

RWA   Right-wing Authoritarianism

SDO   Social Dominance

SDS   Sexual Double Standard

SET   Sexual Economics Theory

SOI   Sociosexual Orientation Inventory

SOI-R   Sociosexual Orientation Inventory – Revised

STM   Short-term Mating

TDDS   Three Domain Disgust Scale

TLKD   Tybur-Lieberman-Kurzban-DeScioli

Chapter 1:
General Introduction

Introduction

For as long as history has been recorded, societies have sought to impose injunctions regarding sexual behaviour. Even in modern societies, many of the highly contented topics garnering massive social media attention and trending status on Twitter relate to sexuality: #MeToo, sexual harassment, and intimate partner violence; abortion laws; right to same-sex marriage; hijab banning; etc. In many of these trends, women's rights are front and centre. Take for instance Roe v. Wade in the United States. Granting women the constitutional right to abortion in 1973, the Republican Party platform promised in 1980 to "work for the appointment of judges at all levels of the judiciary who respect traditional family values and the sanctity of innocent human life" (Melich, 2009) and finally accomplished it on June 24, 2022, after nearly 50 years of trying. Regardless of one's opinion on the topic, female sexuality and its regulation is not a new phenomenon.

Famously known as the earliest civilisations, Mesopotamic legal codes such as the Code of Hammurabi or the Code of Ur-Nammu already had laws regarding sex, and, more often than not, these were either 1) dependent on the woman's marital status, 2) harsher on adulterous women than on adulterous men, or 3) both. For example, if a man in ancient Sumeria raped a betrothed or married virgin, then he was sentenced to death, but if the woman was neither, he and the woman were either forced to marry, or, if he was already married, owed the father monetary compensation (Finkelstein, 1966). Beyond virginity, men were allowed to kill their adulterous wives, whereas a married woman was not allowed to lay a finger on her adulterous husband (Goldstein, 2002). The nearest approach to punishment for the adulterous husband was that the wife was allowed to take her marriage portion and return to her parental home (Berkowitz, 2012). These sexual double standards were not exclusive to Mesopotamic kingdoms; similar norms regarding premarital sex, adultery, and sanctioning of husbands' heat-of-passion killings also existed in Islamic and Tigris-Euphrates laws, Mediterranean law (e.g., Egyptians, Syrians, Hebrews, Romans, and Spartans), tribal Germanic law, the Americas (e.g., the Incan, Mayan, and Aztec empires), African legal codes, and traditions throughout China, Japan, and other Far Eastern civilisations. (Berkowitz, 2012; Daly et al., 1982; Goldstein, 2002; Moore, 1962; Thomas, 1959; Wilson &

Daly, 1992). These historical cross-cultural similarities raise the question as to why the emphasis on women more so than men.

Two main theoretical approaches seem to dominate the field of sexuality and, by consequence, the study of why we seek to put restrictions on female sexuality in particular. The first approach emphasises biological determinants shaped by evolutionary pressures and differential reproductive strategies between the sexes (Buss & Schmitt, 1993; Trivers, 1972). The second approach, feminist theory – generally based on social constructivism – emphasises social and political systems run by men to subjugate women, and women's response to their oppressed position in society (Brownmiller, 2005; Costin & Schwartz, 1987; White et al., 2000). While often seen as antagonistic (e.g., Rudman, 2017; and see discourse in Rudman & Fetterolf, 2014; Vohs & Baumeister, 2015; and Rudman, 2015), evolutionary and social constructivist approaches seem more like ultimate and proximate explanations, respectively. The evolutionary perspective focuses on *why* female sexuality is suppressed (i.e., an ultimate explanation; it has benefits to men's and women's reproductive fitness), while a social construction approach helps answer *how* female sexuality suppression works (i.e, a proximate explanation; men and women, although unconsciously, endorse ideological, cultural, social, and political systems that advance their mating self-interests).

As such, in this chapter I first explain evolutionary perspectives on human mating strategies and how men and women increase their reproductive fitness by pursuing certain strategies. I then describe how female promiscuity can threaten these strategies, resulting in both men and women having incentives to suppress the sexual behaviour of other women. Next, I give the feminist account for this phenomenon, though as this perspective is often a rebuttal to evolutionary accounts rather than a complement, I initially refrain from integrating the two perspectives until Chapter 2 in order to properly give a raw account of the literature. Finally I review the empirical evidence regarding the suppression of female sexuality by both sexes.

Evolutionary Perspectives on Human Mating Strategies

Across most animal species, reproduction is more expensive for females than it is for males, both in terms of time and energy (Trivers, 1972). Even in species where sex roles such as pregnancy are reversed (e.g, sea horses), this reversal is not synonymous with the cost of reproduction. Female sea horses, for instance, still need more time to prepare an egg clutch than males require to get ready to accept the clutch, and sex differences in mating latency can

translate to a greater potential reproductive rate for males (Masonjones & Lewis, 2000). In the case of humans, females are born with a limited supply of eggs, whereas males constantly generate new sperm cells throughout their lives. A female cannot increase her reproductive success during pregnancy because more copulations during this period will not lead to more offspring, while this restriction does not apply to males. Moreover, before the advent of modern medicine, childbirth could prove mortal to mothers. With regards to paternal investment after birth, male investment is necessary for the survival of offspring in some species, while for others, such as humans, this investment is merely facultative (i.e., it benefits offspring but is not always necessary for their survival; Westneat & Sherman, 1993). Mothers, on the other hand, still need to provide primary nutritional support for offspring until these are weaned. Overall, human males need to invest substantially less in parenting than females do to achieve successful reproduction.

As Trivers (1972) suggests, these differential reproductive constraints between males and females also lead to differential reproductive behaviour, with females being more selective in their mate choice and favouring males who not only possess social and economic resources, but also signal a willingness to invest these resources on them and their offspring. Conversely, because less time and energy spent on reproductive and parental tasks translates into more potential sexual opportunities, males' reproductive success is optimised by having sexual access to a large number of fertile females and investing fewer resources in a large number of offspring, as opposed to investing large number of resources in a small number of them.

Ample empirical evidence supports these sex differences in preference for short- vs long-term mating (STM and LTM, respectively) and physical attractiveness versus status. Men are more likely to consent to casual sex with a stranger (Clark & Hatfiled, 1989), regardless of whether the stranger is highly attractive or merely average (but see Conley, 2011; Conley et al., 2011). Men more often consume media containing short-term sex and physically attractive women, whereas women more often consume media emphasising long-term romance with physically and socially competent partners (Salmon, 2012). Literary analyses of non-WEIRD (Western, Educated, Industrialised, Rich, and Democratic) folktales show similar findings, with male characters being portrayed as prizing physical attractiveness, and female characters portrayed as emphasising wealth and status (Gottschall et al., 2004). When given a limited budget to " build" a partner, men prioritised physical attractiveness whereas women prioritised social status (Li, 2007). Regarding effectiveness in

attracting a mate, advertising sexual interest seems more efficient for women, while advertising emotional commitment seems more successful for men (Wade, 2015; Fisher et al., 2020). All in all, through different methodologies, men across cultures and generations, are more sexually permissive in their sexual attitudes and behaviours, placing greater emphasis on physical attractiveness and youth, while women place greater importance on a mate's prospective social and economic status (Buss & Schmitt, 1993; Lippa, 2007; Oliver & Hyde, 1993; Petersen & Hyde, 2011; Schmitt, 2014; Walter et al., 2020).

Strategic pluralism: when women pursue short-term mating and men pursue long-term mating.

One important caveat of the sex differences just described is that these do not mean all human females will pursue long-term strategies and all human males will pursue short-term ones. As Gangestad and Simpson (2000) note, there are trade-offs between allocating time and energy on child-rearing vs mating, and so men and women evolved *conditional* mating strategies. For men, foregoing casual sexual opportunities and instead investing in one partner and any offspring resulting from that union translates into lower mortality due to provisioning and protection, particularly in harsh environments (see Geary, 2005). In preindustrial Finland, for example, women married to wealthier men had more children and better child survival (Pettay et al., 2007). Among the Ache in Paraguay, father absence before a child's 15th birthday was associated with a 45% increased mortality rate compared to 20% for father-present children (Hill & Hurtado, 2017). Another important consideration for men is that the success of STM depends partly on which attributes women value when they are willing to engage in casual sex themselves. Men who do not fulfil women's STM preferences are unlikely to generate good payoffs from such a strategy and thus would benefit from investing in a single mate and any subsequent offspring instead.

Women can benefit from STM by gaining access to protection and immediate resources (Symons, 1979), or to mates with better genes (Smith, 1984). STM can also help inform or improve a woman's LTM, be it by allowing her to better identify her long-term preferences, to improve her self-esteem and confidence to eventually pursue long-term partners, or to assess a short-term mate's potential as a long-term partner (Buss & Schmitt, 1993; Greiling & Buss, 2000). All these hypotheses seem to have some empirical support, with physical gratification from partners deemed highly attractive, mate switching (including mate assessment and eventually switching to the one with highest mate value and willingness

to commit), and resource acquisition receiving consistent support (Armstrong & Reissing, 2015; Conley, 2011; Greiling & Buss, 2000).

Where Female Sexuality Comes In

The male control theory

As mentioned before, mating strategies come with trade-offs, and female promiscuity presents different threats to men and women depending on which strategy they pursue. Men opting for LTM benefit from decreased child mortality but sacrifice time and resources that could be otherwise spent in search of other mating opportunities. Thus, paternal uncertainty, or cuckoldry, is a significant threat (Buss & Schmitt, 1993), and the ancestral male may have evolved preferences for cues that would indicate a woman would be faithful in a long-term partnership, as well as mate guarding strategies to ensure his wife cannot commit infidelity.

Loyola and DiDonato (2012) found that higher mate value, but not faithfulness, was preferred in short-term contexts; however, for LTM, faithfulness standards remained high even when presented with potential partners of higher mate value. Men also seem to be more accurate than women in inferring whether their partners had extra-pair copulations (Andrews et al., 2008), and perform above chance when identifying the more faithful woman in a forced-choice task (Leivers et al., 2015). Stricter mate guarding does seem to result in lower cuckoldry rates among the Dogon of Mali (Strassman et al., 2012), and traditional societies where men make the biggest paternal investments are also those in which male jealousy is most extreme, with violent jealousy, honour killings, and sexual double standards (SDS) being considered acceptable (Reis, 1986). Marriage itself seems to organise mating behaviour and reproduction in favour of paternal certainty (Wells, 2022; Bethmann & Kvasnicka, 2011).

The Male Control Theory (MCT; Baumeister & Twenge, 2002) posits men are the main agents in suppressing the sexual behaviour and desires of their long-term mates as a means to increase paternal certainty, but that they should have no concern in suppressing the sexuality of other women. If anything, unattached men would probably want women to have more sexual desire so as to increase men's chances of forming temporary liaisons. Other non-evolutionary accounts suggest alternative mechanisms for the suppression of female sexuality by men. Of importance to this paper's thesis, the feminist account holds that men suppress women sexually, politically, and economically because this allows them to achieve and maintain status and power as a group (Rudman, 2017; Travis & White, 2000). More on the

social construction theory, its empirical support, and its relationship to evolutionary theory is discussed in later sections.

The female control theory

A second line of argument – the female control theory (FCT) – posits that women are the main culprits of suppressing female sexuality, be it that of other women or even their own. Based on sexual economics theory (SET), the FCT begins with the assumption that sex is a resource that men desire and women possess (Baumeister & Vohs, 2004). The reason for sex being a female resource and not a male one might be due to greater costs of reproduction and parental investment for women (Symons, 1979); because women have less interest in sex and therefore have more power to shape the sex market (i.e., principle of least interest; Waller and Hill, 1951); or because the development of a broader sphere of economic and political activity as societies became more complex occurred mainly in the male sphere, resulting in wealth and power being created by and for men (i.e., a biosocial approach; Wood & Eagly, 2002). Intercourse, thus, is not an equal exchange but an instance of a man getting something of value from the woman in exchange of something *she* values (e.g., material gifts, respect, commitment to a relationship, etc.). The higher the price of sex is kept, the more inducements men will need to offer women.

As has been discussed, men have more permissive sexual attitudes and behaviours, and are more willing to engage in casual sex. Thus, according to the FCT, a woman pursuing STM, who easily offers sex, diminishes women's collective bargaining power. Additionally, men pursuing LTM prefer women with high mate value (i.e., femininity, youth, and physical attractiveness; Asendorpf et al., 2011; Hitsch et al., 2010; Li, 2007). We have seen that women can pursue STM as a means of mate switching or finding a long-term partner, and women with high self-perceived mate value also tend to be more sexually permissive (Clark, 2004; Penke & Asendorpf, 2008). As such, a man might be tempted to leave his mate if he finds a more appealing one (i.e., a woman can have her mate poached by a more permissive woman of greater mate value). Beyond suppressing the sexuality of other women, an individual woman may also benefit from suppressing her own sexuality, since men adjust the resources they invest based on the perceived fidelity of their mates (Apicella & Marlowe, 2004, 2007). Unlike the MCT, the FCT establishes that both single *and* committed women benefit from stifling female sexuality.

The feminist version of the suppression of female sexuality

Social construction and feminist theories heavily criticise the FCT and SET (see Rudman, 2017), stating that women supressing female sexuality more than men do implies women should be more sexist, yet, empirically, men consistently score higher on sexism across cultures (Glick et al., 2000; Glick & Fiske, 2001; Swim et al., 2010). Despite people in developed nations showing decreased support for traditional gender roles, sexism is still prevalent in the form of men's resistance to, and resentment of, women's gains (Swim et al., 2010). For example, meta-analyses show men are more likely to discriminate against female job candidates for male-dominated and gender-integrated occupations (Koch et al., 2015), and to have more negative attitudes against affirmative action policies (Harrison et al., 2006). Lerner (1986) argues that the suppression of female sexuality is done in the interest of the patriarchy and to keep women from realising their full potential by keeping them subservient to men and commodifying them. Consistent with this, Sibley et al. (2007a, b) found SDO – a preference for hierarchical structures where, regarding gender hierarchies, men are at the top and want to keep that power – was related to HS, and Bareket et al. (2018) and Kahalon et al. (2019) found SDO to correlate with the Madonna-whore dichotomy – the belief that sexually restricted women should be cherished and protected whereas unrestricted women deserve to be antagonised. According to Rudman and Fetterolf (2015), by dismissing the extent to which sexual exchange dehumanises women, SET reflects and reinforces patriarchy. Another feminist account for female sexuality suppression – social chaos theory (Sherfey, 1966) – suggests that female sexuality represents a threat to an orderly society that men want. This rests on the assumption that the chaos and social disruption resulting from female promiscuity is more aversive to men than it is to women, and that men value peace and order over sexual gratification. The main argument against FCT and SET is that, historically, legal and political systems have either punished female sexuality more harshly or based their laws around the commodification of women, yet these same systems have also always been in men's, and not women's, hands.

In cases when women become more hostilely sexist towards other women, the culprits are system-justifying ideologies that have been put in place by men. For example, ambivalent sexism theory (Glick & Fiske, 1996) posits that benevolent and hostile sexism (BS and HS) both contribute to an ideological system that justifies and maintains men's greater societal status and power; BS by idealising and objectifying women who conform to the system, and HS by justifying the active dislike and denigration of women who do not comply with

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traditional sex roles or who challenge male power. Consistent, with ambivalent sexism theory, Sibley et al. (2007a) found that women's endorsement of BS predicted longitudinal increases in HS, but that this effect only occurred for women high in Right-Wing Authoritarianism (RWA; a system justification ideology that emphasises societal conformity), suggesting that motivations for social cohesion cause women to actively participate in ideologies that perpetuate gender inequality. Similarly, Radke et al. (2018) found that social dominance orientation among women was associated with BS. Fowers and Fowers (2010) found that not only did SDO have a relationship with HS as well, but that when women were asked to judge two female targets (one promiscuous and one chaste) and had their HS towards the targets measured, SDO moderated the relationship such that women with the highest SDO scores showed the greatest differences in HS expressed towards the two targets (being harsher on the promiscuous target), whereas women low in SDO expressed similar levels of HS towards both targets. Ultimately, while evolutionary theory proposes that the suppression of female sexuality can be informed by mating strategies, social construction and feminist theories argue men's greater desire for power and maintaining the status quo are the crux of the matter.

Empirical Support for the MCT and the FCT

To evaluate whether one sex really does engage in greater suppression of female sexuality, I take a look at some indicators of suppression commonly used in the MCT vs FCT debate: gender inequality, the sexual double standard (SDS; or the tendency to punish women for sexual behaviour that goes unpunished or judged less harshly for men), and support for cultural and socio-political practices that discourage casual sex. I finish this section with a conclusion that other researchers have already made: that the suppression of female sexuality is likely not as simple as one sex being the main culprit.

Gender inequality and its effect on female sexuality suppression

Evaluating whether one sex suppresses female sexuality more than the other can be a complex task, as some findings may support both the MCT and FCT. For example, Reis (1986) found a positive correlation between indices of greater male power and suppression of female sexuality across cultures, which at first glance would appear to support the MCT; the more power men have, the more they suppress women and their sexual behaviour. However, Baumeister and Twenge (2002) suggest the FCT could still explain these findings; when men have all the political and economic power, sex becomes the only means for women to gain

access to resources, and thus suppressing female sexuality becomes crucial compared to when women have alternative sources of power. In line with this reasoning, Baumeister and Mendoza (2011) hypothesised that sexual norms and practices would be less restrictive in countries with higher gender equality. Across 37 nations, higher gender equality was negatively correlated to abstinence promotion and age of first sex, and positively correlated to casual sex. Similarly, men and women seem to report higher sociosexuality (i.e., greater permissiveness towards sex without commitment) in nations with more egalitarian sex roles and greater socio-political gender equality, with the effect being more pronounced in women and resulting in decreased sex differences in sexual permissiveness (Lippa, 2009; Schmitt, 2005; Schmitt, 2015). This again seems to support a feminist account of the MCT – it isn't that women have less sexual desire, rather, in nations where men have more power, suppression of female sexuality is greater – or the sexual exchange explanation of the FCT – women keep their desire for uncommitted sex at bay because sex is their only bargaining tool. However, Schmitt (2015) notes that sex differences in sociosexual attitudes towards sex with *different* partners also increase as nations become more egalitarian, but the effects are more profound in men, leading to *larger* sex differences in enjoyment for casual sex with different partners. A feminist account can hardly account for these findings; however, an evolutionary explanation – sexual strategies theory (Buss and Schmitt, 2013) – can. Among men and women who pursue STM, men will seek larger numbers of partners (Schmitt, 2004) because, as has been mentioned, sex with a large number of women optimises their reproductive success (Trivers, 1972). Women who engage in STM, on the other hand, tend to be more selective over genetic quality (Gangestad & Simpson, 2000). Greater gender equality allows men and women to pursue STM; however, because of these sex differences in preference for variety vs choosiness, it is likely that questions measuring casual sex with a diverse number of partners, rather than casual sex in general, better reflects men's evolved STM psychology than it does women's. Importantly, this distinction fails to support the MCT because the MCT would predict a smaller, not larger, gender difference.

The sexual double standard

Another challenge in evaluating whether the MCT or FCT have more support is that evidence may not be consistent. Research on the sexual double standard (SDS; the tendency to punish women for sexual behaviour that goes unpunished for men) is a prime example. A meta-analysis by Oliver & Hyde (1993) using data from 1966 to 1977 found women had more negative attitudes toward premarital sex than men, yet another meta-analysis examining

double standards for casual sex between 1993 and 2007 found men were more supportive of the SDS (Peterson & Hyde, 2010). O'Sullivan (1995) found people did evaluate targets who engaged in casual sex more negatively compared to targets who had sex within committed relationships, but female targets were not judged more negatively than male targets, with Marks and Fraley (2005) finding similar results of no SDS. In Milhausen and Herold (2002) most participants perceived society to hold a SDS, but, at the individual level, most held a single standard, and each gender endorsed a double standard whereby they evaluated the *opposite* gender more harshly. In line with the perception that a SDS exists, Marks and Fraley (2006) noted participants who read vignettes about either a male or female target with an equal number of positive and negative comments about the target's sexuality recalled more information consistent with a SDS, suggesting the SDS is more a result of confirmation bias due to our social perceptions that such double standard exists, rather than due to the SDS actually existing.

However, Marks (2008) reported that participants *did* show a SDS in a divided attention condition where they were required to rehearse an eight-digit number as they completed the experiment, but not in a full attention condition. Conley et al. (2013) found that a female target who accepted a casual sex offer was judged more negatively than a male target who accepted the same offer, yet female participants were harsher in their judgments, regardless of the target's gender. Rudman et al. (2013) found men endorsed a SDS by encouraging other men but discouraging women from having casual sex. Meanwhile, Papp et al. (2015) found a reverse SDS whereby male "sluts" were judged more harshly, as were slut-shamers when the "slut" was female as opposed to male. Thus, the SDS seems to have a hard time consistently supporting either the MCT or the FCT.

Cultural practices: female genital mutilation

Better evidence for the FCT comes perhaps from practices like female genital mutilation (FGM), which prevent women from enjoying sex and engaging in promiscuity. FGM is often carried out in countries with high indices of gender inequality (Khosla et al., 2017), but are also carried out by mothers, grandmothers, or midwives (Ashimi et al., 2015; Lightfoot-Klein, 1989). Meanwhile, evidence suggests men, particularly in younger generations, prefer uncut wives (Abdalla et al., 1979; Almroth et al., 2001; Herieka et al., 2003; Lightfoot-Klein, 1989; Shandall, 1967), and that men are more supportive of anti-FGM interventions and less likely to let their daughters undergo FGM compared to women (Mitike

& Deressa, 2009). Crucially, the one predictor consistently negatively related with a child undergoing FGM is the mother's education (Ashimi et al., 2015; Elduma, 2018; Nkwo & Onah, 2001; Satti et al., 2006) and, in some studies, wealth and socio-economic status (Elduma, 2018; Satti et al., 2006). If the MCT held, men should use their greater social and political power to retain these practices, particularly in their wives. Instead, evidence seems to suggest that providing women with greater education – a proxy for becoming less dependent on men – reduces the practice.

Socio-political practices: religion and politics

As some researchers have pointed out (e.g., Blake et al.,2018) the reality of female sexual suppression is far more complex than a sex war of which sex is the main culprit. Female sexuality suppression is, if anything, contingent on aspects of the ecology. Greater economic dependence of women on men results in greater moralisation of female promiscuity in *both* sexes (Price et al., 2014). Pathogen prevalence and environmental harshness relate to women's sexual restrictiveness and their subordination relative to men's status (Thornhill et al., 2009). Men are generally more supportive of veiling across cultures that have this practice, supporting the MCT, but support for veiling in both sexes increases as environments become harsher (Pazhoohi & Kingstone, 2020), suggesting women have some incentives to support veiling more under certain conditions, and the number of sons a woman has increases her support for veiling, presumably because practices that restrict female sexuality increase the paternal certainty of her sons and, by extension improves her own reproductive fitness (Blake et al., 2018). Experimentally manipulating the popularity of men led to them being less supportive of casual sex and of increasing the minimum wage and access to healthcare, whereas women were not affected by the manipulation (Luberti et al., 2022), providing support for the MCT via men wanting to preserve socio-economic inequality, but they had been made to feel unpopular. Overall both men and women seem to have motivations to restrict the sexuality of other women depending on the environments they are in. Efforts to better understand the suppression of female sexuality are thus better spent in understanding how ecological factors lead to both sexes engaging in or favouring greater suppression.

Conclusion

In this chapter I have explained the evolutionary and feminist accounts or approaches for the suppression of female sexuality, as well as two popular theories for studying the phenomenon: the MCT and the FCT. I provide a review of some of the literature supporting

one or the other and follow by explaining how more recent studies that focus on its contingency on ecological factors, rather than on a war of the sexes, are better suited to shed light on it. In the next chapters I integrate both to predict constructs that, while not tapping into suppression in its more aggressive forms, are still related to an overall concern of woman's promiscuity.

Chapter 2:

Does Evolutionary Theory or Feminist Theory Better Predict the Moralisation of Female Promiscuity?

Introduction

Throughout Chapter 1, I refrained from diving into how feminist accounts of female sexuality suppression are not antagonistic, but rather complementary to evolutionary theory. In this chapter I focus on how integrating both can provide useful insights, despite much research only looking at one or the other. Even if these accounts were antagonistic and completely different, research would still benefit form examining both at once, because then hypotheses and methodologies could be drawn and designed in such a way that results will support one or the other. Feminist theories, by failing to include evolutionary accounts in their designs, also fail to test if their theoretical framework really does a better job at predicting human psychology, and vice versa (e.g., test if sexism or mating strategies better predict endorsement of the Madonna-whore dichotomy), though evolutionary studies do seem better at either integrating approaches (Adair & Lozano, 2022) or comparing hypotheses derived from evolutionary theory to those derived using the standard social science model of which social constructionism is a part (e.g., Schmitt, 2015).

I first better describe social dominance and its role in group-based prejudice and oppression. Then I argue for an evolutionary adaptive origin of social dominance, followed by empirical evolutionary and social constructivism research examining sexuality, and how these findings inform hypotheses on the suppression of female sexuality. Finally, I provide an example of a study that integrates both to better understand sexual harassment.

Social Dominance and its Potentially Evolved Origins

Given group-based prejudice and oppression of subordinate groups is ubiquitous across organised societies, Pratto et al. (1994) postulate that societies minimize group conflict by "creating consensus on ideologies that promote the superiority of one group over others." These ideologies – hierarchy legitimising myths – legitimise discrimination and influence inequality in societies. The extent to which a person desires their ingroup to dominate other groups is known as social dominance orientation (SDO), with people higher in this construct favouring hierarchy-enhancing ideologies and policies. With regards to female sexuality, sexism is a hierarchy-legitimising myth that justifies women being subordinate to men.

Social dominance theory posits that, because women show a bias towards males with social and economic resources (Buss & Schmitt, 1993; Trivers, 1972), men will attempt to monopolise resources as a means to make themselves more appealing and make women more dependent upon them as a mate retention tactic (Sidanius et al, 2000). Intrasexual competition among males, thus, not only encourages men to dominate women politically and economically in order to control their sexual and reproductive behaviour, but also to form expropriative coalitions against other men (Sidanius et al, 1994). Thus, despite its popularity among feminist theorists, social dominance has some evolved origins.

What social dominance theorists do not seem to account for, is that, as explained in Chapter 1, while males' reproductive success is optimised by pursuing a short-term mating strategy with a large number of fertile females and a minimum resource investment in offspring, human males may still opt for long-term strategies where they invest large amounts of resources on a few offspring. Mate retention tactics, which social dominance theory argues is a reason men attempt to monopolise resources, are more relevant to LTM than they are to STM (i.e., a man pursuing STM is already investing most of his resources in search of new mating opportunities and likely is less concerned with keeping any particular mate compared to a man pursuing LTM). Evolutionary theory would argue that men who pursue long-term mating strategies benefit from social systems that impose gender hierarchies and traditional gender roles where women are expected to be "pure and faithful" and dependent on men. As Price et al. (2014) found, the greater female economic dependence on men, the more moralised sexual permissiveness in women is.

Mating Strategies, Social Dominance, and Sexuality

Theories concerned with group-based social hierarchies like social dominance theory suggest such hierarchies can be, and often are, structured to systemically favour or discriminate against groups based on characteristics such as ethnicity, religion, or sexuality (e.g., sex or sexual orientation). These social hierarchies are legitimised and justified through ideology embedded in social institutions, intergroup processes, and individual differences (Pratto et al., 2006). In the case of sex and sexuality, ideologies operating to justify hierarchical structures can be reflected through governmental regulations or policies (e.g., abortion regulation to control women's reproductive choices and thus keep them subordinate to men), preferential treatment of dominant group members (e.g., preference for male candidates for gender-integrated occupations), and individual prejudices or stigma towards

subordinate groups, particularly those members that challenge the status quo (e.g., sexually restricted women being considered worthy of protection while encouraging hostility towards unrestricted women), all in the benefit of the dominant group.

In line with social dominance theory, sex differences in prejudice towards gay men were mediated by SDO and sexism (itself mediated by SDO; MacInnis & Hodson, 2014), presumably because gay men represent a unique sub-group of men by being perceived as feminine or "woman-like." Men's beliefs that women are inferior hence translates to similar perceptions towards gay men. In line with mating strategies, mental associations between homosexuality and promiscuity interacted with short-term mating orientation to predict oppositions to same-sex marriage (Pinsof & Haselton, 2016). The greater one's association of homosexuality and promiscuity, the stronger the negative association between short-term mating orientation and opposition to same-sex marriage (i.e., the potential promiscuity of homosexuals is mainly a threat for those with little interest in short-term mating, resulting in these individuals opposing same-sex marriage). With regards to female sexuality and the suppression of women specifically, political differences in support of abortion policies were explained by conservative individuals being more likely to endorse sexism (a system-justification ideology that stems from SDO) and less likely to support abortion policies, with sexism mediating this effect (Prusaczyk & Hodson, 2018). From a sexual strategies perspective, individuals following a monogamous mating strategy are more likely to adopt socially conservative political ideologies because these support their reproductive interests (Tybur et al. 2015; Billingsley et al., 2018). Similarly, people higher on SDO justified violence against women through their endorsement of sexual double standards across both the U.S. and Pakistan, and intimate partner violence is a mate retention tactic (Shackelford et al., 2005)

By integrating these findings regarding social dominance and the hierarchy-legitimising myths that succeed it (e.g., sexism), and mating strategies, it is possible that perceptions of subordinate members that threaten the status quo (e.g., promiscuous others) will elicit attitudes and behaviours aimed at reducing the reproductive costs these others might incur, especially for individuals pursuing LTM. Social conservatism, in emphasising monogamy and long-term commitment, could be a potentially effective institution to keep such individuals regulated. To the extent that social conservatism is a means to suppress female sexuality suppression, then, we can expect other methods of suppression (e.g., religious institutions, moralisation and subsequent punishment) to be similarly related to both

mating strategies *and* group-based hierarchies. Group-based hierarchies are social systems that arose because they had some adaptive value. Evolutionary and feminist theories, thus, need not be antagonistic explanations in explaining the suppression of female sexuality.

An Example on Effectively Integrating Evolutionary and Feminist Theories: Two Motives Underlying Sexual Harassment

Diehl et al. (2012) designed an elegant study to test two theoretical accounts for why men sexually harass women. Evolutionary theory argues that sexual harassment can be understood as an unintended side-effect of men's evolved mating strategies (Studd & Gattiker, 1991). Because men benefit from pursuing as many mating opportunities as possible, the benefits of a woman potentially accepting an offer for casual sex is greater than the potential cost of rejection (e.g., a bruised ego). The social construction account proposes that sexual harassment disparages and discriminates against women and thus serves to maintain men's social and economic dominance (Samuels, 2004), likely being motivated through misogynist ideologies like hostile sexism. Integrating both approaches, they hypothesised that a short-term mating orientation would predict the unwanted sexual attention component of sexual harassment (i.e., unrequited behaviours potentially aiming for sexual exchange) but not the gender harassment component (i.e., insulting, hostile, and degrading gender-related behaviour. Hostile sexism on the other hand was hypothesised to predict both components. Through path analysis, they found support for both the evolutionary and social construction accounts, proposing both need to be taken into account for a complete explanation of sexual harassment and any interventions aimed at reducing it in the workplace. This study is a great example of the practical benefits of integrating what are often painted as competing theories.

Before Suppression Happens: Moralisation of Female Sexuality

Moralisation can be conceptualised as "the transformation of morally neutral activity into one with significant moral weight, by individuals or in society" (Rozin, 1997). Moralisation shapes social norms, and social norms influence behaviour (Cialdini et al., 1990). Through moralising, individuals can promote behaviours that serve their own personal interests (be these coalitional or reproductive). When more powerful people have an interest in discouraging a behaviour, their moral systems will likely condemn that behaviour. In the case of female sexuality, individuals pursuing long-term mating strategies, as well as individuals seeking to keep gender-hierarchies can benefit from moralising casual sex in

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women because this leads to social norms whereby women are expected to refrain from casual sexual behaviour lest they risk the consequences. As such, I decided to focus on moralisation of female sexuality as a precursor to actual suppression.

Study 1

Promiscuous women can be a potential threat, both towards one's reproductive fitness (e.g., due to increased paternal uncertainty for men and intrasexual competition for women) as well as to the gender social hierarchy because they challenge traditional gender norms. Because SDO helps men monopolise resources that can be used to either attract women or make women more dependent on them, and because SDO gives rise to gender hierarchy-legitimising myths (particularly hostile sexism) that enforce gender norms and sexually restricted individuals that pursue LTM may benefit from such hierarchies, SDO may be negatively related to permissive sexual strategies (i.e., sociosexuality). Research on who suppresses female sexuality yields mixed results, as this phenomenon is contingent on several aspects of the local mating ecology, but presumably, looking at who moralises female promiscuity would support either the MCT or the FCT (or suggest neither engages in more moralisation). Taking all this into account, this study makes the following predictions:

H1: There will be sex differences in the moralisation of female promiscuity (though no specific direction is hypothesised).

H2: Sociosexuality and SDO will be negatively related.

H2.1: Sociosexual attitudes will be negatively related to SDO because an ideology or system that forces women to be restrictive in their sexual behaviour is antagonistic to those who believe sex without love is ok and enjoy sex with casual partners.

H2.2: Sociosexual desires will be negatively related in women because if a woman often experiences sexual arousal towards men she is not in a committed relationship with or has just met, a social system that enforces gender hierarchies and roles would not allow her to act on those desires without repercussions. Conversely, a woman with low SOI desire herself could be threatened by sexually permissive women, especially if there is no gender hierarchy that punished such women. For men, the sociosexual desire and SDO relationship is more challenging. Unrestricted men should want women to be able to act on their sexual desires and give sex easily. A system that places gender roles where women are supposed to be sexually restricted would complicate this. On the other hand, certain hierarchy-legitimising

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myths like the Madonna-whore dichotomy excuse men from being unrestricted in their desires while emphasising sexually restricted women are pure and worthy of respect while unrestricted women are worthy of hostility. In this case, SOI-R desire would be unrelated to SDO because the gender hierarchy caters to both sexually unrestricted and restricted men.

H3: Both mating strategies (as measured by sociosexuality) and support for gender hierarchies (as measured by SDO) will uniquely predict the moralisation of female promiscuity and mediate sex differences in moralisation.

Methods

Participants and procedures

I recruited 311 participants via Prolific Academic. Participants received an invitation to the survey if they were between the ages of 18 to 40; currently lived in the United Kingdom, identified as heterosexual and cisgender; and had no biological or adopted children (to prevent effects like those of Blake et al., 2018 where a woman's number of sons increased her support for practices aimed at suppressing women). Seven participants reported having children in the survey despite their Prolific Academic profile information, and 9 participants no longer identified as heterosexual. After removing these participants and any non-completed responses, the final sample constituted of 291 participants (N_{men} = 148; M_{age} = 25.44, SD_{age} = 5.55), of which 82.1% were British or from another White background, 11% identified as Asian or Asian British, 3.4% were Black or Black British, and the remaining 3.4% identified as other ethnic minorities (i.e., Hispanic or Latino, mixed ethnicity, Arab, and other, in order of greater frequency).

After reading the Participant Information Sheet and giving their informed consent, participants completed a first set of demographics pertaining my inclusion criteria and then completed scales measuring their sociosexuality and their social dominance orientation. Next, they completed 6 items measuring their moralisation of women's promiscuity and the same 6 items worded as moralising men's promiscuity. The order of the moralising scales was evenly counterbalanced such that half the sample saw the male items first, and the other half saw the female items first. Finally, they completed a second set of demographics pertaining their ethnicity, and religious and political affiliation.

Measures

Sociosexuality. The revised Sociosexual Orientation Inventory (SOI-R; Penke & Asendorpf, 2008) is a 9-item, 9-point, self-report Likert scale that assesses three dimensions of sociosexuality: behaviour (e.g., "With how many different partners have you had sexual intercourse on one and only one occasion?"), attitudes (e.g., "I can imagine myself being comfortable and enjoying 'casual' sex with different partners."), and desires (e.g., "How often do you experience sexual arousal when you are in contact with someone you are not in a committed romantic relationship with?"). The third item for attitudes is reverse-coded and mean scores can be obtained for each of the three dimensions, as well as for total sociosexual orientation, with greater scores corresponding to a more unrestricted sociosexuality. The SOI-R has become an important instrument, with 1100 citations in Google scholar as of May 2022, and its three-factor structure and sex differences replicating across cultures (Barrada et al., 2018; Nakamine & Komura, 2016; Nascimento et al., 2018; Meskó et al., 2014; Neto, 2016). Cronbach's alpha for all three dimensions in this study ranged from .74 to .89, and .83 for overall sociosexuality.

Social dominance orientation. Pratto et al. (1994) developed a 14-item and a 16-item, 7-point scale that consists of one single dimension for social dominance orientation and asks participants to rate the degree of positive or negative feelings toward each of the items. In the 14-item version that was used for this study, items are balanced such that half indicate approval of inequality (e.g., "Some people are just more worthy than others.") and half indicate approval of equality (" If people were treated more equally, we would have fewer problems in this country."). Reverse-coding the equality items and computing means gives an overall score for social dominance orientation, where higher scores correspond to greater support for group inequality (Cronbach's α = .92).

While the initial validation of the 14-item scale was done only with US college-student samples (Pratto et al., 1994), cross-cultural examinations of it and the similar 16-item version have found good reliability for translated versions in Canada, China, Israel, the Palestinian West bank and Gaza Strip, Taiwan, former Soviet Russia, and New Zealand (Pratto et al., 2000; Sidanius et al., 2000). Lee et al. (2011) conducted a meta-analyses spanning 3 decades and 206 samples across 22 countries and found that a quarter of the studies used the 14-item scale, with its mean Cronbach's α = .84 and mean effect size for sex difference of d_+ = .43. Additionally, regardless of whether the scale used was the 14-item, 16-item, shortened 4-item version (SSDO; Pratto et al., 2013), or other versions (e.g., Ho et al.,

2012; Kteily et al., 2011; Kteily et al., 2012), SDO was consistently positively related to nationalism, racism, heterosexism, sexism, and other types of culture-specific hierarchy-enhancing ideologies, and negatively related to support for progressive social policies. Given group-based hierarchy is ubiquitous, SDO has strong construct validity and is a good omnibus indicator and antecedent (Kteily et al. 2011) of a variety of culture-specific attitudes and behaviour promoting group hegemony.

Moralisation of promiscuity. For the moralisation of promiscuity, I used the 12 items from Price et al. (2014). These are on a 7-point Likert scale, with half of the statements referring to male promiscuity and the other half to female promiscuity (E.g., "Promiscuous (men/women) are not worthy of much respect."). For each sex, two items need to be reverse-coded, and then scores can be averaged, with higher scores indicating greater moralisation or wrongness of promiscuity. Price et al. (2014) had a Cronbach's $\alpha = .96$, whereas my dataset had Cronbach's $\alpha = .95$.

Results

MCT vs FCT: who moralises female promiscuity?

Screening the data prior to analysing group differences in the moralisation of female promiscuity revealed one participant had a z-score larger than ± 3.29, and thus extreme ($p < .001$, Tabachnick & Fidell, 2007) for the outcome variable. This participant was removed, resulting in a final sample of n = 290. Further GLM diagnostics showed that the assumption of normality of residuals was not met. While ANOVA is robust against such violations, I decided to instead conduct a moderated regression with the categorical predictors (i.e., sex and counterbalancing order) and bootstrap 95% confidence intervals for all estimates. The model was significant, $F(3, 286) = 4.37$, $p = .005$, $R^2 = .04$; however, the interaction between sex and counterbalancing order was not, $F(1, 286) = .11$, $p = .74$. The main effects for sex and counterbalancing order were both significant, $b = -.44$, $\beta = -.18$, $F(1, 286) = 4.75$, $p = .03$, $R^2 = .02$ and $b = -.41$, $\beta = -.17$, $F(1, 286) = 4.28$, $p = .04$, $R^2 = .01$, respectively.

Given the lack of a significant interaction, I ran a simpler linear model in the interest of parsimony. This reduced model with sex and counterbalancing order as predictors of the moralisation of female promiscuity was significant, $F(2, 287) = 6.52$, $p = .002$, $R^2 = .04$. Men's moralisation of female promiscuity ($M = 2.41$, $SD = 1.28$) was significantly greater than was that of women's ($M = 2.05$, $SD = 1.15$), $b = -.39$, $95\% BootCI[-.66, -.11]$, $\beta = -.16$, $F(1, 287) = 7.49$, $p = .007$, $R^2 = .02$, . With the interaction removed, the effect of

counterbalancing order was also significant, $F(1, 287) = 6.63$, $p = .01$, $R^2 = .02$, such that presenting questions on the moralisation of male promiscuity first ($M = 2.40$, $SD = 1.18$) resulted in greater moralisation of female promiscuity than presenting questions on female promiscuity first did ($M = 2.06$, $SD = 1.25$), $b = -.37$, $95\%BootCI[-.64, -.08]$, $\beta = -.15$.

An ANOVA test comparing the full and reduced models showed no significant difference, $F(1, 286) = .11$, $p = .74$. Thus, the reduced model explains group differences in the moralisation of female promiscuity well, and has the added benefit of providing greater parsimony and bootstrapped confidence intervals for the estimates.

Is there a relationships between mating strategy and SDO?

Pre-examining the data. Before seeking to build a mediating model to assess the role of sociosexuality and social dominance orientation on sex differences in the moralisation of female promiscuity, I screened the original $n = 291$ data for univariate and multivariate outliers for the variables sex; sociosexual behaviour, attitude and desire; social dominance orientation; and moralisation of female promiscuity. Three participants were dropped as univariate outliers based on standardised z-scores larger than ±3.29 ($p < .001$, Tabachnick & Fidell, 2007); two for social dominance orientation, one for moralisation of female promiscuity. No multivariate outliers were identified, resulting in a sample of $n = 288$ for the following analyses.

Item 1 of the SOI-R behaviour dimension. Data for this study were collected on August 31th and September 1st, 2020. While this time period corresponds with indoor venues being reopened as the first wave of the COVID-19 pandemic ended, the UK had still been in a national lockdown since the end of March, with contact outside one's own social bubble being highly discouraged (see Institute for Government, 2022 for a timeline of UK restrictions). Because item 1 of the SOI-R (i.e., "With how many different partners have you had sex within the last 12 months?") is contingent on a specific time period, I was concerned that these restrictions would impact analyses. For example, perhaps restricted individuals would be more likely to follow restrictions and have very low SOI-R behaviour scores, while unrestricted individuals would continue to seek casual sexual encounters due to sociosexuality being correlated to low pathogen disgust sensitivity (Hlay et al., 2022) and high risk-taking behaviour (Cross, 2010; Seal & Agostinelli, 1994), thus widening typical gaps between restricted and unrestricted individuals. Alternatively, perhaps even unrestricted individuals would have their mating opportunities negatively affected, resulting in floor effects for item 1 across the whole sample.

To test whether I should keep this item, I took an initial look at correlations among all three behavioural items. Item 1 correlated weakly with the other two (.25 and .31, respectively), while items 2 and 3 had a correlation of .80. Further running a confirmatory factor analysis fitting my data to the original Penke and Asendorpf (2008) factor structure revealed a decent model fit, $\chi^2(24, N = 285) = 41.28, p = .02$ (comparative fit index [CFI] = .99, Tucker-Lewis index [TLI] = .98, root mean square approximation [RMSEA] = .05, standardised root-mean-square residual [SRMR] = .04); however, item 1 had a weak standardised factor loading of $\lambda = .33$ and $R^2 = .10$. Removing this item resulted in an improved fit of $\chi^2(17, N = 286) = 18.09, p = .38$ (CFI = 1.00, TLI = 1.00, RMSEA = .02, SRMR = .03). Beyond the COVID-19 pandemic, Barrada et al. (2018) have shown that item 1 does not load onto the behavioural dimension of the SOI-R as strongly as rewording it for a homogenous time frame does – their factor loading for item 1 using a 12-month reference was .65 compared to .90 when using a lifetime reference. All in all, I ultimately decided to remove item 1 from the SOI-R behaviour dimension. Correlations for sex (0 = female), the SOI-R factors and the overall construct, and SDO are found in Table 1.

Table 1. Correlations for sex, sociosexuality, and social dominance orientation with corresponding 95% confidence intervals

Variable	1	2	3	4	5
1. Sex (0 = female)					
2. SOI-R behaviour	.06 [-.05, .18]				
3. SOI-R attitude	.20*** [.09, .31]	.49*** [.40, .57]			
4. SOI-R desire	.45*** [.35, .54]	.18** [.07, .29]	.43*** [.33, .52]		
5. Overall SOI-R	.32*** [.21, .42]	.73*** [.67, .78]	.84*** [.81, .87]	.71*** [.64, .76]	

| 6. SDO | .22*** | .05 | -.03 | .13* | .07 |
| | [.11, .33] | [-.06, .17] | [-.14, .09] | [.01, .24] | [-.05, .18] |

*p < .05, **p < .01, ***p < .001

Sex differences. Research consistently shows men to have a stronger preference for short-term mating compared to women (see Chapter 1). Because sociosexuality is often used as a proxy to measure mating strategies, it should be no surprise that men typically have higher SOI-R scores in attitudes and desires across cultures (e.g., Lippa, 2009, Schmitt, 2005), though not always in behaviour (Barrada et al., 2018; Meskó et al., 2014, Penke & Asendorpf, 2008). Social dominance similarly shows frequent sex differences where men score higher (Lee et al., 2011; Pratto et al., 1994; Sidanius et al., 2000). Thus, I decided to test whether my data replicated these sex differences. Table 2. shows descriptive and inferential statistics for these comparisons. Consistent with past research, males scored significantly higher on social dominance ($d = .46$), sociosexual attitudes ($d = .42$) and desires ($d = 1.01$), and on overall sociosexuality ($d = .66$), but no sex difference was observed for sociosexual behaviour ($d = .13$).

Table 2. Means, standard deviations, and comparisons between male and female participants. Bonferroni corrections were applied for SOI (C = 4). Bootstrapped confidence intervals for group differences were computed for greater accuracy.

	Males	Females						
	M (SD)	M (SD)	t	df	p_{adj}	95%BootCI	d	1 - β
SOI-R	4.46 (1.61)	3.48 (1.35)	5.60	277.33	< .001	[.64, 1.32]	.66	.99
Behaviour	2.70 (2.14)	2.44 (1.89)	1.07	283	.99	[-.21, .71]	.13	.19
Attitude	6.23 (2.08)	5.37 (2.02)	3.52	283	.002	[.38, 1.32]	.42	.94
Desire	4.46 (2.05)	2.63 (1.57)	8.51	268.86	<.001	[1.41, 2.26]	1.01	.99
SDO	2.54 (1.09)	2.08 (.92)	3.88	278.09	< .001	[.22, .70]	.46	.97

Cohen's d guidelines: $d \leq .20$ (small), $d \leq .50$ (medium), $d \leq .80$ (large)

Effects of sociosexuality on social dominance. Correlations showed a weak positive relationship between SDO and overall SOI-R ($r = .13$, $p = .03$). To further examine the relationship between the SOI-R facets, sex, and SDO, I ran 3 multiple regressions. Each regression had SDO as the outcome, and the interaction of an SOI-R facet and sex as the predictor, with females as the reference category (or female = 0; note that the lm package in

R includes the test for main effects by default when given an interaction term). For the SOI-R behaviour * sex regression, only sex was a marginal predictor of SDO, indicating that, controlling for SOI-R behaviour, men scored marginally higher on SDO than women did, $b = .33$, 95%$BootCI$[-.04, .71], $SE = .19$, $p = .09$. When looking at the SOI-R attitude * sex interaction, there was a main effect for SOI-R attitude, $b = -.09$, 95%$BootCI$[-.16, -.01], $SE = .04$, $p = .04$, such that when sex was 0 (i.e., when looking at female participants) SOI-R attitude negatively predicted SDO, but the main effect for sex and the interaction term were non-significant. Finally, for the SOI-R desire * sex interaction, neither of the main effects were significant, but the interaction term was, $b = .14$, 95%$BootCI$[.02, .26], $SE = .07$, $p = .04$. Further probing the conditional effects of SOI-R desire on SDO for each sex revealed no relationship between SOI-R desire and SDO among females ($effect = -.07$, $SE = .05$, $p = .22$), and a marginal positive effect for males ($effect = .07$, $SE = .04$, $p = .07$). Given the interaction term was significant but the conditional effects of SOI-R desire on SDO were not, I instead looked at the conditional effects of sex on SDO at different levels of SOI-R. The John-Neyman technique revealed that sex differences in SDO were only significant when SOI-R desire scores were 2.38 (-.57 SD) or above, and increased as SOI-R increased (see Figure 1).

Figure 1: Interaction between SOI-R desire and sex in SDO. Horizontal dotted line represents the value at which sex differences in SDO become significant
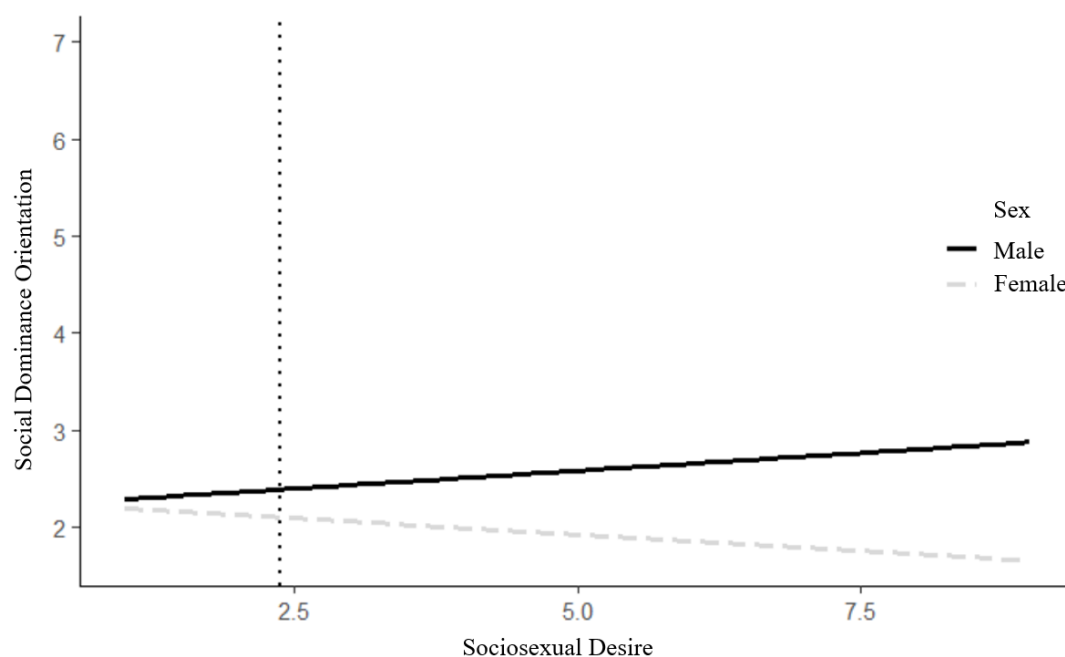
***Sociosexuality and social dominance as mediators of sex differences in the moralisation of
female promiscuity***

I ran a mediation model with 5,000 bootstrap resamples to see if the SOI-R factors
and SDO would explain sex differences in the moralisation of female promiscuity, and
whether any single construct would have a greater role. Beyond the chi-square statistic, $\chi^2(4)$
= 14.89, p = .005, half of the fit indices were within excellent parameters (CFI = .97, SRMR
= .03), while the other half were not great (TLI = .89, RMSEA = .10). Theoretically, the most
logical modification would be adding a direct effect from sex to moralisation, and a look at fit
indices modification did show adding this path would lead to the greatest improvement. This
new model had good fit across all indices, $\chi^2(3)$ = 5.35, p = .15, CFI = .99, TLI = .97,
RMSEA = .05, SRMR = .02, and was a significant improvement on the previous model,
$\Delta\chi^2(1)$ = 9.54, p = .002, ΔR^2 = .02, explaining 43% of the variability in the moralisation of
female promiscuity. The direct effect being significant after accounting for the mediating
roles of sociosexuality and social dominance suggests partial mediation. Looking at
constructs individually, only the indirect effects of SOI-R attitude (a_2b_2 = -.31, *95%BootCI*[-
.48, -.13]) and SDO (a_4b_4 = .18, *95%BootCI*[.08, .30]) were significant. For every one-unit
increase in sex, there is a -.31 decrease and a .18 unit increase on moralisation of female
sexuality passing through SOI-R attitude and SDO, respectively. Comparing both effects
using the absolute difference (Coutts & Hayes, 2022) revealed the magnitude of the indirect
effects were not significantly different (*estimate = .12, se = .11, 95%BootCI*[-.10, .33],
indicating both SOI-R attitude and SDO had similar mediating effects, albeit in opposing
directions. The path model can be seen in Figure 2, and the indirect effects for all constructs
are detailed on Table 3.

Figure 2. Partial mediation of SOI-R factors and SDO on sex differences in the moralisation of female promiscuity
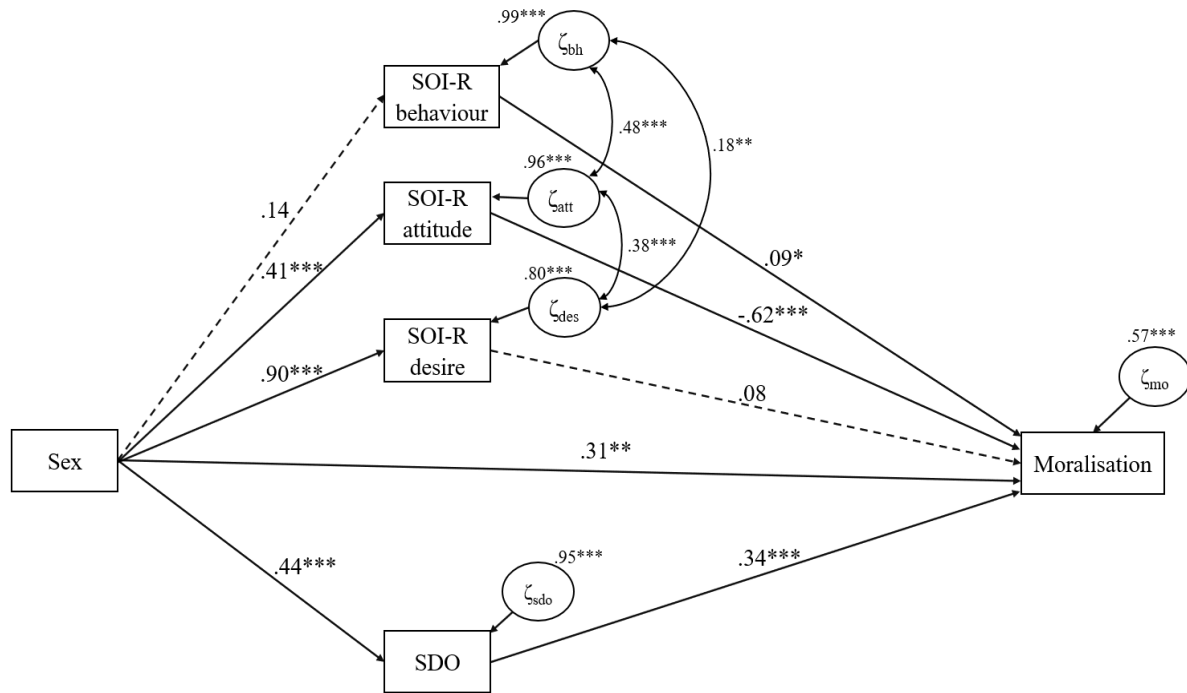
*Note. Estimates for variables regressed on sex (0 = female, 1 = male) are partially standardised estimates for ease of interpretation. E.g., the expected change in SOI-R attitude is .41 SDs for a regular unit-change in sex (i.e., for going from female participants to male participants). All other estimates are fully standardised estimates. For covariance parameters, the presented fully standardized estimates can be interpreted as correlations.

Table 3. Bootstrapped indirect effects for every SOI-R factor on its own and SDO, for all SOI-R factors, and for all constructs (i.e., SOI-R and SDO together), as well as direct and total effect. Significant effects have their 95%Boot CIs in bold.

	Unstandardised	Standardised	95%BootCI
Mediator			
SOI-R behaviour	.01	.01	[-.01, .05]
SOI-R attitude	-.31	-.13	**[-.48, -.13]**
SOI-R desire	.09	.04	[-.03, .23]
SDO	.18	.08	**[.08, .30]**
Total indirect effect SOI-R	-.20	-.08	**[-.39, -.01]**
Total indirect effect	-.02	-.01	[-.24, .22]
Direct effect	.39	.16	**[.15, .62]**
Total effect	.37	.15	**[.08, .65]**

Exploratory analyses: what about male promiscuity?

Because the survey obtained opinions on the moralisation of both promiscuous men and women, to the degree that moralisation of these two is considered a similar construct, the sex being moralised can be considered a within-groups variable. Thus, to explore if any sex holds a double standard whereby women's sexuality is moralised more than men's is, I ran a 2(participant sex) x 2(moralisation order) x 2(moralised sex) mixed measures ANOVA with Type III sums of squares.

The three-way interaction was not significant, $F(1, 284) = 1.20$, $p = .27$, nor were the two-way interactions between moralised sex and counterbalancing order , $F(1, 284) = 2.40$, $p = .12$, or between participant sex and counterbalancing order, $F(1, 284) = .001$, $p = .97$. However, the two-way interaction between participant sex and moralised sex was significant, $F(1, 284) = 24.05$, $p < .001$, $\eta_p^2 = .08$. Pairwise comparisons with Bonferroni corrections revealed that, among male participants, there was no difference in the moralisation of male promiscuity ($M = 2.38$, $SD = 1.26$) and female promiscuity ($M = 2.39$, $SD = 1.26$), *diff* $= .01$, $p = .79$, $d = .01$. Among female participants, however, the moralisation of male promiscuity ($M = 2.33$, $SD = 1.26$) was *greater* than was the moralisation of female promiscuity ($M = 2.05$, $SD = 1.15$), *diff* $= .28$, $p < .001$, $d = .22$. The main effect for moralised sex was significant, $F(1, 284) = 20.65$, $p < .001$, $\eta_p^2 = .07$, such that promiscuity among men ($M = 2.35$, $SD = 1.26$) was moralised more than was promiscuity among women ($M = 2.22$, $SD = 1.22$). Finally, the main effect for counterbalancing order was also significant, $F(1, 284) = 7.84$, $p = .005$, $\eta_p^2 = .03$. Moralisation was greater when questions on the promiscuity of men were asked first ($M = 2.48$, $SD = 1.17$), as opposed to having questions on the promiscuity of women first ($M = 2.10$, $SD = 1.27$). The main effect for participant sex was not significant $F(1, 284) = 2.58$, $p = .11$.

Discussion

This study sought to do three things: 1) to further test the MCT and FCT by looking at whether one sex moralises female promiscuity more, 2) to test if social dominance orientation and sociosexuality were related, and 3) to evaluate if either mating strategies, as measured by sociosexuality, or system justification ideology, as measured by social dominance orientation, better explained sex differences in the moralisation of female promiscuity. Results supported the MCT in that male participants were more moralising of promiscuous women than female participants were. However, in terms of a SDS, exploratory analyses showed moralisation of

promiscuity in men to be higher overall. Male participants moralised promiscuity in men and women equally, whereas female participants judged female promiscuity as *less* morally wrong than they did male promiscuity. Women evaluating men's promiscuity more harshly than they do that of other women is consistent with Milhausen & Herold (2001), although in their study both sexes endorsed double standards in their favour. One possible explanation for women's reverse SDS in my sample is that women may perceive promiscuous men as a threat to women and hence moralise male promiscuity. In Milhausen & Herold (2001) open-ended questions revealed that women often described men with several sexual partners as potential sexual predators.

While not hypothesised, I found some evidence of order effects, where having questions on moralisation of male promiscuity first resulted in greater moralisation as a whole, compared to presenting questions regarding female promiscuity first. As Marks & Fraley (2005) suggest, asking participants to rate the appropriateness of certain sexual behaviours for men, immediately followed by the same questions regarding women, can result in demand characteristics where participants may either try to answer in an egalitarian manner, or in a manner that is consistent with what they believe to be the norm. This might help explain the main effect of order in my sample, although the lack of an order*target sex interaction is intriguing.

There was weak evidence that sociosexuality predicts SDO. Among women, greater sociosexual attitudes (i.e., greater belief that sex without love is ok and of seeing oneself enjoying casual sex with multiple partners) negatively predicted social dominance. There was an interaction between sociosexual desire (i.e., often fantasising about sex with people one does not know well) and sex, but probing the interaction revealed sex differences in SDO were conditional on sociosexual desire, rather than the relationship between desire and SDO being conditional on sex. In other words, the relationship between SDO and SOI-R desire was not significant in either sex, but the sex difference in SDO disappeared at low levels of SOI-R desire.

Finally, mediation analyses revealed that both sociosexual attitudes and social dominance orientation partially mediated sex differences in moralisation of female promiscuity, the former in a negative direction and the latter in a positive one, but both of equal magnitude, suggesting both evolutionary and social construction theories contribute to predicting moral judgments on promiscuity in women similarly well. While adding a direct

effect of sex on moralisation improved model fit, R^2 only increased by 2%, suggesting a small effect of sex after accounting for sociosexuality and social dominance orientation.

The complex relationship between mating strategies and generalised prejudice

There are two possible explanations for why there was no relationship between a more restricted sociosexuality and greater SDO. At the time this study was designed, research on the potential evolutionary adaptiveness of social dominance and its relationship to mating strategies was scarce, if not non-existent. However, more recently Petersen (2018) proposed that, because historically and culturally, kin, elders, and other authorities have been observed to exercise some control over people's mating decisions and prefer their children find mates high in parental investment and ingroup cooperation, traditional hierarchies where individuals must conform to authorities' decisions regarding mates, rather than exercise their free choice, present a problem to those pursuing STM. Dominance hierarchies would serve these individuals' reproductive fitness more effectively because they allow for the accumulation of power, which can subsequently shape the number of available mates. Thus, from a mating strategic perspective, individuals pursuing an unrestricted, short-term mating strategy should support moral regimes that justify power inequalities (i.e., SDO), whereas inequality poses a problem for individuals pursuing long-term committed strategies in that it makes them vulnerable to mate poaching from dominant others. Instead, committed individuals would benefit from traditional regimes. This line of reasoning implies that an unrestricted sociosexuality will be associated with *higher* SDO (contrary to my hypothesis) but *lower* right-wing authoritarianism because the former reflects support for anti-egalitarianism and a desire to accumulate power, whereas the latter reflects respect for existing authorities and traditionalism. Across two large cross-cultural datasets, Petersen (2018) found RWA and sociosexuality to be negatively related, while SDO and sociosexuality were positively related. It is important to note that the author states these associations should be considered small, meaning they would be harder to find in smaller sizes, which mine certainly was.

Another potential alternative for the lack of a relationship between SDO and SOI-R, at least among men, is that SDO does not serve short-term mating oriented men more than it does long-term oriented men because many gender hierarchies support a Madonna-whore dichotomy, where women who conform to traditional gender roles such as chastity are Madonnas suitable for long-term relationships while those with more permissive sexualities are cast as "whores" unsuitable for marriage (Tanzer, 1985). Coupled with historical beliefs such as those in early England where sexual relationships before or outside marriage were

seen as a mild yet pardonable offense for men (e.g., "a reformed rake makes the best husband"; Thomas, 1959) but a matter of utmost gravity for women, and social dominance and the gender-specific system justification, and the MWD accomplishes the ultimate male reproductive strategy: allowing for both a long-term partnership with a woman who is unlikely to cuckold her husband, while pardoning any extra-marital affairs he might pursue with other women. Women, on the other hand, regardless of their status in the social hierarchy, are still subordinate to men (at least those of equal status) and have greater pressure to restrict themselves sexually, thus explaining the negative relationship observed between SOI-attitudes and SDO; the more unrestricted attitudes a woman has, the less she would favour a system that leads to gender-legitimising myths like the MWD.

Limitations and future research

There are several limitations and areas for improvement in this study. Firstly, while sociosexuality is often used as a proxy to measure mating strategies, SOI-R is more tailored to preferences for short-term mating, which does not necessarily mean complete disregard for long-term mating. However, sexuality is not that simple, and people can, and often do, pursue both strategies simultaneously (Mogliski et al., 2017; Valentova et al., 2020). Measuring the multidimensionality of mating strategies (e.g., Jackson & Kirckpatrick, 2007) could better inform future research on how different strategies influence the restriction of female sexuality. Interestingly, while the Petersen (2018) used the overall SOI construct, using the SOI-R in my sample and looking at each factor differentially showed a negative association between SOI-R attitude and SDO in women. Aside from using more multidimensional measures of mating strategies, examining the relationship of specific factors in measures such as the SOI-R to RWA and SDO might be of interest.

Similarly, I focused on social dominance orientation because studies seem to support it as a precursor to gender-specific system justification such as sexism or the MWD, or to policies that seek to disempower women more than other system-legitimising constructs like right-wing authoritarianism, either theoretically or through their application in their methodologies (e.g., Bareket et al., 2018; Kahalon et al., 2019; McInnis & Hodson, 2015; Prusaczyk & Hodson, 2018). However, as Petersen (2018) shows, SDO is related to greater sociosexuality because it is a dominance hierarchy while RWA is related to lower sociosexuality because it is a traditionalism and conformity with authority hierarchy. Future

studies looking at how mating strategies and generalised prejudice explain the suppression of female sexuality would thus do well to measure both.

The dependent variable – moralisation of female promiscuity – was based on a scale used by Price et al. (2014) made of self-generated items. While these had good reliability as measured by Cronbach's alpha in both their study and mine, they are far from comprising a psychometrically validated scale. Recently Asao and Buss (2022) published the Sexual Morality Inventory and found women consistently expressed more moral condemnation of short-term sex and sexual infidelity. The use of these two subscales could be useful in future research on the suppression of female sexuality. Additionally, while attitudes can be precursors to behaviour, these do not always go hand in hand. Muggleton et al. (2019), for example, showed both men and women were prejudiced against sexually-accessible women, but only women inflicted costly punishment. Thus, to examine actual suppression of female sexuality, behavioural outcomes should also be taken into account. Finally, it is important to mention the model were fit to one single set of data and thus runs the risk of being overfitted. Future studies should aim to replicate this model with other samples.

Conclusion

Evolutionary theory posits that the suppression of female sexuality is contingent on several ecological factors, but can ultimately be explained and predicted by an individual's reproductive goals. Feminist theory argues the suppression of female sexuality stems from a desire to reinforce patriarchy and keep women subordinate to men. While often in conflict, both have predictive power and are potentially more closely associated than the evolutionary vs feminist theory rivalry would have predicted. More recent studies have begun focusing on how system justification beliefs inform mating strategies, thus applying an evolutionary lens to feminist theory. More studies could benefit from testing both evolutionary and feminist predictors within the same study as opposed to only testing one or the other.

Chapter 3:

Disgust as the Ultimate Predictor? The Mediating Effects of Sociosexuality and Social Dominance Orientation on the Avoidance and Punishment of Promiscuous Women

Introduction

Sexual selection is a key component of evolutionary psychology and the hypotheses derived from it; however, in order to reproduce, an organism must first make it to reproductive age. This would have been no simple task for the ancestral human, considering infectious diseases have posed a threat for as long as history has been recorded, with many of the major human infectious diseases today following the rise of agriculture and the establishment of large, dense human populations (Wolfe, Dunavan, & Diamond, 2007). The evolution of physiological mechanisms like the immune system would have only solved part of the threat diseases posed. After all, while the benefits of the immune system are plain; it detects and attacks disease-causing agents within the body, mounting an immune response to an infection is still costly and spends nutrients that need to be replaced (Humphrey & Skoyles, 2012), leaving the body weaker and more vulnerable to other threats, assuming, that is, that the individual manages to survive the infection. As a result, natural selection would have favoured psychological and behavioural mechanisms that prevented infection in the first place. These mechanisms are known as the behavioural immune system (BIS; Schaller, 2006) and include emotions (e.g., disgust), cognitions (e.g., inferences about disease-connoting traits), and behaviours (e.g., avoidance of potentially infected others).

While early theories on the function of disgust have focused on the ingestion of harmful substances (e.g., Darwin, 1872/1965), disgust reactions can apply to objects and acts beyond (e.g., incest and moral transgressions), leading contemporary theories to argue that the function of disgust is domain-specific. One such theory is the Rozin, Haidt, McCauley model or RHM (Haidt et al.,1994, Rozin et al., 2008), which has been the gold standard for much of the initial research on the evolutionary psychology of disgust (Olatunji & Sawchuk, 2005) and posits disgust is conformed of four domains: core disgust, animal-nature disgust, interpersonal disgust, and moral disgust. Drawing from cultural evolution, the RHM model posits disgust during our earlier evolutionary history was mainly food-related, but expanded to include the other domains as civilizations grew (Rozin & Haidt, 2013). Core disgust protects the body from disease and infection and motivates pathogen avoidance. Animal-

nature disgust protects humans from recognising their animal nature and thus their mortality, and is elicited by sex, death, bad hygiene, and body envelope violations. Interpersonal disgust protects the body, soul, and social order, and is elicited by contact with strangers or undesirables. Moral disgust functions to protect social order and is elicited by norm violations.

Despite its popularity, the RHM model and its respective scale, the Disgust Scale (Haidt et al., 1994), are not without conceptual and psychometric issues (Olatunji et al., 2007), as all individual domains seem to possess low internal reliability (Haidt et al., 1994; Schienle et al., 2003). Despite Haidt et al. (1994) concluding the scale is best conceptualised as a measure of general disgust sensitivity rather than a robust multidimensional measure, several studies have often treated the domains as empirically valid and theoretically distinct (Olatunji & Sawchuk, 2005). Conceptually, Tybur et al., (2009, 2013) have also heavily criticised the RHM model. Firstly, they argue the animal-nature domain lacks empirical support and is unclear about how disgust responses would ease fear of animal reminders or what evolutionary adaptive value this domain possesses. Secondly, although core disgust is suggested as a mechanism to protect against disease, some disgust responses towards disease risks are categorised into other domains (e.g., disgust towards flesh wounds is considered part of the animal-nature domain). Finally, while the RHM model argues for four domains, the development of the Disgust Scale (Haidt et al., 1994) qualitatively categorised disgust elicitors into eight different categories.

In light of their criticisms, Tybur et al. (2009, 2013) proposed a three-factor biological approach known as the Tybur-Lieberman-Kurzban-DeScioli or TLKD model. Pathogen disgust prevents potentially costly infections and is elicited by objects likely to contain infectious agents or to emit similar cues. Sexual disgust motivates the avoidance of sexual behaviours with partners that may impose potentially high fitness costs, and is expected to covary with pathogen disgust because other individuals and their bodily fluids carry potentially infectious microorganisms. The important distinction between the two domains is that, while an individual displaying cues of infection should motivate general avoidance, an individual deemed unsuitable as a mate should motivate avoidance only within the context of mating, but not within other social interactions such as friendships. Finally, moral disgust prevents interactions with social norm-violating individuals. Tybur et al. (2009) validated the Three Domain Disgust Scale (TDDS) across a series of four studies, better capturing the heterogeneity of disgust than the RHM model. Given the stricter validation of the TLKD model, as well as the fact that its domains, unlike those of the RHM model, allow for separate

evaluations of the relationship of each domain to other constructs, I later measure disgust using the TDDS; however, this does not mean an evaluation of the literature with other scales does not have merit in informing hypotheses (e.g., the Disgust Scale still gauges general pathogen avoidance and can be informative provided it is not treated as multidimensional). As such, the next sections focus on summarising the literature on the relationship between disgust, and mating strategies and social dominance.

Disgust and Mating Strategies

Research not based on the TKLD model already shows women exhibit greater pathogen sensitivity than men (e.g., Curtis et al., 2004; Haidt et al., 1994). Tybur et al. (2009) further hypothesised that women would also score higher on sexual disgust sensitivity because of their costs of reproduction being greater than those for men, leading women to be more restrictive and choosy in their partners, particularly for short-term mating (Trivers, 1972). Women also show an increased risk of contracting sexually infectious diseases or of experiencing severe consequences from them if left untreated (Centers for Disease Control and Prevention, 2008; Varghese et al., 2001). They potentially also incur greater reputational damage from engaging in casual sexual behaviour to the extent sexual double standards exist. Even if there is no SDS, perceptions of one existing and fear of incurring costs such as social exclusion may also explain greater sexual disgust in women, especially since the costs of social exclusion are greater for them than they are for men, and women are more sensitive to cues of its occurrence (Benenson et al., 2013). Several studies using the TDDS have now found consistent support for greater sex differences in sexual disgust, followed by differences in pathogen disgust, and inconclusive findings on sex differences in moral disgust (Al-Shawaf et al., 2015, 2019; Hlay et al., 2022; Tybur et al., 2009, 2011).

Another common hypothesis that has received good empirical support is that mating strategies and disgust sensitivity are associated. In environments of high pathogen prevalence, the costs of pursuing an unrestricted sexual strategy may be greater than the benefits, leading to relatively monogamous mating systems. Research using measures of perceived vulnerability to disease and pathogen avoidance have found negative associations between these constructs and indicators of STM (Duncan et al., 2009; Murray et al., 2013). Regarding mating strategies and sexual disgust, pursuing a STM strategy would prove difficult if an individual has high levels of sexual disgust, especially since sex that happens quickly before sufficient information is acquired about the health and hygiene status of a potential mate. Such individuals are likely to be more comfortable pursuing long-term,

monogamous strategies. Al-Shawaf et al. (2015) found that mating strategy was indeed associated with individual differences in sexual disgust, but not in pathogen or moral. Across cultures, pathogen disgust was a negative predictor of overall sociosexuality, while sexual disgust was a positive predictor, and moral disgust was unrelated (Hlay et al., 2022). When it comes to mating strategies and the three dimensions of disgust as measured by the TDDS, sexual disgust is consistently related to mating strategies, while pathogen disgust only reaches significance in large samples (e.g., Hlay et al., 2022 but not Al-Shawaf et al., 2015). Al-Shawaf et al., (2015) provide a possible explanation for why other measures of disgust sensitivity or perceived disease vulnerability may predict mating strategies while the pathogen disgust subscale of the TDDS does not: the subscale does include some cues that are relevant to STM (e.g., cues to infection or disease), but it also contains cues that have little to no relevance to mating strategies (e.g., items pertaining insects or spoiled food) leading to the subscale as a whole to be unrelated to mating strategies. One last important distinction is that disgust and its activation seems to *cause* changes in mating strategy (Al-Shawaf et al., 2019). This, plus the behavioural immune system responsible for disgust emerging earlier than any reproductive strategies, suggests that disgust is an antecedent of mating strategy.

Disgust and Social Conservatism

Humans are a social species yet person-to-person contact is a potential route of infectious diseases. The BIS and its mechanisms are tuned to recognise and respond negatively to individuals who might pose such risks, be these in the pathogen or sexual domain. Ample research shows political conservatism to be related to disgust sensitivity (Inbar et al. 2012; Terrizzi et al., 2013; Tybur et al. 2016), perhaps because conservative societies impose rigid social structures that limit certain forms of contact (e.g., lower socio-economic individuals who might carry pathogens hardly interact with high socio-economic individuals; individuals who have transgressed social or sexual norms are ostracised; etc.). Alternatively, as the previous chapter mentioned, people affiliate with religious and political groups that further their reproductive strategies. Thus, one question regarding the disgust – political conservatism relationship is whether it is driven by the adoption of stricter social strategies (i.e., conservative ideologies mitigate risk of infectious disease either by promoting out-group avoidance or by reinforcing norms that sustain antipathogenic practices) or more restricted mating strategies (i.e, they promote the pursuit of long-term mating while setting injunctions on permissive sexual behaviour).

Across three studies, Tybur et al. (2015) found sexual strategy to fully mediate the association between pathogen avoidance and social conservatism, although a later study by Shook et al. (2015) addressing the methodological concerns in Tybur et al. (2015) failed to replicate these results, finding only partial mediation of sexual strategies in the effect of pathogen avoidance on conservatism. More recently, Billingsley et al. (2018) found social conservatism to be related to both pathogen and sexual disgust (though not to moral disgust), although when regressing social conservatism on all three disgust factors, the effect of pathogen disgust was no longer significant. Similarly, pathogen disgust had no effect on political ideology, party affiliation, or voter behaviour after controlling for sexual disgust in the 2016 U.S. presidential election. These findings suggest increased pathogen sensitivity manifests itself in reduced sexual promiscuity and subsequent inclination towards monogamy.

It should be noted though, that Tybur et al. (2015), and Billingsley et al. (2018) used sexual disgust as an indicator of STM rather than more conventional measures like sociosexuality (Simpson & Gangestad, 1991; Penke & Asendorpf, 2008) or the multidimensional short-term mating and long-term mating orientation approach (Jackson & Kirckpatrick, 2007). Shook et al. (2015) found only a partially mediating effect of mating strategy when using the SOI-R. Additionally, many studies measuring the relationship between disgust and social conservatism do not necessarily assess constructs such as SDO, RWA, or religious fundamentalism. As such, any hypotheses of pathogen and sexual disgust relating to SDO in this study specifically rest on the assumption that SDO properly reflects social conservatism. There is good reason to believe this may be the case though, as a meta-analysis by Terrizzi et al. (2013) found that, while RWA was usually the preferred measure to assess the pathogen sensitivity – social conservatism relationship, SDO measures in the absence of RWA ones were preferred next as general measures of conservative beliefs, hierarchy, and group-based superiority. Finally, Ray and Parkhill (2021) that another hierarchy-legitimising myth – antigay hostility – was predicted by sexual, but not pathogen disgust. As a whole, the literature seems to consistently support an association between sexual disgust and generalised prejudice, leaving little reason to doubt a relationship between sexual disgust and SDO. The relationship between pathogen disgust and SDO, however, is unclear.

Dealing with Costly Others: Promiscuous Women

In the previous chapter, I discussed the role of moralisation in the suppression of female sexuality. Expanding upon morality and its relationship to actual suppression, Asao & Buss (2016) argue morality itself comprises three distinct adaptations, each comprised of several psychological mechanisms designed to determine whether a conspecific is exploitative (i.e., imposing a cost to one's inclusive fitness) or prosocial (i.e., imposing a benefit to one's inclusive fitness), and of which two are of relevance for this paper. The first of these adaptations – moral judgments – determine if a moralised behaviour has occurred, calculates a cost/benefit ratio of the behaviour to the self, and stores that information for use in future social interactions. Moral judgment condemns cost-inflicting behaviour and approves prosocial behaviour. The moral standing of a person as good or evil is judged on several inputs, such as observation, intentions of the person in question, and the likelihood of their behaviour imposing fitness consequences on the self. Once a moral judgment has been made and avoidance of the cost-inflicting individual is unlikely, the second adaptation – moral influence identifies the most efficient and cost-effective way to alter a conspecific's future behaviour to be less fitness cost-inflicting and more benefit-bestowing. This can be done through praise and rewards, inflicting reputational damage, enlisting others in coordinated ostracism, and inflicting physical punishment. Importantly, when avoidance *is* possible, it is a relatively low cost means of solving the adaptive problem of exploitation by others, as it does not waste time, energy, or resources in attempting to alter that person's future behaviour. Thus, avoidance should be the preferred response to costly others to the degree it is feasible.

In the context of promiscuous women, moral judgments should take inputs specific to promiscuity, such as number of previous sexual partners, and incidence of the target's infidelity and mate poaching attempts. When this information is not available, cues such as clothes are also used to make inferences as to the target's sexual permissiveness and exploitability (Goetz et al., 2012). Moral influence mechanisms then find the most efficient way to correct the target's behaviour. As has been said, avoidance should be the preferred solution, and much of disgust focuses on avoidance of cost-inflicting individuals. Thus, I decided to include an outcome measure assessing the avoidance of a promiscuous target (note that for ease of interpretation the measure used scores responses as low or high in desired social *proximity* rather than avoidance). Should avoidance not be possible or should we need to interact with the promiscuous target in any way, other ways to deal with the target will be

identified. In this study, I focus on punishment as a cost-effective means to deal with the threats a promiscuous woman represents.

Study 2

In Study 1, my prediction that sociosexuality and SDO would be related received very weak support. Looking at potential antecedents of both constructs, I identified disgust. Given the empirical evidence that disgust is related to both one's mating strategies and SDO, I decided to investigate if disgust would be related to measures of avoidance and punishment of a promiscuous-looking female target, and if SOI-R and SDO would mediate any relationship. While avoidance cannot really be considered a form of female sexual suppression, the moralisation processes behind deciding how to respond to a cost-inflicting target still seem interesting to study. I also decided to explore if the relationships I hypothesised for this model differed by sex, since any sex differences in the strength of the relationships could help inform why women and men differ in their attitudes towards policies and laws that seek to regulate sexual conduct (e.g., if the relationship between sexual disgust and SDO were stronger for men, that could explain why men are more likely to oppose abortion bans).

Before building my model, independent of disgust, sociosexuality, and SDO, I hypothesise sex differences in my outcome variables. Replicating Muggleton et al. (2019), women should be more likely to punish the target. Regarding avoidance, or wanting a decreased social proximity from a promiscuous woman, it is possible that women would prefer no contact with what is essentially a sexual competitor, while men should want social proximity, as this may lead to a potential sexual opportunity. Thus, I hypothesise a sex difference in desired social proximity (i.e., less avoidance) where men will report wanting more proximity (i.e., less avoidance) to the target compared to women.

One path that seems to have empirical support is that of sociosexuality regressed on sexual disgust (e.g., Al-Shawaf et al, 2015; Hlay et al., 2022). Thus, I include it in my model. Sociosexuality regressed on pathogen disgust does have empirical support when using measures beyond the TDDS. Al-Shawaf et al. (2015) fail to find an association between the pathogen subscale of the TDDS and the SOI-R, however, this is the only study that I know of that found (or even measured) this. As such, I do include a pathogen disgust – SOI-R path. Should it be non-significant, it would add further support to Al-Shawaf's (2015) explanation

that the pathogen subscale contains enough cues unrelated to mating strategies that the subscale as a whole becomes unrelated to them.

There is enough empirical support to hypothesise a significant path from sexual disgust to SDO (e.g., Billingsley et al., 2018; Ray & Parkhill, 2021; Shook et al., 2015; Terrizzi et al, 2013). The relationship to pathogen disgust is, once again, more complicated. Studies like Shook et al (2015) that found pathogen disgust still predicted social conservatism after controlling for sexual disgust or sociosexuality, or like Terrizzi et al. (2013) that found ample evidence for different measures of disgust being associated with conservatism, lend support for a potential significant path between pathogen disgust and SDO. Findings like those in Billingsley et al. (2018), Ray and Parkhill (2021), and Tybur et al. (2015), however, suggest this path may not be significant when controlling for sexual disgust. It could be argued that, while I allow pathogen and sexual disgust to covary, this is not the same as controlling for sexual disgust when assessing the path between pathogen disgust and SDO. As such, I include it in the model.

Finally, I hypothesise that, as with the previous study, both SOI-R and SDO will predict my outcome variable. SOI-R should be positively related to desired social proximity because the less sexually unrestricted someone is, regardless of sex, the less proximity they would want to a promiscuous target. More exclusive to SOI-R, research suggests men and women show a preference for friendships with people showing similar levels of promiscuity to themselves (Coutinho et al., 2007), although this association seems limited among women (Vrangalova et al., 2014). With regards to punishment, to the degree that a promiscuous woman poses a threat, both sexually restricted individuals and individuals high on SDO should want to adopt measures that would prevent or stop any reproductive costs or threats to the status quo this woman might incur. Thus, sociosexuality should have a negative relationship to punishment while SDO should have a positive relationship to it.

This model aims to evaluate whether SOI-R or SDO can mediate the relationship between disgust, and avoidance and punishment of a promiscuous woman, and, if so, whether one does a better job than the other. While I predict no direct effects, Tybur et al. (2015) provide some evidence for a potential direct effect of sexual disgust and either avoidance or punishment. In their study, sexual disgust fully mediated the relationship between pathogen disgust and conservatism – a measure of group prejudice – with the underlying theory that sexual strategies influence socio-political attitudes. Perhaps in a similar way, to the extent that promiscuous others are evaluated as posing a threat to our reproductive strategies (i.e., a

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moral judgment is made about this person being exploitative or prosocial), sexual disgust will predict us trying to avoid or punishment this costly other (i.e., moral influence mechanisms will find the most efficient way to respond to the threat they pose).

Methods

Participants and procedures

Participants for this study were recruited mainly through Prolific Academic and the Brunel University SONA system. Social platforms such as Facebook and Twitter were also used; however, only 32 participants were recruited through these means, so they were ultimately scrapped from data analyses. Inclusion criteria were similar to those of the previous study: participants had to be between the ages of 18 to 40, currently live specifically in London (as opposed to anywhere in the UK for the previous study), identify as heterosexual and cisgender, and have no biological or adopted children.

Due to limitations with remuneration for Prolific and Brunel participants, data were collected in time waves. Prolific participants were first recruited during mid-March of 2021, and a second recruitment wave was done in mid-to-end June, 2021. A total of 373 Prolific participants completed the study in exchange for £1.25. Of these, 4 reported not being cisgender, 38 were non-heterosexual, 4 had children, and 7 did not currently live in London, thus being removed from the dataset. The final Prolific sample consisted of 320 participants (M_{age} = 27.87, SD_{age} = 5.78, N_{Men} = 164), of which 52.81% were White or White British, 23.44% Asian or Asian British, 10% Black or Black British, 9.38% mixed, and the remaining 4.38% were from other ethnicities (Arab, Hispanic, and other).

Recruitment through the Brunel University SONA system was done during November, 2020, and then again between May and June, 2021. A total of 135 Brunel University psychology undergraduates took the study in exchange for one course credit. Because only 15 students were cisgender men, any plans to run analyses on sex differences with this sample were dropped. Of the remaining 120, 1 student reported not being cisgender, 27 were not heterosexual, 2 had children, and 5 did not currently live in London. Upon removing these participants, the final sample consisted of 85 cisgender female students (M_{age} = 19.66, SD_{age} = 2.10), of which 44.70% identified as Asian or Asian British, 16.47% as Black or Black British, 15.29% as White or White British, 7.06% as Arab, 7.06% as mixed, 7.06% left the question unanswered, and the remaining 2.35% identified as other ethnic groups.

The Participant Information Sheet explained that the study was about building an algorithm to match potential friends, similar to how dating apps work and that, if participants chose to take part, they would complete a series of personality measures, be shown a randomly selected target profile from one of several volunteers who had agreed to build and share a profile of themselves, asked about their perceptions of this target person as a potential friend, and then complete a task based on a decision the target had begun previously. After consenting to proceed, they were asked to complete a series of demographics to make sure they matched my inclusion criteria. Next they completed the pathogen and sexual disgust items of the Three-Domain Disgust Scale (Tybur & Lieberman, 2009), the SOI-R (Penke & Asendorpf, 2008), and a 4-item SDO scale (Kteily et al., 2011). When moving to the next part of the study, participants were shown a page with a message that a profile was being selected for them and would load shortly, together with a loading circle GIF. After a fixed time, the same profile of a woman – Emily – in revealing clothing from Muggleton et al. (2019) was shown to all participants. Upon reading the profile, participants completed 6 questions regarding how socially close they would like to be to Emily, followed by instructions that Emily had been given the chance to win £20 when she volunteered to create and share her profile, but that these £20 would have to be split between herself and whichever participant was shown her profile. Furthermore, Emily could decide how to allocate those £20, but ultimately the participant could choose whether to accept or reject her offer. Should the participant accept, both would get the agreed amount. Should the participant reject Emily's offer, neither of them would receive any remuneration beyond what the study promised. A few examples were given of how this split would work, followed by a few True-False questions to assess that participants had understood the instructions. Once these were completed, participants were told Emily had decided an £18 to £2 split in her favour and were asked whether to accept or reject her division. Finally, participants completed a second series of demographics such as ethnicity, and religious and political orientation and were ultimately debriefed and thanked for taking part in the study.

Measures

Disgust sensitivity. The Three-Domain Disgust Scale (Tybur & Lieberman, 2009) is a 21-item scale that measures moral, pathogen, and sexual disgust. Each dimension of disgust is comprised of 7 items on a 7-point Likert scale where participants are asked to rate how disgusting they find certain scenarios, with greater scores representing greater disgust sensitivity. For this study, I measured pathogen (e.g., "Accidentally touching a person's

bloody cut," $\alpha_{Prolific} = .77$, $\alpha_{Brunel} = .66$) and sexual disgust (e.g, "Finding out someone you don't like has sexual fantasies about you," $\alpha_{Prolific} = .80$, $\alpha_{Brunel} = .70$). These two subscales have been shown to properly measure the same constructs across the sexes (Tybur et al., 2011), and, unlike the moral subscale, be consistently valid (Olatunji et al., 2012)

Sociosexuality. As in Study 1, I used the SOI-R (Penke & Asendorpf, 2008) as a proxy of mating strategy. Cronbach's alpha ranged from .75 to .86 for the Prolific sample, and .66 to .87 in the Brunel sample.

Social Dominance Orientation. I used a 4-item version of the SDO used in Kteily et al. (2011), where researchers found longitudinal evidence for SDO as a causal predictor of, and not just a mere reflection of, group-based prejudice. Scale reliability was .77 at Time 1 and .69 at Time 2. Cronbach's alpha was .82 and .78 for the Prolific and Brunel samples, respectively.

Social Proximity. Six items were adapted from Papp et al. (2015) to measure the degree to which participants wanted to get socially close to Emily. Willingness to engage in several scenarios (e.g., "Would you be close friends with her?"; "Would you want her as a co-worker?") was measured on a 1 (*definitely no*) to 6 (*definitely yes*) scale. Reliability analyses were .90 and .89 for the Prolific and Brunel samples, respectively.

Punishment. The Ultimatum Game (UG; Güth et al., 1982) is an economic game in which two people are randomly matched and assigned the roles of proposer and responder. The proposer is endowed with an amount of money and has to suggest a division of that amount between themselves and the responder. The responder decides whether to accept or reject. If the division is accepted, both the proposer and responder earn the amount allocated by the proposer. If the responder rejects the offer, both proposer and responder earn nothing. Most proposers offer between 40-50% of the endowed amount, which is almost always accepted by responders. However, when the proposal falls to 20%, the endowment is rejected about half of the time, and rejection increases as the proposal falls to 10% and lower. The Ultimatum Game is thus a means to punish unfairness, even if it comes at a cost to oneself. For this study, Emily was always the proposer unbeknownst to participants, and suggested a division of 10% (£2 out of £20).

Results

Screening the data

Once again, given data were collected throughout the COVID-19 pandemic, after several lockdowns and social distancing measures had been in place for over a year, I decided to test if item 1 of the SOI-R loaded well on its factor in the Brunel and Prolific samples. While the former sample was small, it did meet some common rules of thumb for factor analysis, such as having 2 participants per variable (Kline, 1994) and 20 participants per factor (Arrindel & van der Ende, 1985). The model had good fit, $\chi^2(24, N = 77) = 19.53$, $p = .72$ (CFI = 1.00, TLI = 1.02, RMSEA = .00, SRMR = .04), and, more importantly, item 1 had $\lambda = .72$ and was thus kept for this sample. The Prolific sample was big enough that a multigroup CFA to look at any invariance in loadings during wave 1 ($n = 167$) and wave 2 ($n = 153$) was possible. Comparing the configural fit with unconstrained parameters to the metric fit with constrained factor loadings revealed no invariance of loadings, $\Delta\chi^2(6) = 1.75$, $p = .94$. Running a regular CFA combining both Prolific waves revealed good fit, $\chi^2(24, N = 315) = 43.57$, $p = .01$ (CFI = .98, TLI = .98, RMSEA = .05, SRMR = .04) but a weak loading for item 1 of $\lambda = .44$ and $R^2 = .19$. Removing item 1 reduced the chi-statistic, but otherwise did not seem to greatly alter fit, $\chi^2(17, N = 315) = 33.94$, $p = .01$ (CFI = .99, TLI = .98, RMSEA = .06, SRMR = .03). Nevertheless, given the Prolific sample from the previous study had item 1 removed, and given the item's poor loading on this study's sample, I decided to remove it from further analyses for consistency.

Finally, to make sure data collected at different time periods did not significantly differ, I ran a series of independent sample t-tests after removing univariate outliers comparing the Brunel data during wave 1 ($n = 33$) to wave 2 ($n = 43$), and the Prolific data during wave 1 ($n = 162$) to wave 2 ($n = 153$) on pathogen and sexual disgust, the three sociosexuality factors and their composite, social dominance orientation, and desired social distance from the target. I found no significant differences across waves in either sample and thus proceeded to combine both waves in each. Table 4a and 4b show correlations for the Prolific and Brunel samples, respectively.

Table 4a. Correlations for sex, disgust sensitivity, sociosexuality, and social dominance orientation with corresponding 95% confidence intervals in the Prolific Academic sample.

Variable	1	2	3	4	5	6	7

	1	2	3	4	5	6	7
1. Sex (0 = females)							
2. Pathogen disgust	-.20*** [-.30, -.09]						
3. Sexual disgust	-.42*** [-.51, -.32]	.25*** [.14, .35]					
4. SOI-R behaviour	.09 [-.02, .20]	.09† [-.02, .20]	-.35*** [-.45, -.25]				
5. SOI-R attitude	.20*** [.09, .30]	-.02 [-.13, .09]	-.66*** [-.71, -.59]	.51*** [.43, .59]			
6. SOI-R desire	.42*** [.32, .51]	.05 [-.06, .16]	-.43*** [-.52, -.34]	.30*** [.20, .40]	.41*** [.32, .50]		
7. SOI-R	.29*** [.18, .39]	.05 [-.06, .16]	-.62*** [-.69, -.55]	.79*** [.75, .83]	.84*** [.81, .87]	.70*** [.64, .75]	
8. SDO	.10† [-.01, .21]	.10† [-.01, .21]	.16** [.05, .26]	<.001 [-.12, .11]	-.13* [-.23, -.02]	.10† [-.01, .21]	-.02 [-.13, .09]

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 4b. Correlations for sex, disgust sensitivity, sociosexuality, and social dominance orientation with corresponding 95% confidence intervals in the Brunel University sample (note all participants were women).

Variable	1	2	3	4	5	6
1. Pathogen disgust						
2. Sexual disgust	.26* [.04, .46]					

	1	2	3	4	5	6
3. SOI-R behaviour	.01 [-.21, .24]	-.42*** [-.59, -.21]				
4. SOI-R attitude	-.08 [-.31, .15]	-.66*** [-.77, -.51]	.55*** [.37, .69]			
5. SOI-R desire	-.05 [-.27, .18]	-.37** [-.55, -.15]	.27* [.05, .47]	.35** [.14, .54]		
6. SOI-R	-.07 [-.29, .17]	-.64*** [-.76, -.48]	.68*** [.54, .79]	.84*** [.76, .90]	.76*** [.64, .84]	
7. SDO	-.21† [-.42, .01]	-.14 [-.36, .09]	.17 [-.06, .38]	-.14 [-.36, .09]	.05 [-.18, .27]	-.01 [-.24, .22]

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

The Prolific Academic sample

Sex Differences. A series of independent sample t-tests were run with the Prolific sample to compare sex differences in the independent variables (disgust, sociosexuality, and social dominance orientation), and desired social proximity to the target. A chi-square test of independence was also conducted to assess whether one sex punished the target more often. Tables 5 and 6 show results for these analyses. Sex differences in disgust and sociosexuality were consistent with past research, but the difference in social dominance orientation was only marginally significant, $t(296.15) = 1.85$, $p = .06$, $d = .21$, *95%BootCI*[-.01, .43] *Power* = .45.

Regarding the outcome variables, men reported wanting greater social proximity to the target ($M = 4.07$, $SD = 1.04$) than did women ($M = 3.72$, $SD = 1.12$), $t(312) = 2.94$, $p = .003$, $d = .33$, *95%BootCI*[.12, .59] *Power* = .83. However, women were not more likely to punish the target compared to men, $\chi^2(1, N = 314) < .001$, $p = .99$.

Table 5. Means, standard deviations, and comparisons between male and female participants. Bonferroni corrections were applied for disgust (C = 2) and SOI (C = 4). Bootstrapped confidence intervals for group differences were computed for greater accuracy.

	Males	Females						
	M (SD)	*M (SD)*	*t*	*df*	*p_adj*	*95%BootCI*	*d*	*1 - β*
Disgust								
Pathogen	4.54 (1.00)	4.95 (.99)	-3.60	312	.001	[-.62, -.18]	.41	.95
Sexual	2.95 (1.07)	3.98 (1.16)	-8.18	312	<.001	[-1.28, -.78]	.92	.99
Sociosexuality	4.53 (1.69)	3.58 (1.48)	5.30	312	<.001	[.61, 1.30]	.60	.99
Behaviour	3.22 (2.32)	2.83 (2.07)	1.58	312	.46	[-.09, .88]	.18	.35
Attitude	6.22(2.18)	5.32 (2.32)	3.55	312	.002	[.41, 1.39]	.40	.94
Desire	4.14 (1.92)	2.58 (1.42)	8.23	294.64	<.001	[1.19, 1.94]	.93	.99
Social Dominance	2.26 (1.14)	2.05 (.85)	1.85	296.15	.06	[-.01, .43]	.21	.45
Social Proximity	4.07 (1.04)	3.72 (1.12)	2.94	312	.003	[.12, .59]	.33	.83

Cohen's *d* guidelines: $d \leq .20$ (small), $d \leq .50$ (medium), $d \leq .80$ (large)

Table 6. Contingency table for the relationship between sex and accepting vs. rejecting an unfair division in the Ultimatum Game

		Accepted split	Rejected split
	Observed	128	25
Men	Expected	128.15	24.85
	Row %	83.66%	16.34%
	Observed	135	26
Women	Expected	134.85	26.15
	Row %	83.85%	16.15%

Relationship between sociosexuality and social dominance orientation.

Once again, I ran 3 multiple regressions – each SOI-R factor and its interaction with sex predicting SDO) – with females as my reference category. This time, for SOI-R behaviour, sex was a significant predictor of SDO, *b* = .39, 95%*BootCI*[.02, .78], *SE* = .19, *p* = .04, such that men had a higher SDO compared to women when controlling for SOI-R behaviour. SOI-R behaviour controlling for sex did not significantly predict SDO, nor was the interaction term significant. SOI-R attitude once again negatively predicted SDO controlling for sex (i.e., when sex = 0 or female), *b* = -.08, 95%*BootCI*[-.14, -.02], *SE* = .03,

$p = .02$, but the effect of sex controlling for SOI-R attitude, and the interaction term of SOI-R attitude and sex were not significant. Finally, for the SOI-R desire * sex regression, neither of the main effects or the interaction were significant.

Building the model. The overall model had an acceptable fit, though half of the fit indices were on the threshold of acceptable, $\chi^2(6, N = 314) = 12.29$, $p = .06$ (CFI = .97, TLI = .93, RMSEA = .06, SRMR = .03). Modification indices suggested a significant improvement if a direct effect regressing social proximity on sexual disgust was added, $\Delta\chi^2(1) = 8.70$, $p = .003$. Because this path does have some theoretical and empirical support, I included it into the model, $\chi^2(5, N = 314) = 3.59$, $p = .61$ (CFI = 1.00, TLI = 1.02, RMSEA = .00, SRMR = .02). R^2 for desired social proximity and punishment were .10 and .001, respectively.

To test if this path structure differed by sex, I conducted a multigroup path analysis. Fit indices in the configural model were good, $\chi^2(10, N = 314) = 11.38$, $p = .33$ (CFI = .99, TLI = .98, RMSEA = .03, SRMR = .03), allowing for invariance testing. Cheung & Rensvold (2002) recommend a value of ΔCFI $\leq$ -.01 between the model with the greater constraints and the one with the fewer to reject the null hypothesis of invariance because $\Delta\chi^2$ is dependent on sample size and deviations from normality. As such, I report $\Delta\chi^2$ for conventional practices but free paths based primarily on ΔCFI rounded to the third decimal.

Constraining all regression paths in the metric model resulted in $\Delta\chi^2(9) = 13.23$, $p = .15$ and ΔCFI = -.021, suggesting non-invariance. Regressing sociosexuality on sexual disgust led to the greatest increase in fit if freed, $\Delta\chi^2(8) = 8.70$, $p = .37$, ΔCFI = -.003, at which point the configural and partially invariant metric model met the ΔCFI criteria. Further constraining the covariance between pathogen and sexual disgust resulted in non-invariance, $\Delta\chi^2(1) = .26$, $p = .61$, ΔCFI = .004. The final partially invariant model had good fit to the data across most indices, $\chi^2(19, N = 314) = 20.35$, $p = .37$ (CFI = .99, TLI = .99, RMSEA = .02, SRMR = .05), but was not significantly different from the overall fit, $\Delta\chi^2(14) = 16.76$, $p = .27$. Due to this lack of difference in fit between the overall and partially invariant models, bootstrapped indirect effects were tested with the overall model for parsimony. However, the partially invariant model is illustrated in Figure 3a. Mediation analyses with 5,000 Bootstrapped corrected samples showed only the mediating effect of sociosexuality in the relationship between pathogen disgust and desired social proximity to be significant, $a_1b_1 =$

.03, *95%BootCI*[.001, .08].

Figure 3a: Partially invariant model showing the mediating effects of SOI-R and SDO on the relationship between pathogen and sexual disgust, and desired social proximity to, and punishment of a promiscuous-looking woman in the Prolific Acadmic sample
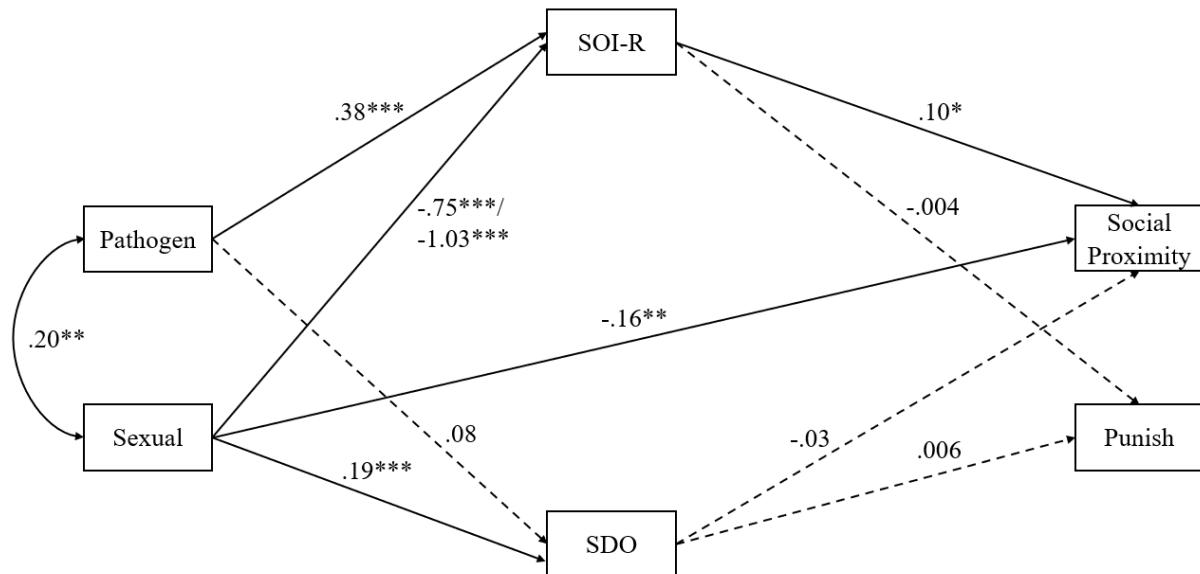

Note: The regression coefficients for SOI-R regressed on sexual disgust are for females and males, respectively. The variance in desired social proximity accounted for by the model was $R^2 = .07$ for females and .09 for males. Bootstrapped indirect effects for this model showed small mediating effects of SOI-R in the relationship between sexual disgust and desired social proximity for both females ($a_{3f}b_1 = -.07$, 95%BootCI[-.15, -.002]), and males ($a_{3m}b_1 = -.10$, 95%BootCI[-.20, -.001]), which were non-significant in the overall model.

The Brunel sample

Regressing SDO on the 3 SOI-R factors for the Brunel sample (since sex comparisons were not possible) showed SOI-R behaviour positively predicted SDO, $b = .28$, *95%BootCI*[.02, .60], *SE* = .11, $p = .01$, while SOI-R attitude did so negatively, $b = -.14$, *95%BootCI*[-.27, -.04], *SE* = .06, $p = .01$. SOIR-desire was not a significant predictor, $b = .03$, *95%BootCI*[-.08, .15], *SE* = .05, $p = .50$.

A chi-square goodness of fit showed the Brunel students were more likely to *accept* Emily's unfair split than would be expected by chance, $\chi^2(1, N = 74) = 9.14$, $p = .002$. Finally, fitting the data to the overall model used in the Prolific sample resulted in good fit, $\chi^2(5, N = 74) = 4.84$, $p = .45$ (CFI = 1.00, TLI = 1.01, RMSEA = .00, SRMR = .04) and an $R^2 = .16$; however, as can be seen in Figure 4b, most paths, and therefore all indirect effects were non-significant.

Figure 3b: Partially invariant model showing the mediating effects of SOI-R and SDO on the relationship between pathogen and sexual disgust, and desired social proximity to, and punishment of a promiscuous-looking woman in the female-only Brunel sample
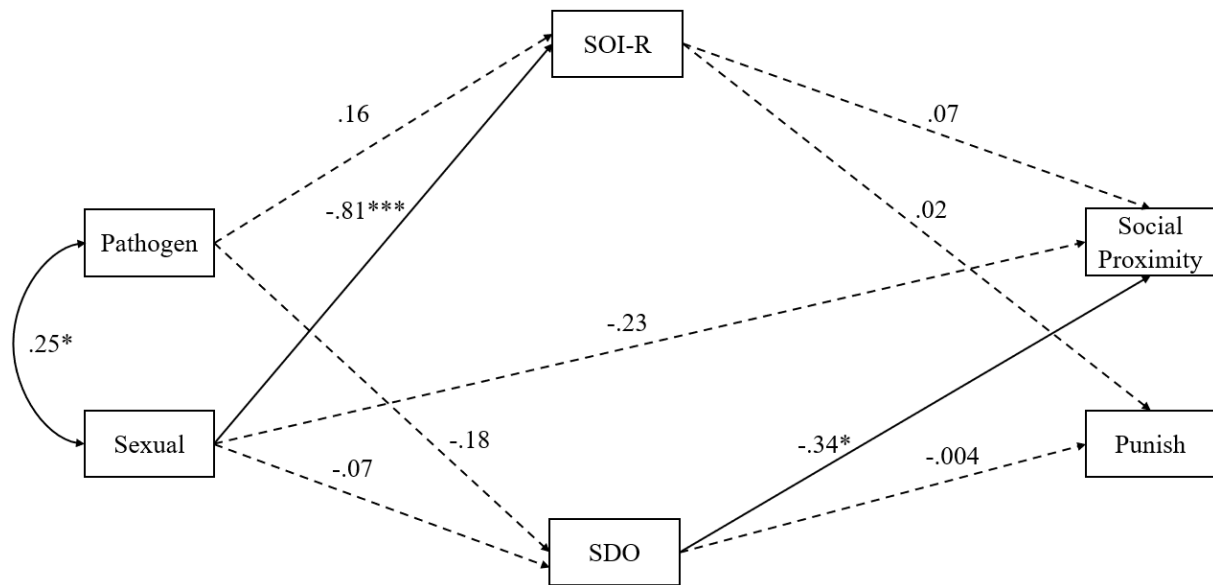
Because the Brunel sample was so small, making any inferences from it will likely not be informative. As such, while results are reported, this sample is largely excluded from further discussion.

Discussion

This study tried to further examine how evolutionary and feminist accounts relate to responses to female promiscuity (i.e., avoidance and punishment), see if disgust was an antecedent for them, and test for sex differences in these relationships. Consistent with my prediction, men did not avoid a promiscuous woman like women did. Instead, men reported wanting greater social proximity to her. When it came to punishment, however, I failed to replicate the results of Muggleton et al. (2019) where women were more likely to punish a promiscuous-looking target compared to men.

Testing my model, the data had good fit, yet the proportion of variance in the outcomes explained by the model were negligible for punishment and really small for desired social proximity/avoidance. Desired social proximity to the target was predicted by sociosexuality but not by SDO. In line with sexual strategies, restricted individuals (i.e., those low on SOI-R) should not want to be socially close to a promiscuous woman. This is also

consistent with findings by Coutinho et al. (2007) and Vrangalova et al. (20140). Punishment was not successfully predicted by any variables.

Pathogen disgust was *positively* related to SOI-R, which not only contradicts findings by Al-Shawaf et al. (2015) that pathogen disgust and SOI-R are not related, but it contradicts findings that other indicators of general disgust sensitivity are related to monogamous mating strategies. Hlay et al. (2022) found similar results whereby accounting for the shared variance among domains of disgust resulted in pathogen disgust being positively associated to SOI scores. They propose two theoretical frameworks to account for this result, of which one – the bet-hedging hypothesis – offers good insight. The bet-hedging hypothesis posits individuals may increase their number of sexual partners in pathogen-risky contexts because it increases variability in offspring immunity through multiple paternity, which in turn increases the chances that at least some offspring will survive. Hill et al. (2015) found support for this hypothesis in humans by exposing participants to a disease threat prime. Considering my sample was obtained in March 2021 and June, 2021, after over a year since the COVID-19 pandemic had begun, claiming the lives of roughly 4,000 people in England by the time data collection ended (see UK Health Security Agency, 2022), the bet-hedging hypothesis is a very plausible explanation. Pathogen disgust was not significantly related to SDO. Past similar studies found no relationship between pathogen disgust and conservatism, but this was mainly after accounting for a mediating effect of sexual disgust. My model had no such path and so it is unclear why this relationship was non-significant.

Sexual disgust, consistent with part research did negatively predict SOI-R and positively predict SDO. The path of SOI-R regressed on sexual disgust suggested invariance, being stronger in men than it was in women (i.e., the greater sensitivity to sexual disgust, the less unrestricted participants were, with this effect being stronger in men). Considering sex risks in terms of sexually transmitted infections are greater for women, this finding is rather perplexing but suggests men's sociosexuality is particularly sensitive to cues of sexual disgust. Adding a direct effect from sexual disgust to desired social promiscuity improved fit, and this relationship was negative such that the greater sexual disgust, the less close participants wanted to be to the target. Considering perceptions that sexually permissive individuals may be at greater risk of STIs, it makes sense that people high in sexual disgust would prefer to stay away from such individuals. Finally, the only significant indirect effect was that of sociosexuality on the relationship between pathogen disgust and desired social proximity. Greater pathogen disgust was related to a more unrestricted sociosexuality, which

in turn predicted greater desired social proximity to the target. Considering the pathogen disgust – SOI-R positive relationship is perhaps because of the effects the pandemic had on participants' psychology when the data were collected, it is unlikely that this effect would replicate under more normal circumstances, at least not in a positive directions (i.e., if typically pathogen disgust is negatively related to SOI-R, and SOI-R positively related to social proximity, any significant indirect effect would be negative). Overall, when it came to desired social proximity, only an evolutionary account focused on adaptive mating strategies could explain this particular outcome.

Inter vs intragroup discrimination: A case against SDO

Tybur et al. (2016) summarise two distinct hypotheses regarding the relationship between disgust sensitivity and generalised group prejudice and political orientation. The traditional norms account is based on the assumption that local rules and rituals evolve culturally to neutralise local pathogen threat. This is an intragroup account and suggests that departures from traditional norms increase risk of infection among members *within* the group. Based on this account, more pathogen-avoidant individuals favour ideologies that encourage adherence to traditional values (i.e., RWA). The outgroup avoidance account is based on the assumption that individuals develop greater resistance to locally prevalent pathogens than to those from foreign ecologies. This intergroup account posits that contact with outgroup members who may carry foreign pathogens that one's immune system is not familiar with, is more likely to result in infectious diseases compared to contact with someone from the ingroup is. Thus, more pathogen-avoidant individuals favour ideological positions that minimise intergroup transmission. Because SDO relates more strongly to prejudice toward foreigners, whereas traditionalism and RWA relates more strongly to prejudice toward non-traditional subgroups within one's own ecology the outgroup-avoidance hypothesis implies that pathogen avoidance should relate to SDO but not to traditionalism, while the intragroup hypothesis posits that pathogen-avoidance motives should relate to traditionalism but not SDO. Across 30 nations, Tybur et al. (2016) found more support for an intragroup account of pathogen-avoidance than an intergroup account. Because conservatism is characterised by stronger preferences for ingroups vs outgroups and by greater traditionalism, much research on disgust and conservatism on prejudice have interpreted results as supporting both hypotheses, using RWA and SDO interchangeably. This theory is very similar to that of Petersen (2018) in the previous chapter, suggesting future research would benefit from

incorporating RWA *and* SDO in their designs rather than opting for one over the other, and, in the case of designs involving disgust, likely choosing RWA if it comes to it.

Limitations and future research

Hlay et al (2022) found that, across all cultures examined, pathogen disgust positively predicted SOI-R attitude and desire, but not behaviour. These differential associations between disgust and the SOI-R facets implies that a single SOI-R summary score is not optimal when looking at the relationship between disgust and sociosexuality. Unlike in study 1 where a simpler design focused on one independent variable and one dependent variable (i.e., sex and moralisation of female promiscuity, respectively), the use of pathogen and sexual disgust as independent variables, and desired social proximity and punishment as dependent variables in this study, meant the number of indirect effects with just two mediators were eight, as opposed to 4 in the previous study with 4 mediators. Breaking SOI-R into factors would have demanded better-informed decisions on the relationship between each factor and the pathogen and sexual disgust domains, and much of the literature focuses only on the composite score, making any empirically-derived hypotheses a challenge. However future research could integrate the facets in other ways, such as perhaps using structural equation modelling to better decrease measurement error.

Another major limitation of this study is the implementation of the Ultimatum Game, which yielded null results across the board. Muggleton et al. (2016) designed their economic games in manners that had higher external reliability (e.g., they told participants they had to log in to their computers at a certain time so they could be connected to someone real-time, and made it seem like the target was indeed another participant logging in). As such, null results regarding the UG in this study are likely more the product of a weaker design than of Muggleton et al.'s (2016) results not being replicable. Their studies were also able to have an experimental design where the target was dressed either provocatively or conservatively, and chi-squares were run with participant sex and target condition. Having an experimental design and a path model, while not impossible, is a very complex task to achieve, but hopefully future research could find ways to experimentally test not just actions like punishment, but also the mechanisms behind them.

Conclusion

Disgust sensitivity seems to be well-related to both mating strategies, and to SDO albeit in a more inconsistent manner. Thus, disgust can be interpreted as a common variable

that gives rise to constructs evolutionary and feminist theories use when studying the suppression of female sexuality. In this study, an evolutionary account seemed to receive more support, as SOI-R was more consistently related to constructs in the model. However, hopefully results from this study and the previous one show that there is merit in incorporating both accounts in order to either test competing predictions or test complimentary ones.

Chapter 4: Conclusion

This thesis investigated how often antagonistic theories – evolutionary theory and feminist theory – can be integrated in research designs, particularly with regards to research on concerns with female sexuality. As I mention in Chapter 1, many studies looking at this phenomenon – or any psychological phenomenon for that matter – stick to either one account or the other, concluding that because they found support for their approach, the other one likely does not have much support.

With regards to not just concern for women's promiscuity, but outright suppression of female sexuality, in Chapter 1 I have provided a summary (though by no means as comprehensive as it can be) on the support for two theories of suppression: the MCT, which states men are the main culprits for stifling female sexuality, and the FCT, which posits women play a bigger role in jointly suppressing the sexuality of other women. Given the varied research sometimes supporting one or the other, I mention how more recent research focuses less on the MCT vs FCT and instead looks at the suppression of female sexuality as contingent on ecological factors, with support for either the MCT or FCT simply following as a by-product.

In Chapters 2 and 3 I focus on integrating evolutionary and feminist accounts to show how examining both jointly can provide insights into the concern for female promiscuity. In Chapter 2, for example, 43 % of the variance in the moralisation of female promiscuity was accounted for by sex, mating strategy, and SDO, with sex accounting for only 2% of that variance. Additionally, the indirect effects of SOI-R and SDO had similar strength, albeit predicted moralisation in opposite directions.

Finally, while carrying out literature reviews for Chapters 2 and 3, one main theoretical issue consistently surfaced: the apparent interchangeability of prejudice ideologies, mainly that of SDO and RWA. SDO in particular was frequently used in studies looking at sexism, which was a major reason for my decision to focus on it throughout this thesis as opposed to RWA. However, based on Petersen (2018) and Tybur et al. (2016), RWA may be a better predictor when studying sexism, as it focuses on intragroup prejudice and traditionalism, as opposed to SDO which focuses on intergroup prejudice, often directed at foreigners.

Beyond these theoretical issues, ideologies like SDO and RWA have only recently begun being rigorously studied with an evolutionary perspective (e.g., Petersen et al. 2018). While Sidanius (2000) does mention some evolutionary accounts on how men monopolise resources and form coalitions to attract mates or keep them dependent on them, it is rare to see evolutionary theory mentioned in SDO papers.

In summary, this thesis investigated the role of evolutionary and feminist theory on the moralisation, avoidance, and punishment of promiscuous women, showing both have their merit. I hope that future research continues to find less antagonistic ways of testing both.

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