Evolutionary and psychological insights into the suppression of female sexuality

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A number of competing theories spanning multiple disciplines currently exist on who restricts female sexuality, most positing that men, and some positing that women are responsible for its suppression. In this thesis, I explore female sexual suppression, drawing from current multiple evolutionary and psychological theories, to understand who may benefit from female sexual suppression. In Experiment 1, I investigated whether men and women anticipate lying more often to their family, friends, colleagues, acquaintances or partners about their sexual history. I find that women and men tell their biggest and most frequent lies to their parents, especially women to their fathers, suggesting parents strongly enforce sexual restriction on their daughters. In Chapters 3 and 4 I investigate which appearance-based judgements increase men and women’s objectifying perceptions of others. Results show that while positive judgements of women’s attractiveness can mitigate negative perceptions of them, negative judgements of women pursuing casual sex increase men and women’s objectification. In Chapter 5, I test which aspects of female sex work—the sexual act itself, the money received or the woman’s perceived autonomy—explain negative, dehumanising perceptions of women. I find that simply knowing that women engage in casual sex in a job, hobby or activity, rather than the money they earn or their autonomy, strongly increases dehumanising perceptions of women. Taken together, results of this thesis suggest that many men, but also some women, may benefit from attitudes or behaviours that restrict female sexuality. This outcome was not predicted by any single-discipline approach to female sexual suppression. Collectively utilizing psychological, evolutionary and economic frameworks to understand men’s and women’s attitudes and behaviours will be vital for understanding what drives sexism, sexual double standards and the broader suppression of female sexuality.
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Abstract

A number of competing theories spanning multiple disciplines currently exist on who restricts female sexuality, most positing that men, and some positing that women are responsible for its suppression. In this thesis, I explore female sexual suppression, drawing from multiple current theories, to understand who may benefit from female sexual suppression. In Experiment 1, I investigated whether men and women anticipate lying more often to their family, friends, colleagues, acquaintances or partners about their sexual history. I find that women and men tell their biggest and most frequent lies to their parents, especially women to their fathers, suggesting parents strongly enforce sexual restriction on their daughters. In Chapters 3 and 4 I investigate which appearance-based judgements increase men and women’s objectifying perceptions of others. Results show that while positive judgements of women’s attractiveness can mitigate negative perceptions of them, negative judgements of women pursuing casual sex increase men and women’s objectification. In Chapter 5, I test which aspects of female sex work—the sexual act itself, the money received or the woman’s perceived autonomy—explain negative, dehumanising perceptions of women. I find that simply knowing that women engage in casual sex in a job, hobby or activity, rather than the money they earn or their autonomy, strongly increases dehumanising perceptions of women. Taken together, results of this thesis suggest that many men, but also some women, may benefit from attitudes or behaviours that restrict female sexuality. This outcome was not predicted by any single-discipline approach to female sexual suppression. Collectively utilizing psychological, evolutionary and economic frameworks to understand men’s and women’s attitudes and behaviours will be vital for
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Chapter 1

General Introduction

A variety of cultural phenomena restrict women from pursuing, enjoying and engaging in sex, and constrain women from appearing or behaving in ways that express their sexuality more than men. This greater restriction of women’s sexuality over men’s sexuality is known as female sexual suppression. Although it is suggested that the suppression of the female sex drive has persisted since prehistoric human societies (see Baumeister & Twenge, 2002; Sherfey, 1966) was not until the mid-1960s that female sexual suppression became a topic of research interest. One important contribution by Ira Reiss (1967) provided one of the first large-scale, systematic studies to show that negative attitudes towards premarital sexual permissiveness were generally stronger, and punishments harsher, for women than men depending on power differences within the home and society. Since Reiss’ study (1967), research has expanded to demonstrate that women, more than men, are encouraged to restrict themselves sexually (Baumeister & Twenge, 2002; Trinh, 2016), condemned for sexual infidelity in religious doctrines (Delamater, 1981; Weeden, Cohen & Kenrick, 2008), and limited by political, cultural and economic structures from pursuing extramarital relationships (Becker, 2019; Howard &
Gibson, 2019; Smuts, 1995; Travis & White, 2000). Thus, research supports that women’s sexuality is culturally suppressed compared to men’s.

The cultural suppression of female sexuality can lead to negative outcomes for women. Women are frequent targets for physically harmful cultural practices that stunt their sexual drive and sexual enjoyment (Onyishi et al., 2016) and violent acts relating to male jealousy (Daly, Wilson & Weghorst, 1982). Indeed, evidence shows that women’s suspected sexual infidelity is the single biggest motivator of male-to-female violence (Daly, Wilson & Weghorst, 1982; Peters, Shackelford & Buss, 2002). Women tend to be judged more negatively than men for appearing or behaving as sexually active, a phenomenon known as the sexual double standard (Crawford & Popp, 2003; Reiss, 1967). These gendered judgements can lead to serious consequences for women ranging from negative perceptions of women in higher-status jobs (Glick et al., 2005) to more frequent blame of female victims than male perpetrators in cases of sexual assault (Loughnan et al., 2013). In short, harsher judgements of women are a major component of female sexual suppression and, more generally, sexism. To mitigate the costs of female sexual suppression, it is important to understand the origins of these harsher judgements, and for whom they benefit.

Although it is broadly understood that female sexuality is culturally suppressed, there is still no consensus of who is most responsible, or who benefits from its suppression. Psychological, evolutionary and economic frameworks have each emerged to explain who restricts female sexuality, and why they do so (for a discussion see Baumeister & Twenge, 2002; Muggleton et al. 2018; Zaikman & Marks, 2017). Generally, there remains a contentious debate between whether men or women are responsible for the suppression of female sexuality (see Baumeister & Twenge, 2002; Baumeister & Vohs, 2012; Rudman et
al., 2014; Rudman, 2017). Still, research that critically tests the predictions of sexual suppression theories remains rare.

In order to understand why female sexuality is suppressed and the broader origins of sexism, in this PhD thesis I aim to explore female sexual suppression by drawing from multiple theoretical evolutionary and psychological predictions regarding who controls female sexuality. How men and women perceive women, and how their perceptions differ or relate, is a resource for understanding positive and negative stereotypes about women. Here, I consider where these biases may originate from, and how they relate to prejudice against female sexuality more generally, including to broader processes of sexism.

To accomplish this, I begin by considering the lies that men and women tell when asked about their sexual history, modifying an existing paradigm for studying sexual double standards to test who men and women lie to most (Chapter 2). I aim to answer the following research question: (1) “Who places the most pressure on men and women to behave in ways that match sexual double standards?”. I then move my attention to objectifying and dehumanizing perceptions that men and women hold towards some women, an important psychological process related to female sexual suppression (Chapters 3-5). I aim to answer two additional questions: (2) “What interpersonal perceptions of women cause men and women to hold objectifying perceptions of women?” and (3) “Do men and women differ in their objectifying perceptions of women?”.

In the present chapter, I provide an overview of female sexual suppression and sexual double standards. I then discuss the existing theories on who restricts female sexuality and their possible limitations. Finally, in Chapter 6, I provide a more detailed overview of the four chapters designed to investigate who may benefit from restricting female sexuality.
Sexism, sexual double standards and the suppression of female sexuality

Across the globe, cultural norms and traditions regarding women’s role within society vary widely. For example, in many patrilineal societies in which social status is inherited through male kin, women’s roles tend to be reduced to be those relevant to the private sphere (i.e., marriage and family; see Hudson & Matfess, 2017). Conversely, matrilineal societies, in which social status is inherited through female kin, are associated with women’s roles that tend to be more substantial, and relate to the public sphere (Koratayev, 2003). Within both patrilineal and matrilineal societies, women’s sexuality holds immense value for directing kinship configurations and transferring resources or social status (Mattison, Quinlan & Hare, 2019; Hudson & Matfess, 2017). It has been suggested, however, that numerous practices across cultures aim to regulate women’s sexual expression and behaviour compared to men’s (Baumeister & Twenge, 2002; Becker, 2019; Sherfey, 1966).

Suppressive cultural practices range in visibility and intensity. Practices such as female genital cutting, whereby a young girl’s clitoris and labia are surgically removed before puberty, physically limit women’s ability to enjoy and engage in sexual intercourse (Baumeister & Twenge, 2002; Berg & Denison, 2013; Howard & Gibson, 2019; Onyishi et al., 2016; Van Rossem & Gage, 2009). Other practices such as honor killings punish women for sexual acts that are considered damaging to family reputation (Douki et al., 2003). Infanticide, the murder of a woman’s infant children, has also been suggested to function as a means of punishment for infidelity (Harris et al., 2007). Other practices which
limit women’s visibility as sexual agents, such as purdah and religious veiling, have also been posited to suppress women’s sexuality (Baumeister & Twenge, 2002; Blake, Fourati & Brooks, 2018). Most religions also preach morals of sexual restriction and approve of punishment for sexual infidelity for women more than men (DeLamater, 1981; Strassman et al., 2012; Weeden et al., 2008; Weeden & Kurzban, 2013). Collectively, these traditions and social structures can have tremendous consequences on women’s capacity to enjoy, and engage in, sex.

Other forms of female sexual suppression are more subtle. For example, social norms can establish differences between acceptable behaviour for women compared to men that permeate everyday social discourse. Female virginity is more often associated with images of purity and, therefore, considered more valuable than men’s virginity (Valenti, 2009). From adolescence, girls are taught ideals of sexual self-restriction more than boys (Baumeister & Vohs, 2002) and pressured to abstain from sex until they are married (Berg & Denison, 2013). As a result, women are often the target of sexual double standards in which they are judged more harshly than men for appearing sexually active or behaving promiscuously (Crawford & Popp, 2003; Reiss, 1997). Though these practices are more subtle, the influence of these sexual double standards is far-reaching, affecting attitudes and behaviours about women and men that influence personal, social and professional circumstances.

Theories of female sexual suppression

Although it is widely accepted that female sexuality is suppressed more strongly than male sexuality, the question still remains: who benefits from its suppression?
Hypotheses on this topic have existed since the late 19th century and have grown in number to span across psychoanalytic (Sherfey, 1966), psychological (Travis & White, 2000; Baumeister & Vohs, 2004) and evolutionary disciplines (Smuts, 1995). In the following sections I provide an overview of each individual theory, and whom the theory predicts is chiefly responsible for the suppression of female sexuality.

1. For the good of society

Until the mid-1960s, it remained a popular view among psychoanalytic thinkers that the female sex drive was of meagre size compared to men’s sex drive. In response to a psychoanalytic approach to understanding the complexity of the female orgasm (e.g., Bonaparte, 1953; Marmor, 1954), Mary Jane Sherfey (1966) built a strong multi-discipline case that posited, contrary to popular belief within the psychoanalytic establishment, that women have an insatiable sex drive that is far stronger than the sex drive of men. If left unimpeded by cultural restrictions, women’s sex drive could break the foundations of social order. Therefore, Sherfey (1966) argued that it is universally beneficial for men, women and for society as a whole to suppress female sexuality.

Sherfey’s critique of Freud’s assertions was based on a poor understanding of anatomy and development, though she provided no direct evidence herself. There exists limited empirical evidence to support Sherfey’s (1966) theory. In opposition to her theory’s predictions, research shows that men tend to have a stronger sex drive than women, on average (Baumeister, Catanese & Vohs, 2001; Schmitt, 2005). Women, especially women of higher mate value, are also found to be less positive towards men that are only interested in short-term relationships compared to men that are interested in long-term relationships as
well (Millar et al., 2018). Other research, finds that men and women’s ideal preferences for number of lifetime partners are similar (Pedersen et al., 2002), suggesting that although women’s sex drive may not be greater than men’s, it is at least equal in strength. However, Sherfey (1966) suggests that women may be unconsciously aware of their insatiable sex drive, and thus behave in ways to suppress their own sexuality. This suggestion makes it empirically difficult to fully refute the theory’s tenets, though the current evidence indicates that the strength of women’s sex drive is likely less than or equal to men’s.

2. Patriarchy

Feminist thinkers acknowledge that women’s sexuality is stifled far more than men’s, and lay the blame squarely on men, who ostensibly benefit most directly from suppression for women and freedom for themselves. By commodifying women and their sexuality to assets which can be attained, traded and owned, men are able to create a gendered social hierarchy in which women are subordinate (Lerner, 1986; Travis & White, 2000). Accordingly, men are hypothesised to dominate powerful positions within cultural institutions that regulate female sexual behaviour (DeLamater, 1981). These cultural institutions socialize men and women to fit gendered sexual scripts based upon physical biological differences, generally reinforcing that men are strong, agentic leaders whereas women are sensitive, emotional caretakers (Eomenagly & Wood, 2016; Jost & Kay, 2005). Thus, men’s control of women is hypothesised to sustain a societal monopoly that blocks women from occupying high-status roles.

Evidence in support of patriarchal suppression shows that, compared to women, men more often endorse ideas that are harmful to women’s sexual agency, and control
institutions that limit women’s sexual behaviours. For example, men are found to be more supportive than women of rape myths that “loose” women are more likely to be sexually targeted by men and justify men’s violent sexual behaviour (Rudman et al., 2013). Men are found to hold sexist beliefs that women are sensitive and lack in agency (Glick & Fiske, 1996), and, subsequently, support hierarchical division in society (Bareket et al., 2018). Indeed, evidence shows many societies forbid women from achieving the same social status as men, either formally or informally (Labovitz, 2007; also see Malovicki Yaffe et al., 2018). Furthermore, religious groups are found to condemn promiscuous behaviour, especially for women (Pazhoohi et al., 2017), and religious teachings are found to increase endorsement that women are more sensitive than men (e.g., Catholicism; Mikołajczak & Pietrzak, 2014). Thus, many lines of evidence suggest that men hold greater negative beliefs of women and support societal structures that limit women’s social power and sexual freedom.

Some research, however, shows that men may not exclusively be responsible for women’s social and sexual suppression. Evidence suggests that certain sources of individual difference can increase or decrease men’s support for gender equality (Blake & Brooks, 2018). Additionally, both men and women may support political policies that limit women’s sexual freedoms due to their own individual interests, beyond those pertaining to biological sex (Petersen, 2018; Weeden et al., 2008; Kurzban & Weeden, 2014). Furthermore, some sexually suppressive behaviours hypothesised to be exclusively committed by men, such as objectification (Fredrickson & Roberts, 1997), are found to also be committed by women (Bernard et al., 2012; Gervais et al., 2013, Haslam et al., 2013, Heflick et al., 2011). Therefore, some evidence against patriarchal hypotheses suggests that
not all men may support or benefit from attitudes or behaviours that suppress women’s sexuality.

3. Paternity Certainty

An evolutionary framework posits that men’s desire to restrict women’s sexual behaviour arose as an evolved consequence of men’s paternity uncertainty (Smuts, 1992; 1995). Paternity certainty refers to the certainty of a parent’s genetic relationship to their offspring, an important determinant of differences in parental investment. Due to internal gestation, mothers are unanimously reassured of their maternity whereas men cannot be certain of their genetic relation to any given offspring at birth. To overcome this problem, it is suggested that over human evolutionary history, men have evolved a variety of adaptations, including collective alliances that restrict women’s sexual autonomy, deter women from pursuing extramarital sexual relationships, and increase men’s paternity certainty (Smuts, 1992; 1995). Thus, men, especially husbands, fathers, and men invested in long-term relationships with their partner, are motivated to limit women’s sexuality in order to ensure that when they do invest time and resources to raise a child, they can be more certain that their child is of their own flesh and blood.

A large sum of evidence finds support for paternity certainty as a driver of female sexual suppression. Men are found to respond more negatively to suspected sexual infidelity than women (Daly et al., 1982; Scelza, 2014; Symons, 1979), and are less willing to parentally invest in children when threatened by the possibility of their partner’s infidelity (Hill & Delpriore, 2012). Genetic evidence also shows that religious institutions can effectively increase men’s certainty of paternity (Strassman et al., 2012), and, in
environments that have greater environmental risks associated with paternal investment, religious practices are more strongly supported (Pazhoohi et al., 2017). In addition, cultural practices like female genital cutting are also found to function as an effective, though more extreme, method of increasing paternity certainty (Becker, 2019; Howard & Gibson, 2019), explaining why this practice is more common in areas in which men spend extended periods of time away from their wives/consorts (Becker, 2019). Therefore, paternity certainty is a strong driver of negative attitudes towards female promiscuity and support for practices that limit women’s sexuality.

Some research, however, refutes that paternity certainty drives female sexual suppression. Recent evidence shows men’s sexual jealousy is not unanimously stronger than women’s, suggesting that men and women’s sexual and emotional jealousy may depend on differences between study populations (Scelza et al., 2019). Evidence also shows that both men and women oppose promiscuity in environments that increase male paternity certainty (Price et al., 2014) even though women remain certain of their maternity in these environments. Thus, although paternity certainty appears to motivate some men to view sexually accessible women more negatively, other evidence suggests it may not fully explain female sexual suppression.

4. Sex differences in reproductive costs of sex

Evolutionary thinkers also point to the large disparity in required energetic investment of reproduction between men and women as a source of sexual conflict (Buss, 1989; Symons, 1979; Trivers, 1972). Women are limited in the number of offspring they can bear over a lifetime due to a minimum nine-month gestation period, period of childbirth
and lactation, and several years of child rearing after successful impregnation. The implication is that women are therefore better able than men to maximize their evolutionary fitness by pursuing committed, long-term relationships, whereas men, due to their minimal required investment, are more likely than women to pursue short-term relationships (Trivers, 1972; Buss & Schmitt, 1993). As a result, men and women may pursue suppressive strategies that maximise their own fitness, including suppressing the sexuality of themselves, and others.

For women, the anticipated cost of reproduction may make self-suppression a useful strategy to avoid pregnancy when psychologically unready, or to an undesirable or uncommitted partner. Avoiding these risks may increase women’s longevity and the success of their offspring. However, opposing evidence suggests that women also benefit from pursuing multiple partners (Scelza, 2011; 2013). Women who pursue extra-pair relationships are found to have increased reproductive success compared to women in arranged marriages in a traditional society (Scelza, 2011). Increasing evidence also shows that women who have multiple sexual relationships can improve the genetic quality of their offspring and gain increased access to resources (Scelza, 2013). Nonetheless, women energetically benefit from avoiding unwanted pregnancy.

Likewise, parents may more strongly restrict the sexual behaviour of their daughters to avoid the costs of additional parental or economic support like an unplanned or unwanted pregnancy (Perilloux, Fleischman & Buss, 2008). Parents are less supportive of daughters pursuing short-term sexual relationships compared to sons (Apostolou, 2009; Perilloux et al., 2008; Perilloux, Fleischman & Buss, 2011) and evidence suggests that parents are more involved in the appearance choices of their daughters than their sons (Perilloux et al., 2008). Additionally, parents hold considerable power in determining the future bride or
groom of both their sons and daughters across cultures (Apostolou, 2007; Mordecai, 1999; Tawfiq & Marcketti, 2017). Parents, especially fathers of the bride, oversee financial negotiations and monetary exchanges associated with marriage rituals (for a discussion see Burch, 2019) and many marriage rituals highlight the importance of the bride’s—but not the groom’s—sexual purity prior to marriage (Monger, 2004). Therefore, parents, and those genetically related to them, may benefit most from the sexual restriction of women.

Due to competition within the mating market, however, some men and women may benefit from choosing alternative mating strategies (Buss & Schmitt, 1993). In particular, men and women with low mate value relative to the mating market may find choosing extra-pair, short-term mating strategies more profitable (Millar, Westfall & Lovitt, 2018; Gavrilets, 2012). Consequently, low mate value men may find more success by investing in long-term relationships and, therefore, opposing female promiscuity, which benefits high mate value men (Gavrilets, 2012). For example, evidence shows low mate value men are more accepting of intimate partner violence than high mate value men who believe that gender equality is improving, a condition that advantages high mate value men in the mating market (Blake & Brooks, 2018). Thus, restricting women from pursuing extramarital relationships may benefit men who view themselves to be disadvantaged in the sexual marketplace.

5. Sexual economics

Using a supply-demand framework, sexual economics instead posits that women have more to gain than men by suppressing other women’s sexuality (Baumeister & Twenge, 2002; Baumeister & Vohs, 2004). This view holds that sex is a female-controlled
resource that women can exchange with men for male-controlled things, such as commitment, finances and status. Due to men’s higher demand for sex compared to women (Baumeister, Catanese & Vohs, 2001), women are able to collectively increase the average “price” of sex by limiting the apparent supply of sex within the community (Baumeister & Vohs, 2004). Women, therefore, are hypothesised to be more negative than men towards women who are promiscuous, especially in markets where women are rare compared to men (i.e., male-biased sex ratios; see Stone, 2017 for a review). In support of this, women are found to be more willing to gossip about other women who appear sexually available (Reynolds, Baumeister & Maner, 2018), hold more negative judgements of women who enhance their appearance (Delpriore et al., 2018), and are more willing than men to inflict economic punishment on women who appear more sexually available (Muggleton, Tarran & Fincher, 2018). Other evidence shows that in populations where brides are rare, the money or gifts required as a brideprice can grow to insurmountable costs for families of sons (Hudson & Matfess, 2017). These findings suggest that women may restrict other women’s sexuality because they benefit from limiting its supply.

Much of the previous research suggesting support for patriarchal (e.g., Lerner, 1986; Rudman et al., 2013; Travis & White, 2000) or paternity certainty hypotheses (e.g., Pazhoohi et al., 2017) shows that men suppress female sexuality, placing the central tenets of female-controlled suppression in question. In particular, many studies have shown that men oppose female promiscuity (Price et al., 2014; Daly et al., 1982) even though, according to sexual economics, men would prefer women to be more sexual to lower the “price” of sex (Baumeister & Vohs, 2004). Furthermore, a main criticism of sexual economics is that the main hypotheses are misconstrued constructs stemming from patriarchy (Rudman & Fetterolf, 2014; Rudman & Fetterolf, 2015; Rudman 2017).
Therefore, sexual economics is at odds with other theories that suggest men suppress female sexuality.

**A tendency for simple divides? Moving towards a multi-faceted view of female sexual suppression**

Individually, the theories outlined in the sections above have been utilized by numerous studies on topics concerning female sexual suppression (Baraket et al., 2018; Howard & Gibson, 2019; Pacilli et al., 2017; Reynolds, Baumeister & Maner, 2018; Rudman et al., 2013; Strassman et al., 2012; Whyte, Brooks & Torgler, 2017). However, experimental tests that compare respective predictions of each theory have been rare (Zaikman & Marks, 2017). Previous research that has attempted to test the merits of male-control and female-control theories has revealed results that are unequivocally in support of one theory at the expense of the other (Baumeister & Vohs, 2012; Rudman et al., 2014; Rudman et al., 2017), raising suspicions of possible biases in methodological design. The issue may also lie in this simplistic dichotomy between male- and female-control, creating a perception that suppression is universally committed by one sex or another, but not both. Researchers that test these theories, therefore, may be prone to design experiments and interpret their findings as fitting within only one category of suppression, rather than appreciating what might influence individual variation. This simplification is potentially damaging not only in the research conducted on female sexual suppression, but in the way that public political discourse broadly thinks about sexual double standards.

In addition to dichotomies between male- and female-control theories, past efforts to understand issues of gender and sexism have been decelerated by a fundamental,
perpetual debate about whether biological or sociocultural factors have a stronger influence on human behaviour (Eagly & Wood, 2013). The tendency to regress to the ancient nature-nurture debates, however, is unlikely to deliver research progress, as evidence shows that genetic, environmental, social, and cultural factors interact to shape human psychology (Nettle 2009; Kurzban & Weeden, 2014). The unwillingness of some to acknowledge the influence of evolution on human behaviour or to consider how culture can dramatically alter behaviours that are genetically determined has likely inhibited the development of deeper, cumulative theories of human behaviour (see Muthukrishna & Henrich, 2019).

Thus, properly resolving questions about who benefits from sexual double standards, and more broadly about sexism, first requires a more cohesive investigation that combines multiple, cross-disciplinary bodies of knowledge.

This PhD thesis aims to combine multiple frameworks to gain a more holistic view of what causes variation in attitudes towards women and women’s sexuality. In the following sections, I provide a brief overview of the four chapters discussed in this thesis and how they aid to accomplish the goal of understanding female sexual suppression.

Chapter 2: Lying behaviour and the suppression of female sexuality

Lying is common (DePaulo & Kashy, 1998; Kashy & DePaulo, 1996). This is because there are many reasons why people lie, including prosociality (Xu et al., 2010), pathological behaviour (Dike, Baranoski & Griffith, 2005) and social desirability among peers (Mann et al., 2014). Social desirability bias is one of the most common biases affecting the validity of survey-based research (Nederhof, 1985), and the responses most
affected by these biases are indicative of what reputations individuals consider valuable (Fisher & Katz, 2000). There exists a strong pressure on men and women to conform to gendered cultural norms of sexual behaviour (Conley et al., 2013) and research shows that when asked questions of their sexual behaviour, men and women tend to answer in ways that match gendered stereotypes (Alexander & Fisher, 2003; Fisher, 2007; Fisher, 2009; Fisher, 2013). Therefore, the differences in how men and women lie about their sexual history reflect pressures of towards women to restrict their female sexuality compared to men.

Previous research finds that in self-rated surveys, men tend to answer that they have more partners than women, on average (Alexander & Fischer, 2003). However, due to sexual interactions most often requiring two people, the average difference between sexes in partner number should be approximately equal in larger samples, assuming equal numbers of men and women (Wiederman, 1997). Research has found that when under the belief that they are connected to a lie detector test, men’s and women’s answers tend to become more similar, suggesting that men and women respectively exaggerate or minimize their answers about their sexual behaviour to match expected social norms when pressured to be truthful (Fisher, 2007; Fisher, 2009; Fisher, 2013). These findings suggest that women are pressured more than men to behave in ways that are sexually restricted and lie in ways that maintain that reputation.

It remains unanswered who women and men feel most pressured by to behave in ways that match gendered sexual norms. Who women and men feel most pressure from to match gendered sexual norms remains unanswered. One way to answer this question is to use a “bogus pipeline” methodology. The bogus pipeline methodology is a test in which participants are led to believe that they are being monitored by a lie detector and asked to
answer questions. Inspired by this “bogus pipeline” methodology (Fisher, 2007; 2009; 2013; Fisher & Brunell, 2014), I was interested in investigating how men and women might adjust their answers depending on who asks them questions about their sexual history. In Chapter 2, I test who men and women lie to most about their sexual history when asked by their mothers, fathers, friends, partners and dating prospects. By understanding who men and women to lie to most, and in what direction, my research aims to provide a better understanding of who perpetuates sexual double standards that pressure men and women to behave in gender-stereotyped ways.

Chapters 3 and 4: Female objectification and the suppression of female sexuality

The process of viewing another person as an instrument or object, usually for sexual goals, is known as objectification. Fredrickson & Roberts (1997) originally posited that women are more frequently viewed as bodies over other human qualities, leading to a commodified perception of women as sexual objects. Therefore, women who appear more sexualised (i.e., wearing tighter, well-fitted and more revealing clothing, wearing more makeup) are found to be more objectified than non-sexualised women (Loughnan et al., 2010; Gurung & Chrouser, 2007; Bernard et al., 2012; Cogoni et al., 2018). Women who are objectified are fundamentally denied mental capacity, or the mental ability to think, make decisions and feel emotions (Heflick et al., 2011; Loughnan et al., 2010; Gray et al., 2011). They are also denied moral status, or their ability to commit or knowingly receive good/bad actions (Loughnan et al., 2013). As a result of frequent objectification, women are also predicted to view themselves as bodies rather than full human beings, known as self-objectification, which can lead to additional consequences for women (Fredrickson, 1997;
Noll & Fredrickson, 1998; see Moradi & Huang for a review). Accordingly, objectification is hypothesised to be a mechanism of male patriarchal control over women (Fredrickson, 1997).

Objectification has been demonstrated using numerous methods. Previous studies have shown that sexualised women are perceived more similarly to animals or robots than non-sexualised women (Morris, Goldenberg & Boyd, 2018; Vaes et al., 2011) and perceived to be less mentally capable and deserving of moral status (Heflick & Goldenberg, 2009; Heflick et al., 2011; Loughnan et al., 2010; Loughnan et al., 2013). Similarly, evidence shows that women who are more sexualised are evaluated to have lower competence (Glick et al., 2005; Gurung & Chrouser, 2007). Other studies have shown that women perceived by a male gaze have more negative self-perceptions (Calogero, 2004) and are less willing to engage in social contexts (Saguy et al., 2010), reflecting consequences of self-objectification. Inversion-effect methodologies, which assess how easily an upside-down image of a person is recognized, have also revealed that at a basic cognitive level, sexualised women are identified using object-like recognition more than person-like recognition (Bernard et al., 2012; Bernard et al., 2018). Neuro-imaging techniques have further shown that sexualised women are compared to literal objects (Vaes et al., 2019) and activate fewer brain regions associated with positive and empathetic reactions than non-sexualised women (Cogoni et al., 2018). Thus, female objectification is a replicable phenomenon across multiple methods of measurement.

Being objectified can lead to serious consequences for women. Research shows that women who are objectified are perceived to lack in mental capacity and moral status (Heflick & Goldenberg, 2009; Heflick et al., 2011; Loughnan et al., 2010; Loughnan et al., 2013). This perception is found to increase men and women’s willingness to inflict pain...
tablets to objectified compared to non-objectified women (Loughnan et al., 2010). Additionally, men are more willing to behave sexually aggressively towards objectified women (Bevens & Loughnan, 2019), and women who self-objectify are found to see themselves as less competent, warm, human and moral (Loughnan et al., 2017). Self-objectification is also shown to associate with lower self-esteem, higher body-shame (Holland et al., 2017; Strelen & Hargreaves, 2005), greater anxiety, higher levels of depression, eating disorder and sexual dysfunction (see Moradi & Huang, 2008 for a review). These findings demonstrate that objectification can affect how women are viewed and treated by others as well as how women perceive themselves.

The fundamental perceptions associated with objectification—that a person lacks mental capacity or moral status—are perceptions that more generally relate to viewing a person as less than human (see Haslam, 2006; also see Haslam & Loughnan, 2014). These perceptions, known as dehumanization, are found to associate with other forms of prejudice (see Haslam & Loughnan, 2014; Haslam & Stratemeyer, 2016). For example, dehumanization is found to associate with racial attitudes towards African-Americans (Goff et al., 2008; Waytz et al., 2014) and animal-like comparisons of individuals occupying lower socioeconomic status (Loughnan et al., 2014; Schroeder et al., 2017). Sexualised women are also found to be dehumanised more than non-sexualised women (Morris et al., 2018; Puvia & Vaes, 2013; Puvia & Vaes, 2015; Vaes et al., 2011). Objectification can be considered one form of dehumanisation that involves denying another person’s capacity for thoughts and intentions, as well as their capacity for feelings and sensations—two dimensions of dehumanisation. Thus, men and women’s objectifying perceptions may be used to understand more general negative attitudes towards women.
Although female objectification was originally hypothesised as a means of patriarchal control (Fredrickson & Roberts, 1997), both men and women are found to objectify sexualised women more than non-sexualised women (Blake et al., 2016; Heflick & Goldenberg, 2009; Heflick et al., 2011; Morris et al., 2018; Strelan & Hargreaves, 2005). Men and women’s reasons for doing so, however, are found to differ (Vaes et al., 2011; Morris et al., 2018). Men are found to objectify women due to an activation of sexual goals (Vaes et al., 2011). These goals relate to men’s short-term mating goals (Gervais, Holland & Dodd, 2013) and are often increased by heightened feelings of power (Kunstman & Maner, 2011). Alternatively, women are found to dehumanize sexualised women due to a desire for distance from an objectified subgroup (Vaes et al., 2011). Women’s dehumanization is also found to relate to intrasexual competitiveness towards other women in the mating market, including negative perceptions of women who are perceived to be more attractive (Agthe et al., 2011) or more sexually available. These findings suggest many possible reasons of why men and women might objectify women.

What remains unclear, however, is to what extent each of these appearance-based perceptions of women increases female objectification. It may be that women’s attractiveness activates sexual goals in men (Fredrickson & Roberts, 1997; Gervais, Holland & Dodd, 2013) and competitiveness reactions in women (Agthe et al., 2011), subsequently increasing negative objectifying perceptions. Alternatively, it may be women’s perceived youthfulness and an associated lack, or perceived lack, of social power that increases how much women are objectified (Civile & Obhi, 2016; Kunstman & Maner, 2011). Or, a woman’s more revealing attire may increase assumptions that she is more open to casual sex, even though revealing attire is an inaccurate representation of a woman’s sexual intentions (Stillman & Maner, 2009). Perceptions of openness to casual sex may stir
negative attitudes towards women’s promiscuous behaviours (e.g., Pinsof & Haselton, 2017) which may thus increase objectifying perceptions towards her. This negativity towards women’s promiscuity may be particularly strong from low mate value men, as research shows that, compared to high mate value men, low mate value men have stronger negative reactions to increases in gender inequality (Blake & Brooks, 2018) and may have greater incentive to restrict women’s sexual opportunities (see Weeden & Kurzban, 2014). Understanding which appearance-based perceptions most strongly increase objectifying perceptions of women may uncover deeper motivations of female sexual suppression.

Another characteristic that may similarly influence positive and negative perceptions of women is how much makeup women wear. Makeup can increase women’s attractiveness (Batres et al., 2018; Borau & Bonnefon, 2019; Cash et al., 1989; Etcoff et al., 2011; Law-Smith et al., 2006) which can positively impact other perceptions of women’s social and personal traits (Dion et al., 1992; Maestripieri et al., 2017). Additionally, wearing makeup may positively affect women emotionally and psychologically (Datta Gupta et al., 2016; Korichi et al., 2008) and is shown to benefit women in the mating market (e.g., Mileva et al., 2016; Hill et al., 2012) and in professional settings (Netchaeva & Rees, 2016), though the amount of makeup women choose to wear, and the extent that makeup improves women’s self-perceptions, may vary depending on the context for which the makeup is applied (Cash et al., 1985; Wagstaff, 2018). However, research shows that, similar to sexualised appearance, wearing higher amounts of makeup is a frequently used but mostly inaccurate cue of women’s sexual behaviour (Batres et al., 2018). Thus, how much makeup a woman wears may be similarly related to objectifying perceptions of women.
Although a large amount of evidence shows that women are objectified, which appearance-based interpersonal perceptions lead to greater objectification remains unclear. In Chapter 3, I conducted a large correlational study to better understand how these appearance-based perceptions associate with men and women’s objectification of women. Additionally, although makeup is also associated with stereotypes of attractiveness and sexual behaviour, it remains unclear to what extent the amount of makeup a woman wears affects men’s and women’s objectifying perceptions of them. In Chapter 4, I test how the amount of makeup women wear influence men and women’s objectifying perceptions of these women and use moderated mediation models to understand how perceptions of attractiveness and sexual behaviour influence these objectifying perceptions. Furthermore, in Chapter 4 I experimentally test how wearing more makeup increases women’s self-perceptions, including self-agency and competitiveness, to understand why women choose to wear makeup given the possible risks of negative stereotypes. This test will also address recent findings that feeling physically and sexually valued—a perception characteristic of feeling objectified—may actually have positive effects on women’s self-perceived traits, rather than only negative effects of feeling objectified (Meltzer, 2019). The findings of these two Chapters will more broadly provide insight into what motivates men and women to hold perceptions that minimize perceptions of women and suppress women’s ability to express their sexuality.
Chapter 5: Stigma toward sex workers and the suppression of female sexuality

Involvement in sex work is relatively common. One survey of 6,773 people across the United Kingdom found that about one in five respondents had ever considered working in the sex industry, and 4.8% of respondents had been in the sex industry in some capacity (Sagar et al., 2015). Although discussion about sex work tends to focus on female street workers over other groups (Cusick, 2006), there is a large variety of jobs and hobbies that identify as forms of sex work (see Bleakley, 2014; Koken, 2012; Sahni & Shankar, 2016). Financially, young women may pursue sex work because they can earn a higher income from sex-work than non-sex work (Arunachalam & Shah, 2008; Edlund & Korn, 2002; Sahni & Shankar, 2016). Autonomous sex work may also increase women’s feelings of sexual agency and empowerment (see Ringrose et al., 2013; also see Vanwesenbeeck, 2009). However, these benefits may come with severe costs associated with exploitation, including victimization and sex trafficking (Ditmore, 2008; Doezema, 2002; Vanweesenbeck, 2001). Thus, the popularity, benefits and consequences of sex work varies widely.

Female sex workers are frequent targets of negative stigma. For example, female sex workers are stereotyped as greedy (Wong, Holroyd & Bingham, 2011), dirty (Whitaker et al., 2011) and unattractive (Ruys, Dijksterhuis & Corneille, 2008). Female sex workers are also targeted for physical abuse (Rhodes et al., 2008; Jorgensen, 2018) and disregarded in government policies that aim to eradicate sex work at the expense of female sex workers’ human rights (Sanders & Campbell, 2014). The strength of negative stigma towards female sex workers is an excellent example of female sexual suppression because stigma has historically been associated with issues of unwieldy female sexuality, social disorder...
(Sanders & Brents, 2017) and female sexual autonomy (e.g., Anderson, 2002; also see Gauthier, 2011). Therefore, understanding what aspects of female sex work drive this negative prejudice may reveal more fundamental reasons of why men and women attempt to restrict female sexuality.

The transactional nature of sex work, and its relation to other forms of sexual transaction, is of particular interest to general theories of the suppression of female sexuality. Indeed, feminist (Dworkin, 1997; MacKinnon, 1989; Richardson, 2018) and sexual economic literature (Baumeister & Vohs, 2004) have both developed hypotheses seeking to explain why stigma towards female sex workers is so strong. However, it is unclear whether this prejudice is fuelled by the direct exchange of money for sex or sexual services, the sex committed outside of marriage or long-term commitment, or the autonomy, or lack thereof, that exploited sex workers endure. In Chapter 5, I experimentally test which of these aspects, or what combinations of these aspects, of female sex work most strongly increase men and women’s dehumanizing perceptions towards women, a measure associated with prejudice. The findings of this experiment will provide a greater understanding of what aspects of sexual transaction drive negative attitudes towards female sex workers, and more broadly, what drives the suppression of female sexuality.

Thesis outline

I begin my thesis by investigating who may benefit most from perpetuating gendered social norms that demand that women are more sexually restricted than men. I do this by testing who men and women tell the biggest and most frequent lies to about their
sexual history (Chapter 2). This experiment will place theories based on cultural, evolutionary and economic frameworks on equal footing to critically test predictions of each.

I then shift my attention to understanding what appearance-based perceptions most strongly influence men and women to objectify women. First, I use a large correlational study to investigate how appearance-based perceptions of women’s youth, attractiveness and sexual associate with men and women’s objectifying perceptions (Chapter 3). Following this, I experimentally test how makeup application, another appearance-based characteristic, similarly objectifying perceptions of women and use mediation to determine how appearance-based perceptions of attractiveness and sexual behaviour influence objectification (Chapter 4). Additionally, I test whether makeup affects women’s self-perceptions of agency and competitiveness (Chapter 4).

Finally, I turn my focus to female sex workers, a group whose strong negative stigma is closely associated with female sexual suppression. To understand what aspects of sexual exchange – the sex itself, the money, or the autonomy – explain negative prejudice towards female sex work and women’s sexuality more generally (Chapter 5). In my final chapter (Chapter 6), I discuss what my findings reveal about who benefits from the suppression of female sexuality and how cross-disciplinary approaches may better inform our understanding of female sexual suppression.

Contribution statement

I have been solely or largely responsible for the conception, design, implementation, and analysis and manuscript preparation of all chapters, and I am to be first author on the
four manuscripts that are either published, in review, or soon to be submitted from Chapters 2-5. My supervisor Rob Brooks helped in the conception, design, analysis, and editing of Chapters 2 through 5 and in the editing of my overall thesis. My co-supervisor Khandis Blake helped in the conception, design, analysis, and editing of Chapters 3 through 5 and in the editing of my overall thesis. Barnaby Dixson assisted in the conception, design and editing of the Chapter 2 manuscript.
Chapter 2

Papa don’t preach? Using lies to expose the truth about who suppresses female sexuality

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This chapter has been accepted for publication as:

DJK, BJWD and RCB conceived and designed the experiment; DJK implemented the experiment, conducted statistical analysis, wrote and edited the manuscript; BJWD and RCB provided manuscript edits and supervision throughout the experiment implementation, statistical analysis and writing processes
Abstract

The suppression of sexuality is culturally widespread, and women’s sexual promiscuity, activity, and enjoyment are almost always judged and punished more harshly than men’s. It remains disputed, however, to what end people suppress sexuality, and who benefits from the suppression of female sexuality. Different theories predict that women in general, men in general, women’s intimate partners, or parents benefit most. Here we use the lies women and men tell – or imagine telling - about their sexual histories as an indirect measure of who is most involved in the suppression of sexuality. We asked men and women what they would reply if asked by their mother, father, current partner, attractive confederate and various same- or opposite-sex friends and colleagues questions about their previous number of sex partners, age at first romantic kiss, age at first consensual sex, and cheating on a previous partner or spouse. By comparing the size and direction of the lies that subjects told, we tested competing predictions of several cultural and evolutionary theories concerning why female sexuality is suppressed and who is driving its suppression. We found that men and women told larger lies to their parents, with women telling the largest lies of all to their fathers. Additionally, the majority of lies by both men and women were in sexually conservative directions. Our findings suggest that mothers, and especially fathers restrict female sexuality.
Introduction

Sexual activity, enjoyment and promiscuity (hereafter sexuality) is widely appreciated to have been suppressed by cultural means, and wherever it is suppressed, the sexuality of women and girls is more harshly suppressed than that of boys and men (Sherfey, 1966, Baumeister & Twenge, 2002). Customs such as female genital mutilation deny women the physical capacity to enjoy sex (Berg & Denison, 2013), and claustrophobia or the cultural requirement to conceal one’s skin or even one’s entire body render women publicly asexual and lacking in agency (Blake, Fourati & Brooks, 2018; Howard & Gibson, 2019). Less obviously, but more pervasively, customs such as the veneration of virginity, exchanging of purity vows and abstinence-only sex education may undermine girls’ and women’s psychological capacity to enjoy sex (Baumeister, Catanese & Vohs, 2001; Carpenter, 2002; Valenti, 2009). Women are judged more harshly than men for being sexually active and for having had multiple partners due to the widespread application of sexual double standards (Milhausen & Herold, 1999; Crawford & Popp, 2003; Conley, Ziegler & Moors, 2013).

Despite widespread evidence both for suppression and for sex differences in its strength, there remains little consensus on why suppression occurs, including who might benefit from it. The pioneering psychoanalyst Mary Jane Sherfey argued that the cultural suppression of sexual promiscuity, and particularly female sexuality was an essential step toward cooperative living in large-scale societies: “primitive woman’s sexual drive was too strong … to withstand the disciplined requirements of a settled family life—where many living children were necessary to a family’s well-being and where paternity had become as important as maternity in maintaining family and property cohesion” (Sherfey, 1966).
constrained female sexuality, according to Sherfey, would have allowed couples to raise a large brood together, providing many hands to help in the hard work of tending the farm and building family wealth. Sherfey’s is an historic explanation, based on the cultural success of norms and the societies that adopt them. The society as a whole and the family unit benefit from constraining women’s sexuality.

A second possibility is that suppressing women’s sexuality functions to benefit men and to reinforce the patriarchal power structures by which men constrain and subordinate women (e.g., Rudman, Fetterolf & Sanchez, 2013). This view typically treats women and men as classes of individuals, assuming that the ultimate goal of social discourse is the exertion of power by one class over another. Patriarchal power structures, such as religion and traditional family role hierarchies, are predominantly male-controlled and thought to act as social institutions which regulate norms of acceptable female behaviour (DeLamater, 1981). Suppressing female, but not male, sexuality frees men up to pursue a variety of sexual opportunities and roles while limiting women to a narrower range of social roles. Much of the suppression is thought to be affected via ‘social scripts’ or ‘social roles’ (e.g., Eagly & Wood 1991, 1999) that dictate the acceptable ways for women and men to express their sexuality and act on their desires. Such scripts are often either implicitly or explicitly considered to serve men’s interests.

A third type of explanation draws on evolutionary theory to discern individual motives and the effects of behaviour on personal fitness. Evolutionary ideas concerning sexual suppression draw principally on the relative costs of reproduction (and thus, historically, of sex), and on male uncertainty about the paternity of any children born to their mates. Parental investment theory hinges on Trivers’ (1972) insight that the relative investment made by male and female parents in each individual offspring should lead to sex
differences in sexual strategy, including the importance and nature of mate choice, and the potential gains from extra-pair mating. Women, throughout history, have had more to lose from an unrestricted sexuality because sex risks unplanned pregnancy and the attendant costs of gestation, lactation and the danger of dying in childbirth (Buss & Schmitt, 1993; Trivers, 1972; Symons, 1979). Self-suppression of sexuality might be a way for women to avoid these costs.

Suppressed sexuality might also be a way for women to persuade men of their paternity, increasing the adaptive profitability of male investments in the woman and her offspring. One study of 93 traditional societies in the Standard Cross-Cultural Sample (Gaulin & Schlegel 1980), showed that societies in which men invest heavily in their wives’ (and thus, ostensibly, their own) children tend to more heavily punish female infidelity and stifle women’s sexual autonomy. The bases for cross-cultural variation in sexual suppression are, however, complex. Another study of 186 traditional societies (Reiss, 1986), found that male jealousy and the suite of behaviours that map broadly to suppression of female sexuality are associated with large differences in economic and political power between women and men. This pattern is also consistent with the idea that sexual suppression arises out of patriarchal control of society.

Women certainly can and do benefit from pursuing extra-pair mating opportunities. Research on both the Himba of Namibia (Scelza, 2011b) and the Pimbwe of Tanzania (Borgerhoff Mulder, 2009) suggests that extra-pair mating can lead to greater reproductive success, increased opportunity for female partner choice and various genetic and material benefits for mothers and their children (see Scelza, 2013). However, the effects of extrapair relationships on women’s reproductive success may depend on the amount of additional support women receive from kin and non-parental caretakers during child raising (Adams et
Additionally, one study across 85 countries demonstrated that women’s multiple mating behaviour is linked to both economic and mating market dynamics (Barber, 2000), showing that the number of births outside of wedlock is most strongly correlated with male unemployment and female-biased sex ratios (i.e., a scarcity of men compared to women) (Barber, 2003). Thus, because the benefits of pursuing extrapair partners may be context-dependent, cultural standards that constrain female sexuality may still deter women from pursuing more than one male partner.

More recently, Baumeister and Twenge (2002) proposed that female sexuality is suppressed by women policing one another’s sexual behavior. This view arises from what Baumeister and his colleagues (Baumeister & Vohs 2004; Baumeister & Twenge, 2002) have termed ‘Sexual Economics’, according to which consensual heterosexual sex is a female-controlled resource (that men want) subject to social exchange for resources that men control (and women want). In areas where women are scarce compared to men (i.e., male-biased sex ratio), the greater demand for female partners provides women greater ability to determine the “price” of sex in a sexual exchange, which can increase men’s willingness for long-term commitment and paternal care (Schacht & Bell, 2016; see Stone, 2017 for a cross-cultural review). Thus, the relative scarcity of women who are available and willing to have sex imbues female consent with value, and the greater the scarcity the higher the value of the exchange for females. Women, then, benefit from the high prices for sexual exchange, and thus they seek to restrict not only how much sex other women are having, but also the outside perceptions of how much sex other women are having.

In their highly-cited ideas paper where they proposed this ‘Female Control’ theory of sexual suppression, Baumeister and Twenge (2002) marshall an impressive body of evidence in support of their idea. They claim that
The view that men suppress female sexuality received hardly any support and is flatly contradicted by some findings. Instead, the evidence favors the view that women have worked to stifle each other’s sexuality because sex is a limited resource that women use to negotiate with men, and scarcity gives women an advantage. (Baumeister & Twenge, 2002, p. 166)

Sexual Economics in general, and the Female Control hypothesis in particular, have stirred controversy, particularly among researchers committed to the importance of patriarchal control and the mechanisms of social roles or scripts (Rudman & Fetterolf, 2015; Rudman, 2017). Differences in how central tenets of Sexual Economics should be interpreted, combined with a scarcity of research testing these tenets, have fueled an ongoing debate about the validity of Sexual Economics (Rudman, Fetterolf & Sanchez, 2013; Rudman, 2017; Vohs & Baumeister, 2015). Up to this point, fair, high-powered experimental studies on Sexual Economics have been rare. However, tests of Sexual Economics and its alternatives would provide a useful empirical contribution to our understanding of sexual suppression and the many related, often controversial, phenomena.

One expression of sexual double standards can be seen in the lies people tell about their sexual histories. Studies that ask subjects to report aspects of their sexual history or desire, including their numbers of sex partners to date, age on sexual debut and ideal number of lifetime sex partners reveal moderate sex differences (Baumeister & Mendoza 2011; Buss & Schmitt, 1993; Oliver & Hyde, 1993; Peplau, 2003; Peterson & Hyde, 2010; Simpson & Gangestad, 1991). Some studies have suggested that sex differences in sex partner number and ideal number of sex partners may be due to men’s greater proclivity to pursue short-term mating opportunities compared to women, on average (Buss & Schmitt, 1993; Buss, 1994). However, some evidence shows that men and women do not differ in number of total partners desired (Pedersen et al., 2002) and that, as samples become larger,
the average difference between sexes in sex partner number should become approximately equal, assuming equal numbers of men and women (Wiederman, 1997). Instead, these differences may be due largely, or in part, to social desirability concerns, whereby extensive sexual experience, and sex outside of committed relationships is seen as less desirable in women than in men (see e.g. Rudman et al., 2013; Sakaluk & Milhausen, 2012).

Fisher (2007, 2009, 2013; Alexander & Fisher, 2003) recognised the heuristic potential of studying the lies that people tell about their sexual histories in an experimental context. By applying the so-called “bogus pipeline” methodology which leads subjects to believe they are being monitored by a lie detector, Fisher was able to infer the scale of the lies people tell by comparing the answers of participants hooked up to the “bogus pipeline” who felt pressure to answer honestly, against the answers of participants who answered more freely. Men and women were found to lie in gender-stereotyped directions when freely answering questions about their sexual history. However, when participants believed they were being monitored for honesty, the sex differences in self-reported answers were erased, and this was especially true of answers on sexual behaviour compared to other behaviours (Fisher, 2013). Thus, when men and women do not feel pressure to answer truthfully, they answer in a socially desirable way, on average. Crucially, gender-role expectations more strongly influence answers about sexuality and romance than on non-sexual topics, suggesting dishonest answers are not only due to a reluctance to disclose sensitive information (Fisher & Brunell, 2014).

Here we adopt the method of studying the “lies” people imagine telling about their sexual curricula vitae in order to gain insight into who might be most responsible for the suppression of sexuality in general, and women’s sexuality in particular. We focus on the relative incidence and magnitude of mismatch between what people tell us in anonymous
online preliminary questions (“before”) and what they then say they would tell various people were they to be asked in real life (“after”). For convenience we refer to deviations in the “after” measures, relative to the “before” measures, as “lies”, even though we expect that answers to both types of questions will be susceptible to dishonesty. The premise of our method, however, is that imagining what one would tell a particular person changes social desirability concerns in particular ways that reveal the social pressures participants imagine from that particular person. It might be a pressure to downplay, or to exaggerate one’s sexual history. It might, instead, exert a pressure to be more honest than in the exaggerated or downplayed “before” measure. In order to suit the preferred behaviour of their anticipated audience, participants’ imagined adjustments to what they say to another person may reveal their relationship with that person (Higgins, 1992, Higgins, 1999), as well as the importance of appearing sexually conservative or sexually liberal in their behaviour. An understanding of these person-specific deviations from the “before” measures is expected to provide insight into who may be most involved in, and might benefit most from, the perpetuation of sexual double standards.

**Hypotheses**

We test the predictions of four theories concerning why sexuality, and particularly female sexuality, is suppressed. Here we draw out predictions from each theory concerning who men and women would be expected to lie to most about their sexual past, and in what direction. Studying both women’s and men’s ostensible “lies” allows us both to test for the signature of double standards and, in some cases, to discern hypothetic predictions from different theories for the basis of suppression in contemporary societies.
**Patriarchy**

According to patriarchal control hypotheses, men’s commodification of women and their sexuality allows men to dominate hierarchical societal structures (Delamater, 1981; Lerner, 1986; Rudman et al., 2013). As a result, men pressure women to appear sexualized while establishing negative stigma towards women who engage in sexual behavior (Conley, Ziegler & Moors, 2013). Women are treated by men as sexual objects that lack mental capacity and moral status (Heflick et al., 2009; Heflick et al., 2011) which can cause women to view themselves as less autonomous (Fredrickson & Roberts, 1997; Moradi & Huang, 2008). In an attempt to avoid these consequences, patriarchal theory predicts that the largest, most frequent lies will be from women to men, including to fathers, male friends and sexual partners, to maintain a reputation of sexual restrictedness (prediction 1A).

Additionally, our reading of patriarchal theory is that men’s answers will either be no different from the “before” measures, or that they will be exaggerated, especially to other men (prediction 1B). Access to greater sexual opportunity may reflect status because this opportunity demonstrates the degree that some men can dominate and control women (Betzig, 1993; Smuts, 1992), and men may exaggerate their perceived sexual activity as a way to demonstrate status over women and other men.

**Paternity Certainty**

Male control of female sexuality may emerge from men’s desire to ensure paternity certainty (Smuts, 1995). A consequence of internal female gestation is that some men may sacrifice valuable parenting and resources to support a child sired by another man.
Establishing negative stereotypes of promiscuous women may serve men to deter women from pursuing multiple sexual relationships at one time, increasing male paternity certainty. Thus, women are expected to convey the appearance of sexual restriction to men such as husbands and current or prospective partners who are, or could become, the fathers of those women’s children. In terms relating our predicted outcomes, an explanation of paternity certainty predicts women to anticipate minimizing their sexual activity to partners or men that they were previously attracted to as potential partners (prediction 2A).

The paternity certainty benefits of reputation management for men are less clear, and so we predict that men will not downplay their sexual activity to partners in the same way we predict for women (prediction 2B).

Costs of sex

Due to greater energetic and opportunity costs post-conception for women than men (Trivers, 1972), women bear heavier consequences in unwanted pregnancy (e.g., gestation, child birth, parental care) (Buss & Schmitt, 1993). Women may suppress their own sexuality to avoid attracting unwanted, non-committal partners. Thus, women are predicted to lie to potential partners (including male friends) and current partners that they are less sexually active to establish a reputation of sexual reluctance (prediction 3A). On the other hand, men may lie upwards to male mating-market competitors about sexual activity to demonstrate their aptitude in attracting women and increase perceived social dominance (Jonason & Fisher, 2009; prediction 3B).

Additionally, parents can increase their own reproductive success, and possibly gain additional social and economic benefits, by ensuring their offspring choose a high quality, parentally committed mate (Perilloux, Fleischmann & Buss, 2008). This hypothesis, known
as the Daughter Guarding Hypothesis, purports that parents attempt to exert their own preferences onto their children’s – especially their daughter’s – partner because the energetic burden of unwanted or unexpected pregnancies is greater for women than men in a relationship (Buunk, Park & Dubbs, 2008; Perilloux et al., 2008; Apostolou, 2013). For example, in 96 percent of a sample of 190 foraging societies, parents played a role in offspring partner choice, primarily through marriage arrangement (Apostolou, 2007). Thus, sons and especially daughters are predicted to lie to their parents about their sexual history to appear sexually conservative because unwanted children can also be costly for parents (prediction 3C).

Sexual economics

Sexual economic theory posits that women collectively restrict the supply of sex in order to increase the average amount women within a community receive from men in a sexual exchange (Baumeister & Vohs, 2004). Thus, by using behaviours such as derogation and gossip, women create negative consequences as an incentive for women to suppress their sexual activity or at least keep this information hidden (Trinh, 2016; Muggleton et al., 2018). We therefore predict that women will imagine downplaying their sexual activity and tendency to be promiscuous to all women in their social circle, particularly to their mothers and to potential mating market competitors. However, close female friends tend to hold similar values and act as social support (Lyons et al., 2011), so the largest lies by women are expected to be directed to casual friends and colleagues because they still hold influence within an individual’s mating market (prediction 4A). This theory makes no assertions that would lead us to predict that men would either downplay or exaggerate their sexual activity.
Methods

Participants

Participants were recruited to take part in an online study through Amazon Mechanical Turk. A total of 1,571 participants ranging in age from 18 to 27 years of age (611 Women, 960 Men; $M_{age} = 24.0; SD_{age} = 2.37$) took part in the study. The majority of participants resided in the USA (68.6%) or India (22.7%). The Supplementary Material available online reports the full list of sample demographics (Appendix 2A).

Procedure

Participants completed an online questionnaire with a random-allocation experimental design, where each participant was randomly allocated to one treatment condition (i.e., answer questions about one target person). Participants were first asked to provide their age, sex, ethnicity, country of residence, educational level, relationship status and religious affiliation. Religiosity was assessed using one item: “Would you say, personally, you are religious?” (Yes/No; From Sheeran et al., 1993). Participants then completed the Kinsey Scale (Kinsey, 1948), a 7-item self-rating measure which assesses participants’ level of homosexuality (0 = Exclusively heterosexual, no homosexual; 6 = Exclusively homosexual, no heterosexual; 7 = Asexual).

Next, participants completed the Revised Sociosexual Orientation Inventory (R-SOI; Penke & Asendorpf, 2008), which is a 9-item measure assessing individuals’ willingness to engage in uncommitted sexual relationships (e.g., “Sex without love is OK”). Scores were aggregated to form a single sociosexual orientation value for each participant ($\alpha = 0.85$).
Following the R-SOI, we added 4 items – the “before” measures - asking participants to provide honest answers about their sexual history to make it seem as if these were additional items of the R-SOI. The four items were, “How many sexual partners have you had over your lifetime? (If you do not know the number precisely, provide your best guess)” (0 – 111 or more), “Have you ever cheated on a partner?” (“Yes” or “No”), “How old were you when you had your first romantic kiss? (as far as you can recall)?” (10 or less – 111 or more), and “How old were you when you first had consensual sex? (as far as you can recall)?” (14 or less – 111 or more). The scale for age at first kiss begins at “10 or less” because most children have entered puberty at this age and kisses are more likely to be viewed romantically. The scale for age at first consensual sex begins at “14 or less” because this is the minimum age to provide legal consent to sex in a majority of countries. We did not wish to provide numbers less than these minimum values in order to protect the anonymity of our participants and to prevent participants from choosing to answer unrealistically low numbers as a way of ‘opting out’ of answering the question, decreasing the potential reliability of our statistical analyses. The highest value for all three scales was selected as “111 or more” in order to allow a wide range of possible answers to sex partner number, age at first kiss and age at first consensual sex. We also wished to avoid making this number an even “100” to discourage participants from ‘opting out’ of answering the question by choosing an even, rounded number. Following this section, participants read:

“We are about to ask you some hypothetical questions that require a numeric response. Please give the most likely numeric response no matter how unlikely you are to ever face the scenario described. At the end we will give you a chance to say how likely the scenarios actually are”.

Participants were randomly assigned one target of a possible twelve targets to answer questions about: mother, father, partner, the last person they were attracted to, close friend (same-sex or opposite sex), friend (same-sex or opposite sex), colleague (same-sex or opposite sex) or acquaintance (same-sex or opposite sex). Participants were asked several questions to focus them on their selected person (e.g., “When did you last speak to X person”).

Participants answered the following four questions in random order: “If X person were to ask you, “How many people have you had sex with?” how many would you tell him/her?” (0 – 111 or more), “If X person were to ask you, “How old were you when you had your first romantic kiss?” what would you tell him/her?” (10 or less – 111 or more), “If X person were to ask you, “How old were you when you first had consensual sex?” what age would you tell him/her? (14 or less – 111 or more), and “If X person were to ask you, “Have you ever cheated on your spouse or partner?” what would you reply?” (“Yes” or “No”). After these four questions, participants answered “How likely is it that you would actually talk to this person about these topics?” (1 = Extremely unlikely; 7 = Extremely likely). The answers to these questions constitute the “after” measures.

Due to the survey being conducted anonymously online, we were unable to be certain whether participants answered either the “before” or the “after” questions honestly. However, any difference between the anonymous “before” answers and the “after” answers participants anticipate telling their allocated target person is only possible if at least one of the two answers is untruthful. This difference is of greatest interest to us, because this difference indicates the effect of the target person on a participant’s answer. If understood in this way, participants may craft their answers to questions about their sexual history to suit their anticipated audience (Higgins, 1992; Higgins, 1999).
It is difficult to be certain that an anticipated difference in what a participant has answered in the “before” compared to the “after” question represents an actual lie. It may be that this is only an imagined lie, and does not represent actual behaviour. Although an anticipated answer is not an actual lie, an anticipated response is still reflective of each participant’s decisions (and of the relationship they have with the person asking them questions). Though the reasons for their discrepancy are less clear, the participant has anticipated that they would not tell a true answer to their allocated person if asked.

Attention and reliability check

We removed 195 participants for self-reporting as primarily or exclusively non-heterosexual due to our hypotheses – and recruitment materials - being specific to heterosexual individuals. Additionally, to increase reliability and as an attention check against participants who completed the experiment with the goal of completing the survey quickly, we removed from the analyses for each question answers that exceeded 100 previous sex partners. This method is similar to that used by Fisher (2007; 2009), who removed the upper and lower 5% of the data distribution. Participants who stated their age of first kiss or first sex that was older than their actual age were also removed because it was unclear whether the subject had chosen not to disclose this information or whether they had never kissed or had sex. This also acted as an in-built attention check for to ensure participants were answering questions with consistency throughout the survey. Two additional extreme outliers were identified, one in each of age of first kiss and age of first consensual sex analyses, and were each removed to decrease skew of residuals. This left a final sample number of 1,385 participants (530 women) for analysis of number of previous
sex partners, 1360 participants (521 women) for analysis of age at first kiss, 1,297 participants (496 women) for analysis of age at first consensual sex, and 1,395 participants (531 women) for analysis of cheating behaviour.

**Analysis**

The size of the lies told by participants was calculated by subtracting the “after” answer each participant anticipated admitting to their target person from the “before” answer. To reduce skew on the distribution resulting from a high density of participants with differences of 0 or 1 (i.e., participants anticipated telling the “truth” or telling a small lie), we transformed the data using a $\log_{10} + 1$ transformation on the values of the “after” and “before” answers. Each transformed “after” answer directed to targets was then subtracted from the transformed “before” answer from the preliminary questions.

To investigate the differences in the size of the lies told by participants to each target person about number of previous sex partners, age at first kiss and age at first sex, we used 2 (participant sex: Male, Female) × 2 (target person sex: Same-sex, opposite sex) × 7 (participant-target relation: Parents, partner, last person attracted to, close friend, friend, colleague, acquaintance) multilevel models with the difference between log transformed “after” and “before” answers to each question as dependent variables. To control for cultural effects between countries, participant-target relation answer depending on country of residence was included as a random slope variable in each model. We used an additional Monte-Carlo randomization as a resampling technique to verify significant effects of multilevel model results as the large number of non-lies or small lies meant that no transformation could ensure that residuals were normally distributed. Although we
measured participant SOI, we elected to not include SOI as a covariate in our data analysis due to anticipated issues of including a covariate that uses very similar items to our dependent variables in our models. Data and code are available on the Open Science Framework at https://osf.io/e4vja/?view_only=a1d3b86d32ef4b149751e77c3856d59d.

To test for differences in the frequency of before-after deviations concerning number of previous sex partners, age at first kiss, age at first sex, and cheating behaviour, we used 4 logistic regression models to test for effects of participant sex, target sex, participant-target relation and their interactions on lying behaviour. The dependent variable in each model was a two-level categorical variable of whether the participant’s anticipated answer was the same as the “before” answer or different. To determine which variables best predicted discrepancies, an initial likelihood ratio test was completed for each dependent variable. The baseline model included only the dependent variable, then added each variable or interaction individually at each level in the order of participant sex, target sex, participant-target relation, two-way interactions between predictors, and three-way interactions between predictors. We calculated odds ratio coefficients and confidence intervals using the best-fit model according to the likelihood ratio test.

Results

“Before” measures

According to the “before” measures, there were no sex differences in number of previous sex partners to date, but women were significantly younger at first consensual sex, and marginally younger at first romantic kiss than men (Table 2.1). There was a marginally significant difference between sexes in likeliness to report having cheated on a partner, with
women more likely than men to report having previously cheated on a partner (Men = 22.8%, Women = 27.9%; Fishers Exact test $p = 0.054$).

### Table 2.1

Average ‘before’ answers from preliminary questions by male and female participants about sexual history and t-test results of differences between average ‘before’ answers.

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>df</th>
<th>F</th>
<th>$\eta_p^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of previous sex</td>
<td>5.93 (8.56)</td>
<td>6.36 (8.30)</td>
<td>1,1383</td>
<td>0.85</td>
<td>.0006</td>
<td>.357</td>
</tr>
<tr>
<td>partners</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of first kiss</td>
<td>16.08 (3.43)</td>
<td>15.72 (3.28)</td>
<td>1,1359</td>
<td>3.54</td>
<td>.0025</td>
<td>.060</td>
</tr>
<tr>
<td>Age of first consensual sex</td>
<td>18.62 (2.89)</td>
<td>18.15 (2.86)</td>
<td>1,1299</td>
<td>7.81</td>
<td>.0047</td>
<td>.005</td>
</tr>
</tbody>
</table>

### Discrepancies: Number of previous sexual partners

A total of 526 participants (170 women, 32% of overall female sample; 356 men, 42% of overall male sample) imagined admitting a different number of previous sex partners to their target person than the number given in the “before” measures. The majority of discrepancies involved anticipating telling the target person that they had fewer previous sex partners than they had said in the “before” measures (76%) (see Figure 2.1). Men anticipated lying significantly more frequently than women (Men = 42%, Women = 32%; Table 2.3; Table 2.4). The frequency of lies was significantly affected by the participants’ relation to their target (Table 2.3), with both men’s and women’s most frequent anticipated lie being directed to fathers (Men = 51%; Women = 55%; Table 2.3; see Figure 2.2).

The average size of lies did not differ between men and women, but larger lies were told to opposite sex targets, and women told significantly bigger lies on average to same-
sex targets than men (Women = -1.12 partners; Men = -0.16 partners; see Table 2.2).

Participants’ anticipated answers did not significantly differ depending on the participants’
relation to their target person, but the anticipated size of lies women told differed to men,
driven primarily by the large deflating lies men anticipate telling their opposite-sex
colleagues compared to women (Men: M = -1.92 partners, SE = 0.53; Women: M = -0.53
partners, SE = 0.91; Figure 2.1).
Table 2.2. Linear multilevel regression results of effects of participant sex, sex of target person ($\text{Sex}_{TP}$), participant relation to target person ($\text{Relation}_{TP}$) and interaction effects on the discrepancy between “after” answers to targets and “before” answers (i.e., the size of the anticipated “lie”). Each model included a random slope effect of participant-target relation $\times$ country of residence to control for effects of cultural differences on each dependent variable.

<table>
<thead>
<tr>
<th></th>
<th>SP Number</th>
<th>Age at first kiss</th>
<th>Age at first sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
<td>F</td>
<td>$p$</td>
</tr>
<tr>
<td>Participant Sex</td>
<td>1</td>
<td>0.003</td>
<td>.957</td>
</tr>
<tr>
<td>Target Person Sex ($\text{Sex}_{TP}$)</td>
<td>1</td>
<td>9.74</td>
<td>.002</td>
</tr>
<tr>
<td>Participant-Target Relation ($\text{Relation}_{TP}$)</td>
<td>6</td>
<td>2.19</td>
<td>.134</td>
</tr>
<tr>
<td>Participant Sex $\times$ $\text{Sex}_{TP}$</td>
<td>1</td>
<td>3.27</td>
<td>.038</td>
</tr>
<tr>
<td>Participant Sex $\times$ $\text{Relation}_{TP}$</td>
<td>6</td>
<td>2.62</td>
<td>.012</td>
</tr>
<tr>
<td>$\text{Sex}<em>{TP}$ $\times$ $\text{Relation}</em>{TP}$</td>
<td>4</td>
<td>0.71</td>
<td>.403</td>
</tr>
<tr>
<td>Participant Sex $\times$ $\text{Sex}<em>{TP}$ $\times$ $\text{Relation}</em>{TP}$</td>
<td>4</td>
<td>1.28</td>
<td>.343</td>
</tr>
</tbody>
</table>
Table 2.3. Likelihood ratio tests for logistic regression analyses, testing which level of model complexity has the best goodness-of-fit for each dependent variable.

<table>
<thead>
<tr>
<th></th>
<th>Number of Sex Partners</th>
<th>Age at First Kiss</th>
<th>Age at First Sex</th>
<th>Cheating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>d.f.</td>
<td>$\chi^2$</td>
<td>$p$</td>
<td>d.f.</td>
</tr>
<tr>
<td>Participant Sex ($Sex_p$)</td>
<td>1</td>
<td>12.83</td>
<td>&lt; .001</td>
<td>1</td>
</tr>
<tr>
<td>Target Person Sex ($Sex_{TP}$)</td>
<td>1</td>
<td>2.46</td>
<td>.117</td>
<td>1</td>
</tr>
<tr>
<td>Relation to Target Person (Relation$_{TP}$)</td>
<td>6</td>
<td>16.30</td>
<td>.012</td>
<td>6</td>
</tr>
<tr>
<td>$Sex_p \times Sex_{TP}$</td>
<td>1</td>
<td>0.007</td>
<td>.903</td>
<td>1</td>
</tr>
<tr>
<td>$Sex_p \times Relation_{TP}$</td>
<td>6</td>
<td>4.64</td>
<td>.591</td>
<td>6</td>
</tr>
<tr>
<td>$Sex_{TP} \times Relation_{TP}$</td>
<td>4</td>
<td>6.26</td>
<td>.180</td>
<td>4</td>
</tr>
<tr>
<td>$Sex_p \times Sex_{TP} \times Relation_{TP}$</td>
<td>4</td>
<td>5.54</td>
<td>.236</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: Each row represents one level within each likelihood ratio test, added in the order presented.
Table 2.4. Logistic regression results testing for differences in the frequency that participants anticipated telling a “lie” to their target person (i.e., choosing to provide a different “after” answer to their target person than their “before” answer in the preliminary questions). Models include variable levels according to likelihood ratio tests (Table 2.3).

<table>
<thead>
<tr>
<th>Number of Partners</th>
<th>Age of first kiss</th>
<th>Age of first sex</th>
<th>Cheating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>OR (CI)</td>
<td>p</td>
</tr>
<tr>
<td>Participant Sex (Sexp)</td>
<td>0.42</td>
<td>1.52 (1.21, 1.91)</td>
<td>.000</td>
</tr>
<tr>
<td>Target Person Sex (SexTP)</td>
<td>-0.21</td>
<td>0.81 (0.64, 1.03)</td>
<td>.090</td>
</tr>
<tr>
<td>Relation to Target Person (RelationTP)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last Person Attracted to</td>
<td>-0.10</td>
<td>0.91 (0.56, 1.48)</td>
<td>.701</td>
</tr>
<tr>
<td>Close Friend</td>
<td>-0.19</td>
<td>0.83 (0.56, 1.23)</td>
<td>.343</td>
</tr>
<tr>
<td>Colleague</td>
<td>-0.03</td>
<td>0.97 (0.66, 1.43)</td>
<td>.880</td>
</tr>
<tr>
<td>Friend</td>
<td>0.15</td>
<td>1.16 (0.79, 1.70)</td>
<td>.461</td>
</tr>
<tr>
<td>Parent</td>
<td>0.51</td>
<td>1.66 (1.14, 2.42)</td>
<td>.009</td>
</tr>
<tr>
<td>Partner</td>
<td>0.15</td>
<td>1.16 (0.72, 1.88)</td>
<td>.539</td>
</tr>
<tr>
<td>Sexp × SexTP</td>
<td>1.70</td>
<td>5.45 (0.92, 32.38)</td>
<td>.062</td>
</tr>
<tr>
<td>Sexp × RelationTP</td>
<td></td>
<td></td>
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<tr>
<td>Sexp × Attracted to</td>
<td>0.14</td>
<td>1.15 (0.92, 32.38)</td>
<td>.826</td>
</tr>
<tr>
<td>Sexp × Close Friend</td>
<td>0.96</td>
<td>2.62 (0.33, 3.96)</td>
<td>.180</td>
</tr>
<tr>
<td>Sexp × Colleague</td>
<td>0.28</td>
<td>1.32 (0.64, 10.75)</td>
<td>.683</td>
</tr>
<tr>
<td>Sexp × Friend</td>
<td>-0.12</td>
<td>0.89 (0.25, 3.15)</td>
<td>.856</td>
</tr>
<tr>
<td>Sexp × Parent</td>
<td>-0.77</td>
<td>0.46 (0.14, 1.58)</td>
<td>.219</td>
</tr>
<tr>
<td>Sexp × Partner</td>
<td>0.27</td>
<td>1.31 (0.34, 5.02)</td>
<td>.699</td>
</tr>
<tr>
<td>SexTP × RelationTP</td>
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<tr>
<td>SexTP × Close Friend</td>
<td>2.55</td>
<td>12.77 (1.76, 92.46)</td>
<td>.012</td>
</tr>
<tr>
<td>SexTP × Colleague</td>
<td>1.38</td>
<td>3.96 (0.54, 29.08)</td>
<td>.176</td>
</tr>
<tr>
<td>SexTP × Friend</td>
<td>1.63</td>
<td>5.09 (0.80, 32.45)</td>
<td>.085</td>
</tr>
<tr>
<td>SexTP × Parent</td>
<td>1.03</td>
<td>2.80 (0.45, 17.49)</td>
<td>.271</td>
</tr>
<tr>
<td>Sexp × SexTP × RelationTP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexp × SexTP × Close Friend</td>
<td>-3.30</td>
<td>0.04 (0.00, 0.36)</td>
<td>.004</td>
</tr>
<tr>
<td>Sexp × SexTP × Colleague</td>
<td>-1.30</td>
<td>0.27 (0.03, 2.63)</td>
<td>.260</td>
</tr>
<tr>
<td>Sexp × SexTP × Friend</td>
<td>-1.96</td>
<td>0.14 (0.02, 1.21)</td>
<td>.075</td>
</tr>
<tr>
<td>Sexp × SexTP × Parent</td>
<td>-1.17</td>
<td>0.31 (0.04, 2.58)</td>
<td>.280</td>
</tr>
</tbody>
</table>

Note: Reference levels for fixed factors: RelationTP = Acquaintance, Sexp = Woman, SexTP = Same-sex. Odds ratios and confidence intervals must be interpreted relative to reference level, with parameters greater than or less than 0 suggesting greater odds than the reference level.
Figure 2.1. Average size and direction of discrepancy between participants’ “after” answer to their target person and their “before” answer in the preliminary questions about number of previous sexual partners. Error bars represent standard error.
Figure 2.2. Percentage of participants with discrepancy between their “after” answer to their target person and their “before” answer in the preliminary questions and the direction of discrepancy about number of previous sexual partners.

Discrepancies: Age at first romantic kiss

A total of 333 participants (117 women, 22% of overall female sample; 216 men, 26% of overall male sample) imagined admitting a different age at first romantic kiss to their target person than the age stated in the “before” measures. Discrepancies for women and men went in both older and younger directions. There was no significant difference between men and women in the overall frequency of anticipated discrepancies and no
difference in the frequency of discrepancies participants anticipated telling opposite-sex targets compared to same-sex targets (Table 2.3). There was a significant effect of the participant’s relation to their target on anticipated lie frequency (Table 2.3) with parents significantly increasing the odds of participants choosing to tell a lie about their age of first kiss (Table 2.4). Women anticipated lying most often to their fathers (44%) whereas men lied most frequently to the last person they were attracted to (35%) and to their mothers (35%; see Figure 2.3). Additionally, a significant two-way interaction between participant sex × target relation and a significant three-way interaction between participant sex × target sex × target relation emerged, driven primarily by greater number of lies men anticipated telling their opposite sex close friends compared to women (Men = 27% anticipated lying; Women = 11% anticipated lying; Table 2.4).

The size of the discrepancies did not differ between men and women and did not depend on whether the target was the same- or opposite sex to the participant (Table 2.2). Furthermore, the relation of the target to the participant did not influence the size of the discrepancy after controlling for variation from the participant’s country of residence (Table 2.2). There were no significant interaction effects (Table 2.2).
Figure 2.3. Percentage of participants with discrepancies between their “after” answer to their target person and their “before” answer in the preliminary questions and the direction of the discrepancy about age at first romantic kiss (top) and age at first consensual sex (bottom).
Discrepancies: Age at first consensual sex

A total of 331 participants (119 women, 24% of total overall female sample; 212 men, 27% of overall male sample) imagined they would admit a different age at first consensual sex to their target person than the age given during the “before” measures. Discrepancies for both men and women were more often in the direction of telling their target person an older age than they had told us during “before” measures (Men = 58% of discrepancies; Women = 71%). The sex of the participant and the sex of the target did not significantly affect discrepancy frequency (Table 2.3). Relation to the target person significantly increased the frequency of lies told by men and women (Table 2.3) driven by the greater number of anticipated lies directed to their fathers (Women = 74%, Men = 49%) and mothers (Women = 45%, Men = 29%; see Table 2.4; see Figure 2.3). Additionally, a significant interaction between participant sex and relation to target emerged (Table 2.3) suggesting men and women’s relation to their target affected how often they anticipated giving a discrepant “after” answer. There was no particular target relation that appeared to drive this effect (Table 4).

Women who give discrepant answers told significantly larger lies than men on average (Table 2.2). The size of the discrepancy depended on the participant’s relation to their target person, with both women and men anticipating admitting their largest lies on average to their parents (Figure 2.4; Table 2.2). Overall, participants did not tell bigger lies overall to opposite sex compared to same-sex targets (Table 2.2). However, men and women differed in the size of the lies they imagined telling opposite sex compared to same-sex targets, and this result appears to be driven by the especially large lies women
anticipated telling their fathers (Table 2.2; Figure 2.4). The size of the lies men and women anticipated telling also differed depending on their relation to the target person, likely driven by the differences in smaller-sized lies men and women imagined telling to non-parent targets (Table 2.2; Figure 2.4). Additionally, the size of the lies told to opposite compared to same-sex targets depended on the participant’s relation to the target, with the greatest difference being between the lies women anticipate telling fathers compared to their mothers (Figure 2.4).

**Figure 2.4.** Average size and direction of discrepancy between participants’ “after” answer to their target person and their “before” answer in the preliminary questions about age of first consensual sex. Error bars represent standard error.
Discrepancies: Cheated on a previous partner

A total of 338 participants (148 women, 28% of overall female sample; 190 men, 22% of overall male sample) answered that they had cheated previously on a partner or spouse when asked in “before” measures (see Figure 2.5). Among those participants, whether they anticipated giving a discrepant answer about having cheated if asked by their nominated target person was significantly affected by the sex of the target person (Table 2.3), with both men and women more likely to give discrepant answers to targets of the opposite sex. The likelihood of discrepancy was independent of the sex of the participant, their relation to the target and all higher interactions (Table 2.3). This suggests whether men and women lied about having previously cheated depended only on the sex of the target, but neither sex was more likely to lie than the other.
Likeliness to discuss with target person

The likeliness of discussing the issues above with the target person depended on the sex of the target ($F_{1,1365} = 23.77, p < .001$) and participant’s relation to the target ($F_{6,17} = 11.01, p < .001$), with the parents being the most unlikely to be discussed with ($\beta = -1.56, t_{24} = -3.87, p = .004$; Figure 2.5). Men and women also differed significantly in which
target sex they were more likely to discuss these questions with ($F_{1,1365} = 13.17, p < .001$). Men felt they were least likely to discuss sexual history with fathers and mothers, whereas women felt they were least likely to discuss sexual history with their fathers and with opposite sex acquaintances (Figure 2.6).

**Figure 2.6.** Average likeliness to talk to target person about sexual history questions and standard error (1 = Not at all; 7 = Very Likely).
Due to our finding that participants feel least likely to speak to parents about topics of sexual history, we conducted mediation analyses to test whether the frequency or the size of the lie participants anticipated telling was mediated by the anticipated likeliness to speak to their parents. Applying bootstrapping procedures outlined by MacKinnon et al. (2002), we found that participants’ anticipated likelihood to speak to their target did not significantly mediate the frequency or size of lies admitted to parents about sex partner number, the frequency of lies admitted about age at first kiss, or the size of the lies admitted about age at first sex. However, we did find that likeliness significantly mediated the frequency of discrepant answers participants anticipated giving their parents about consensual sex ($\beta = 0.02, SE = 0.009, p = .032$), suggesting the more unlikely the participant felt they were to speak to their parents these topics, the more likely they were to lie to their parents about these topics.

Discussion

Although there has been a great deal of research on the topic of female sexual suppression, it still remains unclear who benefits from the perpetuation of gendered sexual double standards. We asked men and women what they anticipated telling members of their family, friends or partners if asked about their sexual history, in order to test who men and women felt most pressured by to downplay, or exaggerate, their sexual history. Even though the amount that each person is “lied” to does not indicate whether that person necessarily benefits from more conservative or liberal sexual behaviour implied by their answers, it does suggest that men and women place greater importance on sexual reputation management for certain people more than other people. The importance of a reputation, and
hence the willingness to “lie” to maintain this reputation, may be due to the anticipated cost of diverging from their expected level of sexual behaviour to certain people. Thus, it may be that certain people suggest greater consequences to some men or some women for diverging from their preferred level of sexual activity, presumably because there is some benefit to managing this level of sexual behaviour. Within our experiment, although there is a possibility that a downplayed or exaggerated response to the target person is a more honest answer than answers the participant gave us in the “before” measures, for simplicity, we talk about discrepant answers throughout this discussion as “lies” and interpret the anticipated answer to the target person as the anticipated lie.

We find that both men and women anticipate lying most frequently to their parents. In particular, women most frequently anticipate lying to their fathers, anticipate telling the biggest lies to their fathers, and anticipate being least likely to discuss past sexual behaviour with their fathers. Additionally, we find men more than women anticipate telling larger or more frequent lies to opposite sex people in their social circles, such as close friends and colleagues. Furthermore, we find all targets had some proportion of participants either downplay or exaggerate their “after” answers directed to them, suggesting that all targets may have varying amounts of influence on anticipated lying behaviour. When men and women did anticipate lying they tended to lie in conservative directions, answering that they had fewer previous sex partners, were older at the time of first kiss and first sex, and had not cheated on a partner previously. Thus, our findings show that men, and especially women, anticipate being most likely to lie to parents, particularly their fathers, and they do so in the direction predicted if parents are agents of sexual suppression.

Our finding that women lie most to their parents and especially their fathers supports evolutionary predictions that parents may pressure their children to restrict their
sexual behaviour. According to these predictions, parents encourage sexual restriction because they are invested in the reproductive success of their children, in line with prediction 3C (Buunk, Park & Dubbs, 2008; Buunk, Park & Duncan, 2009; Perilloux et al. 2008; Apostolou, 2007; Apostolou, 2012; Burnstein, Crandall & Kitayama, 1994). In particular, our results match predictions of the Daughter Guarding Hypothesis (Perilloux et al. 2008), which posits that parents place greater pressure on daughters than sons to maintain sexual restriction, arguing that this increased pressure is due to the higher costs of an unwanted pregnancy for parents of daughters than parents of sons. According to this line of thinking, parents are at greater risk of having to provide their daughters support in raising an unwanted child than they are of having to do the same for their sons because it is more difficult for women to abandon an unwanted child compared to men. As a result, parents attempt to prevent their daughters from unwanted pregnancies through partner choice manipulation (Apostolou, 2013; Perilloux, Fleischman & Buss, 2011) and disapproval of promiscuous behaviour (Perilloux et al. 2008). Thus, our finding that women anticipate telling the biggest lies about their sexual history to their parents suggests a central role for parents in the suppression of female sexuality, and the possibility that such suppression acts to the benefit of parents.

In addition to both sexes telling the biggest lies to their fathers, they, and daughters in particular, report feeling least likely to speak to fathers about topics of sexual history compared to all other targets. Evidence suggests that fathers discuss topics of sexual behaviour with their children less often than mothers (Wilson & Koo, 2010). When conversations about sexual behaviour do materialize, fathers are more likely to preach abstinence and discuss consequences of sex and pregnancy with daughters than sons (Wilson & Koo, 2010; DiLorio, Kelley & Hockenberry-Eaton, 1999). Hence, fathers may
act as a voice of sexual restrictedness which can lead to more sexually conservative
behaviour by their daughters. Additionally, daughters who lose their fathers in adolescence
are found to commit to faster life-history strategies due to less certain support (Shenk &
Scelza, 2012). Behaviours include engaging in sex earlier (Boothroyd & Cross, 2017),
competing more with other women and utilizing more non-verbal seduction techniques to
attract male partners (van Brummen – Grigori & Buunk, 2016). This increase in the
seductive and sexual behaviour of girls without fathers may help to explain why teenage
pregnancy rates are 7 to 8 times higher for girls who lose a father early in life (Ellis et al.,
2003). Thus, the presence of fathers who support and invest in their daughters and preach
values of restricted sexuality, even sparingly, may do a great deal to pressure daughters to
engage less frequently in behaviours that increase the chances of becoming pregnant in
adolescence. Moreover, our finding that women lie most to their fathers may indicate that
women are reluctant to lose the support of their fathers by acting less sexually restricted.

One relevant example of how women’s reluctance to lose support from parents can
lead to consequences more than lying behaviour is the incidences of “forced adoptions” that
occurred in Australia between 1950 and 1975 (see Cuthbert & Quarterly, 2012 for a
summary). In response to a 2 to 5 times increase in the rate of child births by unmarried
women in Australia between 1947 and 1971 (Ruzicka, 1975), Australian parliament passed
legislation to ease the process of legal adoption, leading to an increase in its popularity
(Higgins, 2010). Unmarried mothers often felt pressured to place their children up for
adoption after many parents threatened to withdraw their family support of the child, and in
many cases unmarried pregnant women were persuaded by their families to give birth in
secret, ostensibly to protect their family’s reputation (Kenny et al., 2012). Considering
evidence that men are more likely to control household finances (Bernasek & Bajtelsmit,
2002), daughters may feel especially pressured by their fathers to avoid risking the loss of future financial support. Events like forced adoptions were not unique to Australia at that time, as many similar global suppressive incidences occurred following the Sexual Revolution. Our findings are consistent with the theme of strong suppressive pressure from family, especially parents, swaying women to act in the interests of their family.

We find men anticipate telling larger lies or anticipate lying more frequently to various opposite sex friends compared to women. More specifically, we find men anticipate downplaying to opposite-sex colleagues about number of previous sexual partners and anticipate more frequently telling opposite sex close friends they were older at first sex than their “before” measures suggest. Women, by contrast, did not do the same things. Female colleagues and close friends may be perceived by some men as potential romantic partners, especially by men with higher sociosexuality (Bleske-Rechek & Buss, 2001; Bleske-Rechek et al., 2012). Lying may provide a useful strategy for men to establish a reputation of faithfulness if an opportunity for a romantic relationship materialized. However, given that men did not lie to opposite sex friends and colleagues consistently about all questions of sexual behaviour, additional experiments may be required to increase certainty of the influence of opposite sex friends on increasing men’s lying behaviour.

All targets, including friends, colleagues, partners and people previously attracted to, were anticipated to be lied to by some men and women. Hence, although parents may induce the greatest pressure on individuals to act sexually restricted, there appears to be some social desirability to downplay or exaggerate one’s sexual history to prospective partners, current partners and various groups of friends. Although studies have found that men and women acknowledge the presence of a sexual double standard (Kreager & Staff, 2009; Lyons et al., 2011), many individuals do not endorse a double standard and judge
both men and women negatively for having a greater number of sex partners (Marks & Fraley, 2005; Allison & Risman, 2013). Negative appraisals may be especially prevalent when men and women are evaluated as potential partners for a long-term rather than short-term relationship (Stewart-Williams, Butler & Thomas, 2016). Therefore, our finding that both women and men lied in more conservative directions on average may represent a desire to uphold an overall reputation of sexual restrictedness within their entire social circle.

Our findings are at odds with the predictions of the patriarchal, paternity certainty and sexual economics explanations for suppression of female sexuality. Patriarchal theory predicts that because all men benefit from the commodification of women (Lerner, 1986; Rudman, Fetterolf & Sanchez, 2013), women will suppress information of their sexual history to men (prediction 1A), whereas men may exaggerate their sexual experience to increase status (prediction 1B). When asked about their sexual history, however, women did not lie more to all male targets including friends, partners and parents and men did not exaggerate their sexual experience as patriarchy theory predicts. This suggests not all men are involved in suppressing women’s sexuality.

Evolutionary explanations of paternity certainty (Smuts, 1995; Daly et al., 1982; Buss & Haselton, 2005; Hill & DelPriore, 2012) predict that women may lie more to husbands, partners and potential romantic partners to provide men with more confidence in their faithfulness as romantic partners (prediction 2A). Yet when asked about their sexual history, women did not deflate their answers more to current or prospective partners (i.e., the last person they were attracted to). This suggests women may not feel pressured by male partners to be sexually conservative to ensure men’s certainty of paternity, although the benefits to men and women from maximizing paternity certainty may depend on
environmental factors such as socioeconomic disparity between men and women (Price et al., 2014). We also did not find men to exaggerate their sexual history as predicted by both paternity certainty and costs of sex explanations (prediction 2B; prediction 3B), suggesting perceptions of exaggerated sexual behaviour may be less advantageous for male status than previously believed (Marks & Fraley, 2005; Allison & Risman, 2013).

Finally, sexual economics predicts that women restrict each other’s sexuality, and as a result, women should lie more to other women (Baumeister & Vohs, 2004), especially friends and colleagues currently in the dating market. When asked about their sexual history, however, women did not lie more to other women as sexual economics predicts. This suggests women may not be the primary suppressors of female sexuality, although these effects may depend on unmeasured sex ratio and socioeconomic effects (Baumeister & Vohs, 2004; see Stone, 2017 for cross-cultural review of sex ratio effects).

One surprising finding was that men were as likely as women to downplay their sexual histories in most measures. This was not predicted by any of the theories we set out to test, and suggests that there is little difference in the sexual suppression women and men anticipate via judgments of their sexual histories. Further, more detailed and sensitive tests are needed before this can be established as a robust pattern, but we should remain open to the possibility that, at least in the populations sampled here, sex differences in sexual suppression are not strong.

Our findings offer insight into the limitations of several accepted theories on female sexual suppression which failed to adequately explain lying behaviour. Given our findings support some evolutionary predictions concerning parental suppression, it is worthwhile considering to what extent those findings support inferences of evolutionary origins. Our experiment uses a modern sample recruited online and the possibility exists that the present
results only display modern cultural pressures on sexual behaviour. However, evidence suggests that parents have influenced the mating choices of their children, especially those of their daughters, prior to the agricultural revolution (Apostolou, 2007; Walker et al., 2011), in traditional agropastoral societies (Apostolou, 2010; Buunk et al., 2012), and in modern contexts (Buunk et al., 2009; Buunk & Solano, 2010; Perilloux et al., 2011). Our findings do not permit strong inferences about the origins of sexual double standards without further experiments, but rather pave the way for studies of lying and sexual suppression in traditional societies and a variety of cultures by suggesting that the hand of parents in sexual suppression of both daughters and sons remains detectable in contemporary cultural and economic circumstances.

Our findings run contrary to views of cultural norms and societal institutions as supporting either men’s suppression of women or of shoring up the paternity certainty of married men. For example, religion has been described as an institutional form of male control over women because powerful positions are monopolized by men, and because it punishes and restricts promiscuity and sexual freedom (DeLamater, 1981; Lerner, 1986). More recent studies have suggested that religious institutions are instead a means to increase paternity certainty because they establish positive values of commitment and negative stigma towards non-marital sex (Strassman et al., 2012; Weeden, Cohen & Kenrick, 2008; Pazhoohi, Lang & Grammer, 2017). We did not measure the “lies” people anticipate telling to religious figures or co-congregationalists, but we do note that the only way in which religious suppression of sexuality might be consistent with our results is if religious institutions function to benefit parents by acting as a cultural means to ensure their children commit to long-term relationships with strong family values.
Throughout this paper, we have suggested that lying about sexual behaviour is fueled by suppressive pressure to limit sexual freedom or enforce gender roles, but other pressures could also influence lying behaviour. Cultural taboos, particularly in non-western societies, may govern what types of conversations are considered acceptable or appropriate between friends or family members, limiting the willingness of men and women to discuss sexual topics (Roudsari et al., 2013). In this case, men’s and women’s decisions to lie to certain people when asked about sexual history might represent a fear of breaking traditional social boundaries or, at the very least, an unwillingness to disclose forbidden information. Furthermore, honest discussions of sexual behaviour between opposite sex family may be particularly difficult due to cultural mechanisms for incest avoidance (Antfolk et al., 2018). Nonetheless, these explanations do not exclude sexual suppression: aversion to telling the truth or speaking at all about sexual behaviour, even due to cultural tradition or incest avoidance, may still function to suppress sexuality by restricting discussion of sexual behaviour and, in doing so, maintaining the perception of a high price of sex (Baumeister & Twenge, 2002).

There may be alternative explanations for our finding that men and women lie more to parents about their sexual history. For example, because men and women tend to discuss topics of sexual history less frequently and less comprehensively with parents and especially fathers compared to peers (Dilorio et al., 1999; Kallen et al., 1983; Lefkowitz, Boone & Shearer, 2004; Lefkowitz & Espinosa-Hernandez, 2007; Wilson & Koo, 2010), participants may feel uneasy or awkward about disclosing personal information about their sexual behaviour for reasons unassociated with suppression. Indeed, some research suggests that how close a person feels to another person is a strong predictor of their lying behaviour (DePaolo & Kashy, 1998). Lies are used for a myriad of different reasons
unassociated with sexual suppression such as to be prosocial (Xu et al. 2010), to appear more socially desirable within peer groups of lying behaviour (Mann et al., 2014), to avoid punishment, to protect others, to hurt others (DePaolo et al., 2004), or due to pathological behaviour (Dike, Baranoski & Griffith, 2005). People lie in many contexts including when giving professional feedback (see Mohnen & Manthei, 2006), when parenting (Heyman et al., 2009) and in criminal circumstances (Strömwall & Willén, 2011). Due to the large heterogeneous sample in our experiment, there may be variation why individuals choose to lie that obscures the hypothesis tests we performed.

Our study asked participants what they anticipated telling someone about their sexual history if asked. Although intentions are suggested to predict behaviour (Sheeran, 2002), it can be unreliable to determine the extent that of a behaviour changes in response to changes in a relevant variable (see Sheeran et al., 2017). In other words, it may be difficult to determine whether differences in the size or frequency of anticipated lies in our study reflect actual answers that men and women may give when asked about their sexual history. Given that many intentions do not translate into actual behaviour (Sheeran & Webb, 2016), our ability to make conclusions beyond what people imagine they might do when asked is limited. This experiment may encourage future research on actual lying behaviours, as well as other behaviours associated with reputation management.

**Conclusion**

Our results support one of the evolutionary hypotheses: that sons and especially daughters feel pressure to maintain a reputation of sexual restriction, ostensibly because parents are agents in the suppression of their children’s, and particularly their daughter’s,
sexuality. We find women lie most frequently and tell the largest lies of all to their fathers when asked about past sexual behaviour and anticipate their father as least likely among a suite of people to talk to about previous sexual behaviour. Furthermore, we find little evidence to support predictions of large sex-differences in the lies people tell, suggesting limited double standards underpinning lying behavior. We also found little support for patriarchy, paternity certainty and sexual economic explanations of why female sexuality is suppressed compared to male sexuality. Taken together, we find that men and especially women feel pressure from their parents to act sexually conservative, suggesting that parents, and fathers in particular, may benefit from the restriction of sexual behaviour of their daughters.
Chapter 3

What drives female objectification? An investigation of appearance-based interpersonal perceptions and the objectification of women

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DJK, KRB and RCB conceived and designed the experiment; DJK implemented the experiment, conducted statistical analysis, wrote and edited the manuscript; KRB and RCB provided manuscript edits and supervision throughout the experiment implementation, statistical analysis and writing processes
Abstract

Previous research finds that both men and women perceive sexualized women as lacking in certain human qualities such as mental capacity and moral status. The mechanism underlying this effect, however, is unclear. The present two studies test how appearance-based judgements affect the degree to which a broad sample of women are objectified. In Study 1 ($N = 279$), full-body images of women wearing different clothing outfits were rated by male and female participants on perceived attractiveness, sexual intent and age. In Study 2, male and female participants ($N = 1,695$) viewed these same images from Study 1 and rated them on two dimensions of objectification (agency and patiency). We analyzed associations between these dimensions of objectification and the averaged appearance-based perceptions from Study 1. We find that women perceived as more open to casual sex are attributed less mental capacity and less moral status. We also find that participants tend to associate attractiveness with greater mental and moral status in women, but we find only limited evidence that perceived age influences objectification. Our findings suggest that although positive attractiveness biases may mitigate the amount a woman is objectified, greater female objectification may be prompted by observers’ negative stereotypes of promiscuous women.

*Keywords*: mind attribution, morality, objectification, sociosexual orientation, attractiveness, interpersonal perceptions
Introduction

The viewing of another person as an instrument to be used for sexual goals is known as objectification (Fredrickson & Roberts, 1997; Nussbaum, 1999). Recent evidence shows that the learned automatic response to objectify women has become culturally ingrained to such a great extent that choosing not to objectify women depletes self-regulatory resources and decreases performance in cognitive tasks (Tyler, Calogero & Adams, 2017). In support of this notion, one Australian study on a sample of 81 women found that over one week, each woman reported being targeted for objectification between 3 to 4 times on average and witnessing sexual objectification of other women 9 to 10 times on average (Holland et al., 2017). Objectification becomes especially harmful if women internalize these judgements and self-objectify, or consider themselves first as bodies over other personal characteristics (Fredrickson & Roberts, 1997). This can lead to negative consequences including heightened body-shame (Sanchez & Kwang, 2007) and greater unwillingness to speak in social interactions (Saguy et al., 2010; for a review see Moradi & Huang, 2008).

Women who are objectified are viewed as less than fully human, perceived to have less of a mind for thoughts or decisions and viewed as less deserving of moral treatment by others (Heflick & Goldenberg, 2009; Heflick et al., 2011; Holland & Haslam, 2013; also see Gray et al., 2011). For example, when men and women were asked to focus on a female weather forecaster’s appearance rather than her performance in her forecast, she was viewed as less capable, kind, sincere and trustworthy (Heflick et al., 2011). This denial of mental capacity and moral status has been found to have negative repercussions for objectified women, including increasing men’s willingness to commit sexually aggressive
actions towards them (Blake, Bastian & Denson, 2016), and decreasing perceived suffering in cases of sexual assault (Loughnan et al., 2010; Loughnan et al., 2013; Cogoni, Carnaghi & Silani, 2018).

Research shows that some women are objectified more than others: women who appear sexualized (e.g., more tightly-fitted, revealing or provocative clothing, greater application of cosmetics), in particular, are objectified more than non-sexualized women (Fredrickson et al., 1998; Graff, Murnen & Smolak, 2012; Gurung & Chrouser, 2007; Rudman & Mescher, 2012; Tyler, Calogero & Adams, 2017). Put another way, compared to a woman wearing a baggy sweater and jeans (a non-sexualised appearance), a woman wearing a form-fitting or revealing dress (a sexualised appearance) is more likely to be targeted by objectifying behaviours such as verbal harassment, stares, winks, whistles and crude gestures (see Holland et al., 2017). Although there is a consensus that sexualized appearance can increase objectification, it is still unclear which judgements based on a woman’s appearance (and in many cases a sexualized appearance) influence the degree to which she is objectified by others. In the current study, we investigate how appearance-based interpersonal perceptions of women affect objectification. Specifically, we test how perceptions of a woman’s sexual intent, attractiveness and age affect attributed amounts of mind and morality.

**Objectification and the attribution of mind and moral status**

Viewing another person as an object, or less than fully human, is fundamentally an act of denying that a person has mental abilities and moral status (Nussbaum, 1999; Haslam, Loughnan & Holland, 2013). Previous research shows that when thinking about
the mind of another person, people perceive them using two dimensions: *mental agency* and *mental experience* (Gray, Gray & Wegner, 2007). A person viewed as having mental agency is seen as able to think, plan, or act on their intentions, whereas a person perceived to have mental experience is seen as able to feel or sense emotional and physical pain. Research has also shown people perceive others’ moral status using two similar, connected dimensions: *moral agency* and *moral patiency* (Gray & Wegner, 2009; Gray, Young & Waytz, 2012). A person seen as having moral agency is viewed as able to commit or be responsible for good or bad deeds, whereas a person perceived to have moral patiency is seen as able to feel or be sensitive to good or bad deeds. However, if a person is perceived to have less of both dimensions of agency and experience, mental and moral, the person’s perceived mental and moral status becomes similar to those of animals, robots or inanimate objects (Gray et al., 2007; Waytz et al., 2010). In other words, a person viewed as lacking in both agency and experience is objectified (Loughnan et al., 2010), though the relationship between agency and experience may be more dyadic and complex in nature (Gray et al., 2011).

Perceiving a person as lacking in mental capacity and moral status can alter the attitudes and behaviors of the perceiver and cause negative consequences for the targeted individual. For example, perceivers are more willing to inflict pain on individuals they perceived to possess less moral patiency (Gray & Wegner, 2009; Loughnan et al., 2010). More broadly, the process of denying human qualities of mind and morality is related to many types of prejudices, including racial discrimination (Goff, Eberhardt, Williams & Jackson, 2008; Waytz, Hoffman & Trawalter, 2014), reduced empathy for medical patients (Haque & Waytz, 2012), and negative stereotypes towards people within lower social classes (Loughnan et al., 2014). More specifically for women, evidence shows sexualized women are viewed as lacking in both mental and moral capacity, and as a result, they are
seen as less competent (Loughnan et al., 2010; Heflick & Goldenberg, 2009), less human (Heflick & Goldenberg, 2009) and perceived to suffer less in sexual assault (Loughnan et al., 2013). Thus, objectification manifested as the denial of mental and moral capacity can negatively affect how targeted individuals, including women, are viewed and treated.

**Interpersonal perceptions and their effects on mind and moral status**

Focusing on a woman’s body promotes objectification and decreases perceptions of her mental capacity and moral status (Loughnan et al., 2010; Heflick & Goldenberg, 2009; Heflick et al., 2011). This relationship between body focus and objectification has been demonstrated through multiple lines of research including cognitive (Gervais et al., 2012; Vaes et al., 2019), visual processing (e.g., inversion effects; Bernard et al., 2012; Bernard et al., 2018; Cogoni et al., 2018) and dehumanization research (Vaes, Paladino & Puvia, 2011). However, men and women do not objectify women equally, and may not do so for the same reasons (Vaes et al., 2011) or even in the same way (Morris, Goldenberg & Boyd, 2018). Objectification is regularly discussed as the consequence of sexual goals by men (e.g., Fredrickson & Roberts, 1997; Fredrickson et al., 1998) even though objectifying women has been found to be a behavior not exclusively committed by men, but also by women (e.g., Bernard et al., 2012; Heflick & Goldenberg, 2009; Tyler et al., 2017). This suggests that although active sexual goals are an important factor explaining many men’s objectification of women (Vaes et al., 2011), there may be alternative factors or more fundamental reasons contributing to greater female objectification by other men and women. Here we discuss three possible reasons as to why men and women might deny other women mental and moral status: because they perceive target women as open to casual sex, because of target women’s perceived attractiveness, and because of target
women’s perceived age. All three of these reasons are related to the notion that male sex goal activation and female competition increase objectification, as we explain below.

Openness to casual sex

Both men and women objectify women (Blake et al., 2016; Cikara, Eberhardt & Fiske, 2011; Fredrickson et al., 1998; Graff et al., 2012; Gurung & Chrouser, 2007; Loughnan et al., 2010; Rudman & Mescher, 2012; Strelan & Hargreaves, 2005; Tyler et al., 2017). One possible explanation as to why women, and primarily sexualized women, are objectified relates to negative attitudes some people hold towards promiscuity. Women who are perceived as more sexually open are found to be more vulnerable to sexual aggression due to lower perceived mental agency (Blake et al., 2016). This may not only relate to men viewing sexually unrestricted women as more likely to accept sexual advances (Vaes et al., 2011), but also as a reaction to breaking the gendered social ‘script’ that women engage in less casual sex than men (Eagly & Wood, 1999; Eagly & Wood, 2016). Evidence also suggests that women who perceive sexualized women as less human view these women as part of a subcategory from which they wish to distance themselves, similar to how an in-group views members of an out-group as less human (Puvia & Vaes, 2013; Puvia & Vaes, 2015; Vaes et al., 2011; Vaes, Loughnan & Puvia, 2014). Women may desire distance from sexualized women not only because they are perceived to perpetuate objectification (Puvia & Vaes, 2015; Vaes et al., 2011), but because they are assumed to be sexually unrestricted. As a result, a woman’s sexual openness, or more importantly her perceived sexual openness, may cause men and women to make objectifying judgements of her.
It is possible that women who are perceived as more sexually active may be perceived negatively because they are viewed as “vixens” or “seductresses”. Vixens, or powerful, sexually agentic women capable of “stealing” married men, are perceived as commanding and seductive, loose and dangerous, and capable of giving and receiving sexual pleasure (for a discussion see Johnson, 2014). Although these women are associated with promiscuity, they are viewed as sexually competent and, as a result, may be viewed more negatively by men and women. Men that perceive sexually active women as vixens may feel sexually vulnerable, less powerful and threatened that they may lose control. Alternatively, women may feel comparatively disadvantaged in intrasexual competition. If sexually available are perceived as vixens, it may be expected that men and women attribute these women high mental agency but less deserving of moral treatment (see Loughnan et al., 2013 for a related finding). Thus, negative perceptions of women believed to have greater sexual agency may lead to others to view them more negatively.

Evidence shows that individuals who are interested in a restricted sexual lifestyle may increase their support for institutions and laws which prevent others from behaving promiscuously, as a way to protect their own personal long-term relationships (Pinsof & Haselton, 2017; Weeden, Cohen & Kenrick, 2008; Weeden & Kurzban, 2013; Weeden & Kurzban, 2014). For men, opposition to promiscuity may be associated with a desire to limit their uncertainty about paternity (Pazhoohi, Lang & Xygalatas, 2017; Price, Pound & Scott, 2014). For women, opposing promiscuity might allow sexually restricted women to increase men’s commitment to long-term marriage, parenthood and resource investment by decreasing the opportunities for men to pursue casual short-term relationships (Baumeister & Vohs, 2004; Price et al., 2014). Given that both men and women frequently interpret revealing attire as a cue of promiscuous behaviour, even though this cue is inaccurate
(Stillman & Maner, 2009), people who oppose promiscuity may objectify sexualized women because they believe sexualized women are more likely to pursue casual sex. Therefore, objectifying judgements of women’s mental capacity and moral status in this instance may materialize due to an aversion towards women who they believe engage in unrestricted sexual behaviour.

**Attractiveness**

Appearance is an influential aspect of many social judgments and biases, including perceived personality traits (Feingold, 1992) and professional success (Hosoda, Stone-Romero & Coats, 2003; Maestripieri, Henry & Nickels, 2017; Rule & Ambady, 2009). Additionally, for women, attractive appearance is important when pursuing romantic partners (Buss, 1989; Fink et al., 2014; Puts, 2010). However, across all societies, men generally are more interested than women in pursuing short-term relationships (Schmitt, 2005). Thus, men may be more likely to judge women who are more attractive in relation to their own short-term sexual goals (Gervais, Holland & Dodd, 2013). For example, men but not women who completed a sex goal activation task focused more on attractiveness than competence when asked to choose a partner to complete a mathematical test with (Vaes et al., 2011). As a consequence, attractive women may be more susceptible to being perceived by men as an object regardless of whether these women are receptive to sexual advances.

However, attractiveness may not only influence perceptions of women due to its relation to activating men’s sex goals; competition between women also tends to focus on comparisons of attractiveness (Fink et al., 2014; Reynolds, Baumeister & Maner, 2018). As a result, a negative bias towards attractive individuals can emerge between same-sex
individuals (Agthe, Sporrle & Maner, 2011). For example, women and men perceive achievements of attractive same-sex individuals as more due to luck rather than intentions, whereas the same did not hold for the achievements of unattractive individuals (Agthe et al., 2016). Perceived intentionality is one facet of mental agency (Gray et al., 2007), suggesting that this negative attractiveness bias may also lead people to view others of the same-sex as having less of a mind if more attractive. Denying mind to other women could also be useful for preventing ego-depletion when comparing oneself to more successful or desirable women (Parks-Stamm, Heilman & Hearns, 2008). Thus, women may mentally perceive attractive women as more object-like as an intra-competitive response.

**Age**

Evidence suggests that, all else being equal, men prefer younger women, particularly women in their early twenties, as sexual partners (Buss, 1989; Kenrick & Keefe, 1992). There are many reasons for this finding. From a biological perspective, younger women are more fertile and have more of their reproductive careers ahead of them (Symons, 1979). Thus, we might find younger women to be objectified more often due to sex goal activation associated with greater fertility. If women are objectified due to perceptions of fertility, we would expect to see women who are both attractive and young objectified most by men. From a sociocultural perspective, a woman’s youth may suggest a lack of social power. Powerful individuals perceive subordinates as less human (Gwinn, Judd & Park, 2013, Lammers & Stapel, 2010), power increases expectations of sexual interest from a subordinate (Kunstman & Maner, 2011), and individuals primed to feel more powerful objectified sexualized women more than low-power individuals (Civile &
Obhi, 2016). For these reasons, younger women may be more likely to be objectified than older women.

**Objectification relates to female sexual suppression**

Across the globe, cultural practices and gendered social norms limit women’s sexual freedoms (e.g., Berg & Denison, 2013; Howard & Gibson, 2018) and judge women more harshly than men for behaving or appearing sexually available (Baumeister & Vohs, 2002; also see Muggleton et al., 2018). As a result, female sexuality is culturally suppressed (Baumeister, 2002). The extent that men and women perceive women to have less mental capacity or to be less deserving of moral treatment, as well as their reasons for these perceptions, can provide information about why female sexuality is suppressed. Original predictions about why women are objectified suggested that objectification functioned as means to maintain patriarchal structures whereby men sustain that women occupy a lower social class to men (Fredrickson & Roberts, 1997). According to these predictions, objectification is intertwined with a desire for social power over female subordinates (see Kunstman & Maner, 2011). Therefore, objectification relates to men’s commodification of women as sexual objects whereby men can control women’s sexuality.

Evolutionary theory instead suggests that objectification may relate to the reproductive goals and strategies that men and women pursue. Men may objectify women who are more attractive as a form of mate assessment, especially if the woman appears active on the mating market (see Fink et al., 2014). Alternatively, women may objectify more attractive, youthful women as a competitive response to women they perceive as most competitive for desirable partners on the mating market (Agthe et al., 2011, 2016; also see
Parks-Stamm et al., 2008). Men and women who prefer long-term relationships may also wish to restrict women’s ability to pursue casual relationships outside of marriage (Weeden et al., 2008; also see Price et al., 2014) and, as a result, dehumanize women who appear more sexually available like an outgroup. Thus, objectification may relate to individual relationship strategies and, for some, reflect an opposition to women who jeopardize their position in the mating market.

Women may hold the strongest objectifying perceptions of women who appear sexually active because these women reduce the amount that women can receive in exchange for a sexual relationship. Sexual economics (Baumeister & Twenge, 2002; Baumeister & Vohs, 2004) suggests that women control the “supply” of sex, and by increasing the “demand” for sex by men by maintain its rarity (or the perception that it is rare), women can gain more when they do commit to a sexual relationship, including status, finances and commitment. Women may objectify other women who appear sexually active not only because they perpetuate objectification (Vaes et al., 2011), but also as a negative response to their promiscuous behaviour. We may even expect that women’s objectification of sexually active women could be stronger than men’s objectification, in this circumstance. Thus, men’s and women’s objectification of women may link to broader reasons of female sexual suppression.

**The current experiment**

Despite a large amount of evidence showing that women are objectified, which appearance-based interpersonal judgements lead to greater objectification remains unclear. In the present research we investigate three novel cues that we argue may influence the
objectification of women. In Study 1, men and women rated a large, diverse sample of 56 photographs of women on three characteristics: perceived sexual intent, perceived attractiveness, and perceived age. In Study 2, the same photographs of women were rated by a separate group of participants on questions relating to mental and moral agency and mental and moral patiency. Using mixed model regression, we analyze the interpersonal perceptions most associated with objectification. We aim to understand which perceptions of women drive objectification and the degree to which objectification differs between male and female perceivers.

Included as covariates in our analyses are three measures of participant individual difference that may drive objectifying judgements: sociosexuality, mate value, and perceived female economic dependence. Sociosexuality refers to a participant’s attitudes, behaviours, and desires towards casual sex and can influence positive and negative attitudes towards the sexual activity of others (Lyons et al., 2011), thus potentially influencing objectification. Self-rated mate value refers to a participant’s belief that they are an attractive, desirable partner. We included this covariate to test whether women are objectified more often if they are perceived to threaten other women as romantic competitors. Perceived female economic dependence refers to how much a participant believes that women around them depend on men for economic support. Price and colleagues (2014) showed that people surrounded by women who depend economically on men hold stronger anti-promiscuity attitudes, demonstrating participants’ perceived socioeconomic environment influences their attitudes towards acceptable behaviours of others. We included this variable to test whether participants who perceive the women around them to depend financially on men may also perceive women to have less mental and moral status, due in part to greater anti-promiscuity attitudes.
Our experiment utilizes a design comparing a large and wide-ranging number of images of women in order to increase the scale, ecological validity, and robustness of our results. Evidence suggests that controlled laboratory experiments often unreliably correlate to real-world effects (Mitchell, 2012) due to the difficulty of translating between specific paradigmatic settings in controlled scenarios and more variable external settings of the real-world (Eastwick, Hunt & Neff, 2013). In the context of this experiment, humans are shown to simultaneously evaluate multiple types of emotional and physical information from faces and bodies together (Aviezer, Trope & Todorov, 2012a; 2012b; Van den Stock & de Gelder, 2014) and use social comparisons when evaluating themselves and others (Festinger, 1954; Stapel & Blanton, 2004). This finding suggests that although comparing highly controlled stimuli that differ only in specific targeted traits are essential for understanding fine-scale effects, these may not translate to real-world circumstances. By presenting stimuli that vary on a continuous rather than categorical spectrum we increase the scale of our experiment to ameliorate these issues.

Methods

This study comprises two experiments performed on the same set of 56 images of women. Ethics for Study 1 and Study 2 was reviewed and approved by the University of New South Wales, Sydney human ethics committee (HREAP 155120) and all participants gave their informed consent to participate in the experiment.
Data and Supplementary Material

All data, code and Supplementary Material is available and can be accessed on the Open Science Framework (https://osf.io/j3f7m/).

Target women images

A total of 56 photographs of different women were used as target images (from freedigitalphotos.net and PeopleImages.com). Each picture depicted one full-body image of one woman photographed in front of a white background. All 56 images of target women can be found in the Supplementary Material (see Appendix 3A for examples). Target women ethnicity was 91% Caucasian, 3.5% East Asian, 3.5% African American, and 1.7% South Asian. Images of target women were selected to vary in style of clothing, amount of clothing, and age. Additionally, target women ranged in weight, from thin to overweight. Clothing type varied from casual attire to work attire, and no target women wore religious garments. Clothing ranged from low-coverage (e.g., bikini, skirt, revealing t-shirt) to high-coverage (e.g., long-sleeve buttoned shirt, blazer). Clothing also varied in color and fit. Images of target women ranged in pose, but in all images the face and body were fully visible.

Study 1

Study 1 investigated differences between target women on perceived likeliness to have casual sex, perceived attractiveness and perceived age. Two hundred and seventy nine participants (146 men, 133 women; $M_{Age} = 36.4$, $SD_{Age} = 11.5$) were recruited from Amazon’s Mechanical Turk (an online participant recruitment service which allows
recruiters to compensate participants for completing experimental research studies) and were paid $1.00 USD to participate. The majority of participants resided in the USA (88.9%) or India (7.89%), and most participants identified their ethnicity as North Western European, British or Irish (34.1%), European Mixed Race (17.6%), or South East Asian (10.4%), with another 10.4% of participants selecting that none of the ethnicities defined their ethnic group. Participants identified as mainly heterosexual (88.5%), with 4.7% identifying as homosexual, 4.7% as between homosexual and heterosexual, 0.7% as asexual, and 1.4% chose not to answer (for full sample demographics, see Supplementary Material; Appendix 3B).

Each participant was randomly assigned to answer four out of five possible questions about 28 images out of 56 possible images of target women. Participants answered 1 question about 7 target women, displayed individually and successively. Then participants proceeded to answer the next question about another 7 target women, again displayed one at a time, until 4 questions were answered about 28 total target women; 7 answers for each question and 1 rating per target woman. Questions and target woman images were randomly selected for each participant. Only 1 target woman image and 1 question were displayed to participants at any time, and no participant rated the same target woman more than once about any question. Although this design was complex, we followed it because we wanted participants to rate a large number of women, but we also aimed to reduce mental fatigue and task disengagement (Hopstaken et al., 2014; Lavrakas, 2008). Additionally, we wished to preserve variation in participants’ responses that can be lost in longer surveys as participants begin to choose identical answers more often in later questions (Galesic & Bosnjak, 2009; Herzog & Bachman, 1981). Preserving this variation in participants’ immediate perceptions towards women was important due to our interest in
having participants rate a large number of women and our aim to discerning between dependent variables with substantial theoretical overlap. On average, 27.7 participants rated each target woman on each question (Men: $M = 14.6$, $SD = 2.73$; Women: $M = 13.3$, $SD = 2.69$). See Supplementary Materials for full list of participant numbers that rated each target woman on each question.

Perceived intention to pursue casual sex was measured using a brief three-item version of the Revised Sociosexual Orientation Inventory (Penke & Asendorpf, 2008; Stillman & Maner, 2009). The three items were (1) “How likely do you think this person is to have a one-night stand?”, (2) “How likely do you think this person is to have (or have had) a lot of sexual partners?”, and (3) “How likely do you think this person is to require strong relationship commitment before engaging in sexual contact?” (reverse-scored). All items were answered using a 9-point Likert scale (1 = Not at all, 9 = Extremely). Due to our single-item random-allocation study design, participants did not answer all three items about each target woman they rated which prevented us from calculating a measure reliability score between items. However, these items have been repeatedly shown to reliably measure sociosexual orientation (Boothroyd et al., 2008; Fisher et al., 2016; Schmitt, 2005; Stillman & Maner, 2009), so we combined average scores of each question to create one overall rating of perceived sexual intent to pursue casual sex for each target woman. The attractiveness of each target woman was assessed using one item: “How attractive do you think this person is?” The item was assessed using a 7-point scale (1 = Not at all; 7 = Extremely). The perceived age of each target woman was measured using a single item: “How old do you think this person is?” The item was assessed using a 9-point scale (1 = 18-24 years, 2 = 25-30 years, 3 = 31-35 years, 4 = 36-40 years, 5 = 41-45 years, 6 = 46-50 years, 7 = 51-60 years, 8 = 61-70 years, 9 = 71 or older). Participant ratings of
perceived age and attractiveness were also averaged to create a mean score of perceived age and perceived attractiveness for each target woman. Correlations of predictor variables can be found in Table 3.2.

Table 3.1. Mean ratings of target women for the three predictor variables

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>M</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Sexual Intent</td>
<td>4.95</td>
<td>.050</td>
</tr>
<tr>
<td>Perceived Age</td>
<td>2.81</td>
<td>.038</td>
</tr>
<tr>
<td>Perceived Attractiveness</td>
<td>4.59</td>
<td>.037</td>
</tr>
</tbody>
</table>

Note: Perceived sexual intent was measured using a 9-point Likert scale (1 = Low; 9 = High). Perceived age was measured from 1 to 9 (1 = 18-24 years, 2 = 25-30 years, 3 = 31-35 years, 4 = 36-40 years, 5 = 41-45 years, 6 = 46-50 years, 7 = 51-60 years, 8 = 61-70 years, 9 = 71 or older). Perceived attractiveness was measured using a 7-point Likert scale (1 = Low; 7 = High).

Table 3.2. Correlations between three target women predictor variables perceived sexual intent, perceived age and perceived attractiveness.

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Perceived Age</th>
<th>Perceived Attractiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Sexual Intent</td>
<td>-0.58</td>
<td>0.70</td>
</tr>
<tr>
<td>Perceived Age</td>
<td></td>
<td>-0.62</td>
</tr>
<tr>
<td>Perceived Attractiveness</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Not all participants rated all measures about every target woman, so reported correlations were calculated from average participant ratings of each target woman. Therefore, bivariate correlations, p values and degrees of freedom could not be calculated and are not reported.
We ran analysis of variance (ANOVA) models to test for differences in men’s and women’s ratings of target women on predictor variables. Models included each predictor variable item as the dependent variable, sex of the participant and target woman identity as fixed effects, and participant identity as a random effect. Results indicated that men and women differed significantly in how they rated attractiveness between target women \((F_{55,1302} = 1.69, p = .001, \eta^2_p = .05)\), but overall average attractiveness ratings did not differ significantly. Because participants answered a unique subset of items, we were not able to test differences in ratings between men and women using the combined score of perceived sexual intent items and thus tested each item individually. Female participants rated items one and two of the perceived sexual intent measure lower than men overall (Item 1: \(F_{1,1} = 6.78, p = .009, \eta^2_p = .009\); Item 2: \(F_{1,1} = 17.35, p < .001, \eta^2_p = .01\)), but men and women did not differ in which target women they perceived to have more or less sexual intent. Men’s rating of target women as more open to casual sex compared to women’s ratings in two of three sexual intent items may represent a sexual over-perception bias in men compared to women (Haselton & Buss, 2000). Ratings of item three of the perceived sexual intent measure and perceived age of target women did not differ between male and female raters.

**Study 2**

Study 2 investigated men and women’s mind and moral attribution towards target women. Participants rated the same images of target women as in Study 1 on measures assessing participants’ perceptions of mental and moral capacity.
Participants

A sample of 1,695 participants (954 men, 741 women; \( M_{Age} = 35.4, \; SD_{Age} = 11.1 \)) were recruited from Amazon’s Mechanical Turk and each paid $1.00 USD to participate in a survey expected to take 10 minutes to complete. The majority of participants resided in the USA (68.0%) and India (25.4%). Participant ethnicity was primarily North Western European, British or Irish (26.7%), South East Asian (24.7%), or European Mixed Race (13.4%), with another 11.9% of participants electing that none of the ethnicities defined their ethnic group. Participants identified as mainly heterosexual (86.5%), with 6.13% identifying as homosexual, 9.32% as between homosexual and heterosexual, and 1.24% as asexual.

Mind and moral attribution measures

Agency

Agentic perceptions were measured using four items. Two items were selected to assess the mental agency of each target woman (from Gray et al., 2007) and two items were selected to assess the moral agency of each target woman (from Holland & Haslam, 2013). Mental agency items were chosen by selecting the two items with the highest factor loadings from Gray, Gray and Wegner’s (2007) original factor analysis that were also included in the shortened agency scale (from Blake et al. 2016) used to assess mental agency of sexualized vs non-sexualized images of target women. Items were: “How capable do you think this person is at exercising self-restraint over desires, emotions, or impulses?” and “How capable do you think this person is at telling right from wrong?” Moral agency items were chosen by selecting two items from a shortened moral perception
scale with the highest factor loadings by Blake and colleagues (2016) when used to assess
moral perceptions of sexualized vs non-sexualized images of target women. Items were
“How much do you believe this person’s achievements and actions are due to their thoughts
and intentions, rather than luck and circumstances?” and “In general, how responsible do
you think this person is for their actions in life?” All four items were assessed using a 6-
point Likert scale (1 = Not at all; 6 = Extremely). Due to the overlap of some items with
both mental agency and moral agency concepts, all four items are considered representative
of broader perceptions of overall agency and will be collectively referred to as perceptions
of agency.

Patiency

Patiency perceptions were measured using four items. Two items were selected to
assess the mental experience of each target woman (from Gray et al., 2007) and two items
were selected to assess the moral patiency of each target woman (from Holland & Haslam,
2013). Mental experience items were chosen by selecting the second and third highest
factor-loading items from Gray, Gray and Wegner’s (2007) original factor analysis,
following Blake and colleagues’ (2016) decision to not assess perceptions of “hunger” (the
item with the highest factor loading) which we believed was less informative for our study
purposes. Items were “How capable do you think this person is at feeling afraid or fearful?”
and “How capable do you think this person is at feeling physical or emotional pain?” Moral
patiency items were again selected by choosing the two items with the highest factor
loadings by Blake and colleagues’ (2016) moral perception scale. Items were “How bad do
you think you would feel if someone took advantage of this person?” and “How bad do you
think you would feel if you manipulated this person?” All four items were assessed using a
6-point Likert scale (1 = Not at all; 6 = Extremely). Due to the overlap of some items with both mental experience and moral patiency concepts, all four items are considered representative of broader perceptions of overall patiency and will be collectively referred to as perceptions of patiency.

Individual differences measures

Dependence on income and perceived female economic dependence

Participants who stated that they were in a relationship were asked about how dependent each member in the relationship is on their partner’s income via two items: “How dependent would you say you are on your partner’s financial income?” and “How dependent would you say your partner is on your income”. Participants answered using a 7-point Likert scale (1 = Extremely independent; 7 = Extremely dependent). The Cronbach’s alpha score revealed that this measure was not a consistent trait-level measure of income dependence (Cronbach’s α = .24), so we chose to not include this measure in final analyses.

Participants next completed a shortened two-item version of the Perceived Female Economic Dependence Scale (from Price et al. 2014). Participants are asked to rate to what extent they believe that the women in their community rely on their male partner for financial income. Participants answered to what extent they agreed on the following statements: “Of the women I know who are in long-term heterosexual relationships, most rely financially on their male partner,” and “Most women I know depend heavily on the money of a male partner, or probably will at some point in their life.” Items were answered using a 7-point Likert scale (1 = Strongly disagree; 7 = Strongly agree). Perceived female
economic dependence was calculated by averaging both items to create one overall score ($\alpha = .88$).

**Sociosexual orientation**

Sociosexual orientation was measured using the Revised Sociosexual Orientation Inventory (R-SOI; Penke & Asendorpf, 2008). Participants answer nine questions to assess their behaviours, attitudes and desires about extramarital and casual sex using a 9-point Likert scale. Examples of items include: “With how many different partners have you had sex within the past 12 months?” (0 to 20 or more), “Sex without love is OK,” (1 = Strongly disagree; 9 = strongly agree), and “How often do you have fantasies about having sex with someone with whom you do not have a committed romantic relationship?” (1 = never; 9 = at least one every day; $\alpha = .86$).

**Mate value**

Self-perceived mate value for each participant was assessed using the Mate Value Scale (Edlund & Sagarin, 2014). The Mate Value Scale is a four-item scale where participants rate themselves on how desirable they believe they are as a partner on a 7-item Likert scale. The four items are: “Overall, how would you rate your level of desirability as a partner on the following scale?” (1 = Extremely undesirable; 7 = Extremely desirable), “Overall, how would members of the opposite sex rate your level of desirability as a partner on the following scale?” (1 = Extremely undesirable; 7 = Extremely desirable), “Overall, how do you believe you compare to other people in desirability as a partner on the following scale?” (1 = Very much lower than average; 7 = Very much higher than average),
and “Overall, how good of a catch are you?” (1 = Very bad catch; 7 = Very good catch; $\alpha = .89$).

**Procedure**

Participants were first instructed to answer demographic questions and all individual difference measures. Participants were then provided instructions about the structure of the survey and that they would be answering a total of 4 questions about 28 images of target women. Participants also read, “Some of the questions may seem a bit unusual. Please look at each model and try to answer honestly, remembering that this entire survey is anonymous.” The procedure then followed the same design as Study 1 with the only difference being that participants answered four out of eight possible questions about 28 out of 56 possible images of target women. After completing the questionnaire, participants were supplied a debriefing about the nature of the experiment.

Similar to Study 1, we used this design in order to gauge participants’ judgements of a large number of women from a large-scale sample on several measures while minimizing repetition, mental fatigue and exhaustion effects which can reduce valuable variation in participant responses. This approach reduces the risk of exhaustion effects within participants. On average, 106 participants rated each target woman on each question (Men: $M = 59.6$, $SD = 5.13$; Women: $M = 46.3$, $SD = 5.08$). See Supplementary Materials for a full list of participant numbers that rated each target woman on each question.
Results

We conducted eight separate general mixed linear regression models using the lme4 R package (Bates et al., 2015) (see Table 3.3 for measure items) to determine whether specific perceived target woman traits explain variation in mind and moral attribution (See Appendix 3C or online Supplementary Material for correlations between dimension items). In order to not overburden participants, and inure them to the questions being asked, each participant answered only a subset of the possible questions about each of the target women that were assigned to them at random. The limitation of this approach is that items cannot be combined to reduce dimensionality, to form overall indices of each construct, or to conduct multivariate tests. As a result, eight different models were necessary. The final eight models included sex (of the participant), perceived intent to pursue casual sex (of the target woman), perceived attractiveness (of the target woman), perceived age (of the target woman) and the interactions between participant sex and each predictor variable from Study 1.
Table 3.3. Means (M) and standard errors (SE) of participant ratings of target women for agency and patiency items.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Item</th>
<th>Question</th>
<th>Men</th>
<th>Women</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>SE</td>
<td>M</td>
</tr>
<tr>
<td>Agency</td>
<td>1</td>
<td>How capable do you think this person is at exercising self-restraint over desires, emotions, or impulses?</td>
<td>4.04</td>
<td>.03</td>
<td>4.25</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>How capable do you think this person is at telling right from wrong?</td>
<td>4.29</td>
<td>.02</td>
<td>4.68</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>How much do you believe this person’s achievements and actions are due to their thoughts and intentions, rather than luck and circumstances?</td>
<td>4.16</td>
<td>.02</td>
<td>4.36</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>In general, how responsible do you think this person is for their actions in life?</td>
<td>4.36</td>
<td>.02</td>
<td>4.77</td>
</tr>
<tr>
<td>Patiency</td>
<td>1</td>
<td>How capable do you think this person is at feeling afraid or fearful?</td>
<td>4.03</td>
<td>.03</td>
<td>4.50</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>How capable do you think this person is at feeling physical or emotional pain?</td>
<td>4.51</td>
<td>.03</td>
<td>5.08</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>How bad do you think you would feel if someone took advantage of this person?</td>
<td>4.31</td>
<td>.03</td>
<td>4.70</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>How bad do you think you would feel if you manipulated this person?</td>
<td>4.16</td>
<td>.03</td>
<td>4.58</td>
</tr>
</tbody>
</table>

Note: All items were measured using 6-point Likert scales (1 = Not at all, 6 = Very)

We first ran a Likelihood Ratio Test to determine which predictor variables and interactions best predicted objectification ratings and to avoid overfitting our models (see Table 3.4). The baseline model included only Target woman and participant identity as random effects. We present each question’s best-fit model according to the Table 3.4. Participant SOI, perceived female economic dependence and mate value are included in
each model as covariates. We found our main significant results remained unchanged when including these covariates in our models (and excluding covariates from our models generally increased effects sizes of significant effects). Therefore, we elected to present models which include covariates because they provide more conservative estimates of effect sizes than models excluding covariates. In all models we found no significant interaction effects between sex of the participant and mental or moral attribution ratings of target women, indicating that there were no significant differences between how male and female participants rated target women.
Table 3.4. Results of Likelihood Ratio Test on models of mental agency, mental experience, moral agency and moral patiency measure ratings of target women.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Patiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self-restraint</td>
</tr>
<tr>
<td></td>
<td>d.f.</td>
</tr>
<tr>
<td>Sex</td>
<td>1</td>
</tr>
<tr>
<td>Linear</td>
<td>3</td>
</tr>
<tr>
<td>Sex × Linear</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: Levels of likelihood analysis:

- **Sex**: Sex
- **Linear**: + Perceived Sexual Intent + Perceived Attractiveness + Perceived Age
- **Sex × Linear**: + Sex × Perceived Sexual Intent + Sex × Perceived Attractiveness + Sex × Perceived Age

Items were analyzed separately because each participant answered a unique subset of questions about a unique subset of target women, and hence items cannot be combined to form overall indices of each construct.
Agency

As Table 3.5 illustrates, the sex of the participant significantly affected 3 out of 4 ratings of target women’s agency, with male participants attributing lower agency than female participants to targets on average. Both male and female participants rated target women perceived as more open to casual sex as less capable of exercising self-restraint, less capable of telling right from wrong, less responsible for their actions in life and less likely to achieve due to intention rather than luck by both male and female participants

(Self-restraint: $\beta = -0.44$, $SE = .17$; Right/Wrong: $\beta = -0.44$, $SE = .13$; Responsible: $\beta = -0.48$, $SE = .15$; Intentional: $\beta = -0.46$, $SE = .15$). Both male and female participants were also found to associate target women with greater perceived attractiveness with being more capable of self-restraint, telling right from wrong and being more likely to achieve due to intention rather than luck (Self-restraint: $\beta = 0.27$, $SE = .09$; Right/Wrong: $\beta = 0.20$, $SE = .07$; Intentional: $\beta = 0.23$, $SE = .08$). Additionally, we found male participants viewed target women perceived as more attractive as more capable of self-restraint than female participants (Self-restraint_{male}: $\beta = 0.27$, $SE = .09$, $F_{1,52.3} = 10.17$, $p = .002$; Self-restraint_{female}: $\beta = 0.18$, $SE = .11$, $F_{1,51.7} = 2.91$, $p = .094$), more capable of telling right from wrong than female participants (Right/Wrong_{male}: $\beta = 0.20$, $SE = .06$, $F_{1,52.7} = 10.47$, $p = .002$; Right/Wrong_{female}: $\beta = 0.13$, $SE = .08$, $F_{1,52.0} = 2.60$, $p = .113$), and more likely to achieve due to intention than female participants (Intentional_{male}: $\beta = 0.09$, $SE = .08$, $F_{1,51.7} = 1.31$, $p = .259$; Intentional_{female}: $\beta = -0.01$, $SE = .09$, $F_{1,51.9} = 0.02$, $p = .894$), though these differences were all of marginal significance (Table 3.5). Target women perceived to be older were perceived as being more capable of telling right from wrong and more likely to achieve due to intention rather than luck than women perceived as younger (Right/Wrong: $\beta
= 0.10, SE = .04; Intentional: β = 0.11, SE = .05), but perceptions of target women’s capability of self-restraint and responsibility for their actions in life were unaffected by perceived age (see Table 3.5). There were no other significant differences between ratings by male and female participants (see Table 3.5).
Table 3.5. Results of general linear mixed effects model predicting which perceived characteristics of the target women affected objectification ratings using Type III ANOVA

<table>
<thead>
<tr>
<th></th>
<th>Agency</th>
<th>Patience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Self-restraint</td>
<td>Right/Wrong</td>
</tr>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>1.5429</td>
<td>9.10</td>
</tr>
<tr>
<td>Perceived SI</td>
<td>1.52</td>
<td>9.55</td>
</tr>
<tr>
<td>Perceived Attr</td>
<td>1.52</td>
<td>6.14</td>
</tr>
<tr>
<td>Perceived Age</td>
<td>1.52</td>
<td>3.76</td>
</tr>
<tr>
<td>Sex × p.SI</td>
<td>1.5296</td>
<td>2.27</td>
</tr>
<tr>
<td>Sex × p.Attr</td>
<td>1.5303</td>
<td>2.93</td>
</tr>
<tr>
<td>Sex × p.Age</td>
<td>1.5284</td>
<td>0.28</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOI (of Participant)</td>
<td>1.844</td>
<td>3.01</td>
</tr>
<tr>
<td>Perceived Fem Econ Dep (of Participant)</td>
<td>1.844</td>
<td>3.80</td>
</tr>
<tr>
<td>Mate Value (of Participant)</td>
<td>1.844</td>
<td>16.81</td>
</tr>
</tbody>
</table>

Note: Each model only included variables to the highest level of significance in the Likelihood Ratio Test (Table 3.4). Items were analyzed separately because each participant answered a unique subset of questions about a unique subset of target women, and hence items cannot be combined to form overall indices of each construct.


**Patiency**

As Table 3.5 shows, the sex of the participant significantly influenced all four items of target women’s mental and moral patiency attribution. Male participants rating target women as less capable of fear or pain than female participants overall and female participants reported feeling worse than male participants in response to the experimental scenario of someone else taking advantage of target women or manipulating the target women (Table 3.2; Table 3.5). Target women perceived as open to casual sex were rated by male and female participants as less capable of feeling fear or pain (Fear: \( \beta = -0.33, SE = .07 \); Pain: \( \beta = -0.23, SE = .06 \)). In addition, results show that as a target woman’s perceived intent to pursue casual sex increased, male and female participants cared less about someone taking advantage of her or manipulating her themselves (Take Advantage: \( \beta = -0.40, SE = .10 \); Manipulate: \( \beta = -0.30, SE = .07 \)). For both male and female participants, a target woman’s attractiveness was positively related to her perceived ability to feel pain but not her ability to feel fear (Pain: \( \beta = 0.09, SE = .03 \)). Both male and female participants also cared more about someone taking advantage of a target woman if she was more attractive, but attractiveness did not affect how bad participants felt to manipulate a target woman themselves (Take Advantage: \( \beta = 0.15, SE = .05 \)). Overall, perceived age had no significant effects on perceptions of target women’s patiency, though a marginally significant negative effect of perceived age on ability to feel fear was driven by male participants rating older women as less capable of feeling fear compared to younger women (Pain\(_{\text{male}}\): \( \beta = -0.05, SE = .02, F_{1,55.2} = 5.20, p = .026 \)), see Table 3.5.
**Individual differences covariates**

The addition of individual difference covariates did not alter the statistical significance of any of our main results presented in the previous sections. There were several significant covariates, however, and we summarize their overall effects here (for details, see Table 3.5). Participants who reported greater female economic dependence in their close social contacts were also more likely to rate target women as having lower mind and moral status for seven of eight items. Previous research finds that perceived female economic dependence is associated with anti-promiscuity attitudes (Price et al., 2014), and our findings suggest that these perceptions also influence perceptions of target women’s mind and moral status. Participant mate value and SOI positively associated with three of eight mental and moral capacity items, respectively, indicating that people with higher mate value or people who are more sexually open were less likely to objectify women. Participant mate value effects were significant for three of four agency items, whereas two of four patiency items had significant participant SOI effects. This suggests that participants with higher mate value and SOI may make more favourable judgements of target women.

**Discussion**

Despite extensive research focusing on sexual objectification, the specific interpersonal judgements that influence how much a woman is objectified remain unclear. In this study we tested whether perceptions of a woman’s openness to sex, attractiveness and age were associated with the degree to which she is perceived to have mental capacity and moral status. We find that the more likely a target woman is judged to pursue casual sex, the less she is perceived to have mental and moral capacity. Attractiveness, by contrast,
had inconsistent effects, significantly relating to four of eight total items of mental and moral capacity (two in each overall dimension). However, when attractiveness was found to associate with mental and moral capacity, it was positively associated (i.e., more attractive target women were associated with having more mental and moral status). Perceived age significantly related to only one of eight total items, suggesting that youth has limited influence on perceptions of mental and moral capacity of target women. Overall, we find male perceivers attribute less mind and moral capacity to target women compared to female perceivers. Our results also show no significant interaction effects between the sex of the perceiver and mental or moral attribution, indicating that associations men and women make from interpersonal judgements of women are similar. Overall, our results indicate that the degree to which a woman is objectified (a) increases with judgements that a woman has more casual sex, (b) can decrease with perceptions of greater attractiveness, (c) is unrelated to a woman’s perceived age, and (d) is greater by men compared to women overall.

Women judged to be more open to casual sex were associated with being less capable of self-restraint, telling right from wrong, feeling fear, feeling pain, being responsible for their actions, and achieving due to intentions rather than luck. Additionally, the perception that a woman was open to sex was associated with participants feeling better about her being taken advantage of or manipulated in a hypothetical scenario. Our finding supports previous evidence that sexualized appearance can lead to fewer attributed agentic mental states (Loughnan et al., 2010) and a loss of perceived humanness (Puvia & Vaes, 2013) by participants. However, our results suggest more specifically that greater objectification of sexualized women may largely, though not entirely, be due to an association between women’s sexualized appearance and assumptions about their sexual behavior.
We also find that both men and women attribute women whom they believe are open to casual sex with lower mind and moral capacity. Discerning between these possible motivations for objectifying women is difficult and complex. For men, inferring lower perceived mental and moral capacity in target women may be the result of perceiving these women instrumentally, due to believing these women to be more receptive to sex (Vaes et al., 2011), or negatively, because female promiscuity jeopardizes men’s future paternity certainty (Buss & Schmitt, 1993; Symons 1979; Trivers, 1972) and breaks the sexual ‘script’ that women engage in less casual sex than men (Eagly & Wood, 1999; Eagly & Wood, 2016). For female participants, negative associations between target women’s perceived sexual openness and their mind and moral capacity may constitute a form of disapproval of sexualized women (Puvia & Vaes, 2013; Vaes et al., 2011; Vaes, Loughnan & Puvia, 2014), or negativity towards competitors in the dating market (Baumeister & Vohs, 2004; Vaillancourt & Sharma, 2011). Our experiment provides limited insight into which, if any, of these explanations accounts for why some men and women may associate lower mental capacity and moral status with women perceived as likely to have casual sex. When considering each of these explanations for female objectification, we are reminded that there may not be one overarching reason for objectification and motivations for objectifying women may be multi-layered, depending on each individual’s opinions, gender and cultural norms.

However, our finding that perceptions of lower mental and moral capacity covary with a person’s own belief that the women they know depend economically on men proves instructive. In the U.S.A., both women and men who are surrounded by women who depend economically on men are also likely to hold stronger anti-promiscuity attitudes (Price et al., 2014). Our findings show that men and women who believe women depend
economically on men also attribute less mental capacity and moral status to women, suggesting that women may be perceived more negatively overall by individuals who reside in areas where women depend on men, or where women are at least perceived to depend on men. Further experiments are necessary to properly test this relationship, as perceived female economic dependence was used as an exploratory covariate in our analyses. Nonetheless, our findings suggest that men and women hold misogynistic biases towards women if they believe that women around them rely economically on men.

Contrary to our predictions, we find that greater attractiveness is positively associated with perceptions of mind and moral status in women. Both male and female participants associate greater attractiveness with having more self-restraint, achieving due to intention rather than luck, and a greater capacity to feel pain. Furthermore, both male and female participants feel worse about others taking advantage of attractive women compared to unattractive women. Although there is evidence to suggest that more attractive women are more likely to be objectified due to a greater body-focus towards them (Gervais, Holland & Dodd, 2013; Holland & Haslam, 2013; Williams, Gruenfeld & Guillory, 2017), we find that attractiveness is associated with an increase in many perceived capacities of mind and morality of women. Although we did not predict that attractiveness would positively correlate with perceived mind and morality, men and women have been found to be positively biased towards attractive individuals. The ‘beautiful-is-good effect’, finds that attractive people are assumed to possess more socially desirable personalities (Dion, Bercheid & Walster, 1972), and to be more competent than unattractive peers (Jackson, Hunter & Hodge, 1995). Maestripieri, Henry and Nickels (2017) summarize copious evidence showing positive financial and prosocial biases towards attractive people. Our finding suggests that attractiveness may not be as closely associated with greater female
objectification as other perceptions of women such as perceived sexual behaviour. Though surprising, our experimental results replicate similar findings that attractiveness can increase perceptions of agency (Gray et al., 2011), and we believe this is also likely due to a beautiful-is-good effect on male and female perceivers.

Although evidence suggests that power can activate sexual motivations (Kunstman & Maner, 2011) and increase objectification towards sexualized women (Civile & Obhi, 2016), our results find that perceiving a woman to be younger does not increase the amount she is objectified. Additionally, our findings suggest perceiving a woman to be younger is not associated with greater objectification due to processes of partner assessment, youthfulness, and fertility. Previous research has found that pre-pubescent girls in sexualized clothing are attributed less mental agency and moral consideration than girls in conservative attire (Graff et al., 2012; Holland & Haslam, 2016), but this may be because they are viewed more like adults when dressed in a sexualized manner (Holland & Haslam, 2016). If this speculation is true, perceptions of youth might not stimulate greater power-related objectification due to viewing girls as more subordinate. In accordance, our findings suggest that among adults, a woman’s perceived youthfulness does not alter how much she is objectified. Instead, our finding that older women are associated with greater responsibility for their actions and a greater ability to tell right from wrong suggests mental and moral attribution may be associated with perceptions of life experience.

Overall, we find that compared to women, men attribute less mental and moral agency and patiency to women, on average. This finding may be indicative that men harbor more sexist attitudes than women towards other women. For example, some research shows that stronger sexist attitudes cause men but not women to more easily objectify sexualized women (Cikara et al., 2011). Additionally, individuals who hold more sexist attitudes are
more likely to perceive greater psychological gender differences between men and women (Zell, Strickhouser, Lane & Teeter, 2016), possibly reinforcing some men’s perceptions that women are an out-group with lower mental capacity and moral status. Thus, although impressions of a woman’s attractiveness and perceived sexual behaviour may influence both men and women’s perceptions, stronger sexism biases may cause men to hold lower baseline perceptions of women.

**Future Directions and Limitations**

We included perceived female economic dependence as a covariate in our model because of its success in predicting anti-promiscuity views in the U.S.A. (Price et al., 2014). Our finding that perceptions of financial inequality between men and women are associated with female objectification provides a new avenue for investigating the causes and correlates of objectification. Using mind and moral attribution as a proxy measurement of anti-promiscuity could offer new insight into more subtle suppression processes and bring new reasons for suppression to light. Future work examining this predictor may prove insightful.

We attempted to utilise a larger number of stimuli to add more realistic variation to our study. However, the large variation in posture, clothing style, pose and size of women depicted in our images restricts our ability to infer which cues participants relied upon to make judgements. Furthermore, the wide and sometimes uneven variation within our stimuli decreases our ability to make inferences about certain groups. For example, although target women varied in race, only 2 were African American and 3 were South East/East Asian, limiting our ability to make meaningful inferences about minority
populations. Additionally, although we make hypotheses about age effects on objectification, a small proportion of our sample was identified to appear older than 35 years of age, due in part to our nonstandard operationalization of age in our age measure. Thus, conclusions about our primarily nonsignificant results regarding age should be taken with consideration to the underrepresentation of older women in our stimuli sample and our nonstandard age measure. Additionally, older women may feel disadvantaged compared to younger women in the mating market, and thus youth may not alter perceptions of power as we originally hypothesized.

The chosen design of our experiment limits our capacity to estimate the correlations among measures at the level of the individual, and thus to draw multivariate insights at the individual difference level. Additionally, due to the online and geographically diffuse nature of our experiment, the associations between attractiveness and judgements of mental or moral capacity that we report may not reflect real-life assessments of women encountered in everyday life, including potential romantic partners or same-sex competitors.

Evolutionary and cultural suppression theories rest upon the salience of local mating market conditions, and the heterogenous sample within the current experiment is ill-suited to account for complex cultural differences in objectification behaviours (see Loughnan et al., 2015). Thus, at the very least, future studies should address whether our results generalize to the judgments people make of the people they meet in their daily lives, including in exclusively non-WEIRD samples (Western, Educated, Industrialized, Rich, Democratic; see Henrich, Heine & Norenzayan, 2010). Further, our study exclusively tests the influence of interpersonal judgements on perceptions of women, though some evidence suggests that sexualised men are also targeted by objectifying perceptions (Loughnan et al., 2010). It
would be informative if future research asked whether similar relationships also exist for judgments of men, and if not, the ways in which the relationships differ.

**Conclusion**

We find that the degree to which a woman is objectified is positively associated with judgements that she has more casual sex, is negatively associated with perceptions of her greater attractiveness, is unrelated to perceived age, and is greater by male compared to female perceivers. Understanding how multiple judgements by perceivers interact during impression formation of women can help us understand the reasons why sexism and negative female stereotypes remain prevalent within society. Considering the overlap between appearances that are considered attractive or sexualized for women, our results highlight the fine line between positive and negative perceptions that women must constantly consider and balance in their daily appearance choices.
Chapter 4

Behind the makeup: Effects of cosmetics on women’s self-objectification, and their objectification by others

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DJK, KRB and RCB conceived and designed the experiment; DJK implemented the experiment, conducted statistical analysis, wrote and edited the manuscript; KRB and RCB provided manuscript edits and supervision throughout the experiment implementation, statistical analysis and writing processes
Abstract

Wearing makeup is known to elevate women’s perceived attractiveness and femininity. Some people, however, associate it with unfaithfulness and promiscuity, qualities for which women are judged more harshly than men. Whether the use of makeup can benefit women by changing how they perceive themselves, or hinder women by changing how others perceive them, remains unclear. Over two experiments, we investigated the effects of makeup on a) women’s self-perceived traits, and b) others’ objectifying perceptions of them. In Experiment 1, we asked 229 women to imagine one of four scenarios (e.g., a romantic date), and half were asked to apply makeup to suit that scenario before rating their self-perceived agency, humanness, intrasexual competitiveness and mate guarding resistance. We found little evidence that applying makeup affected women’s self-perceived traits. In Experiment 2, 844 men and women rated images of women’s faces from Study 1 on measures of mental capacity and moral status. We found that as women wore more makeup, they were attributed less mental capacity and moral status by raters. Negative attributions were mediated by an assumption that women wearing more makeup have more sex, whereas positive attributions were mediated by perceptions of greater attractiveness. These findings suggest that although there exists cultural and competitive pressure on women to appear attractive, negative stereotypes of makeup use may lead to detrimental perceptions of women.
Introduction

Makeup is a regular part of many women’s daily grooming routines. A recent survey of 1,039 respondents within the USA found that more than 70% apply makeup at least once per week (Statista, 2017), a frequency comparable to those found in other European and Asian populations (Biesterbos et al., 2013; Park et al., 2018). Globally, the cosmetic products market is continually growing, valued at $532 billion in 2017 (Zion Market Research, 2018), with popular beauty brands such as L’Oreal reporting billions of dollars in sales each year (L’Oreal Annual Report, 2018). Increasing ease and accessibility across social media platforms allows millions of people to follow the latest makeup and fashion trends (Statista, 2019a; 2019b), with fashion and beauty icons such as Kylie Jenner reaching as many as 139.5 million followers (as of 2 July, 2019). Worldwide, a large proportion of women use, purchase and stay up-to-date with makeup.

One reason for makeup’s popularity is because it elevates the wearer’s perceived attractiveness and femininity (Batres et al., 2018; Borau & Bonnefon, 2019; Cash et al., 1989; Etcoff et al., 2011; Jones, Russell & Ward, 2015; Jones & Kramer, 2016; Law Smith et al., 2006; Mileva, Jones, Russell & Little, 2016). Makeup does so by highlighting or exaggerating sexually dimorphic facial features, such as increasing apparent eye size (Jones, Porcheron & Russell, 2018), lip redness (Stephen & McKeegan, 2010), and facial contrast of the eyes and lips from the skin and brow region (Russell, 2009; Jones, Russell & Ward, 2015). Being perceived as more attractive can lead to a host of positive repercussions, including many prosocial and financial benefits (Nash et al., 2006; see Maestripieri et al., 2017 for a review). Additionally, attractive individuals are often assumed to be more competent (Jackson, Hunter & Hodge, 1995), agentic (Agthe, et al., 2016),
trustworthy (Smith et al., 2009; Putz, Kocsor & Bereczkei, 2018), and to possess more socially desirable personalities compared to unattractive people, known as the what-is-beautiful-is-good effect (Dion, Bercheid & Walster, 1972). Thus, makeup’s ability to increase physical attractiveness can positively influence the social perceptions made towards women wearing makeup.

Makeup may also benefit women who are interested in attracting a desirable partner. Makeup can increase a woman’s perceived dominance and prestige, allowing women wearing makeup access to more high-quality men and a greater opportunity for mate choice than women wearing no makeup (Mileva et al., 2016). The effectiveness of makeup to attract a partner may be especially relevant when competition for high-quality male partners is high. For example, evidence shows that in areas of high income inequality women have a stronger desire to buy beauty products (i.e., the Lipstick Effect; Hill et al., 2012; Netchaeva & Rees, 2016), spend more money at beauty salons and clothing stores, and post more “sexy-selfies” on social media (Blake et al., 2018). Women enhance their looks strategically in order to compete with other women for partners and non-sexual (e.g. employment) opportunities.

Associations with makeup and femininity, however, are not unanimously positive. For example, women wearing more makeup are perceived to have lower leadership ability (James, Jenkins & Watkins, 2018) and to be less desirable to interact with (Delpriore, Bradshaw & Hill, 2018) compared to women with less makeup or no makeup. Additionally, multiple studies find women who use more cosmetics are more likely to be perceived as sexually available (Osborn, 1996; Mileva et al., 2016; Batres et al., 2018), a quality for which women are more negatively judged than men (Crawford & Popp, 2003; Reiss, 1967). Although men and women tend to infer a woman’s sexual behavior from her makeup, such
inferences are generally inaccurate (Batres et al., 2018). Therefore, women who choose to apply more makeup may become subject to negative judgement because they are unintentionally and unwillingly inferred by others to be less restricted sexually than they really are.

**Consequences of makeup may lead to women being objectified**

The process of assessing a woman primarily as a body over other personalized perceptions, or female objectification (Fredrickson & Roberts, 1997), is found to be a cross-cultural (Loughnan et al., 2015), automatic, cognitively engrained phenomenon (Tyler, Calogero & Adams, 2017). However, not all women are objectified equally. Numerous lines of research show that women who are sexualised (e.g., revealing, tightly-fitted attire, high amounts of makeup) are objectified more than women who are non-sexualised (Vaes et al., 2019; Cogoni, Carnaghi & Silani, 2018; Bernard et al., 2018; Tyler et al., 2017) in part due to perceivers’ association of sexualised appearance with sexually open behaviour (Blake et al., 2016). Research finds that, similar to makeup, sexualised appearance is a frequently used but inaccurate cue of sexual behaviour (Stillman & Maner, 2009). Thus, stereotypes that perceivers hold about women’s appearance and their sexual behavior may lead some women to be objectified.

Women who are objectified face many potential negative consequences. Objectified women activate fewer neural regions associated with empathy in perceivers than non-objectified women, mentally processed more similarly to real-life objects (Cogoni, Carnaghi & Silani, 2018; Vaes et al., 2019). As a result, objectification is associated with serious implications for women’s moral treatment, including greater vulnerability to verbal
(Davidson, Gervais & Sherd, 2015), sexual (Blake, Bastian & Denson, 2016) and physical aggression (Arnocky et al., 2019; Bevens & Loughan, 2019; Vasquez, Ball, Loughnan & Pina, 2017). Cultural pressures additionally reinforce that women self-objectify, or consider themselves first for their appearance and secondarily as individuals (Calogero & Jost, 2011). Self-objectification is found to lead to further consequences such as greater body surveillance (Aubrey, 2006; Holland et al., 2017; Sanchez & Broccoli, 2008), greater reservation to interact in social situations (Saguy et al., 2010) and lower self-perceived competence, warmth and morality (Loughnan et al., 2017; see Moradi & Huang, 2008 for a review).

Objectification is one form of a broader classification of perceptions related to the process of viewing another person as less than fully human, known as dehumanization (see Haslam, 2006; Gray, Gray & Wegner, 2007; Haslam & Loughnan, 2014). Dehumanizing perceptions are most commonly directed by in-group members towards out-group members, usually in the context of racial biases or societal group biases (Haslam & Loughnan, 2014). For example, dehumanizing perceptions are associated with comparisons of African-Americans with apes (Goff et al., 2008), lowered empathy for hospital patients (Haque & Waytz, 2012; Lammers & Stapel, 2011) and greater moral outrage towards women and their male partners who choose to have an abortion (Pacilli et al., 2018). Sexualised women are also found to be more intensely dehumanized than non-sexualised women (Puvia & Vaes, 2013; Puvia & Vaes, 2015; Rudman & Mescher, 2012; Vaes et al., 2011) which, like objectification, encourages perceptions of active harm (Rudman & Mescher, 2012; Bevens & Loughnan, 2019) and reduced moral concern towards women (Waytz, Gray, Epley & Wegner, 2010; Loughnan et al., 2013; Morris et al., 2018; Gray et al., 2011; Loughnan et al., 2010). Thus, appearing sexualised can result in additional
negative consequences for women due to a broader stereotype that sexualized women are less than fully human.

Although it is regularly suggested that men are the primary instigators of objectification towards women (Bareket et al., 2018; Fredrickson & Roberts, 1997), both men and women are found to objectify women (Blake et al., 2016; Cikara et al., 2011; Fredrickson et al., 1998; Graff, Murnen & Smolak, 2012; Gurung & Chrouser, 2007; Loughnan et al., 2010; Morris, Goldenberg & Boyd, 2018; Puvia & Vaes, 2013; Puvia & Vaes, 2015; Rudman & Mescher, 2012; Tyler et al., 2017; Strelan & Hargreaves, 2005; Vaes et al., 2011). However, the ways that men and women objectify women, and their reasons for doing so, may differ. Men’s objectification of women may relate to sex goals that become salient when men focus on a woman’s physical attractiveness (Vaes et al., 2011; Morris et al., 2018). Alternatively, women’s objectification of women may relate more closely to a belief that women who self-sexualize are active in the mating market, competitively motivated and sexually accessible (see Delpriore et al., 2018; Muggleton et al., 2018). Some women may feel their potential pool of high-quality male partners is threatened by these sexualized romantic competitors and may subsequently objectify these women as a negative response to this threat (see Delpriore et al., 2018; also see Borau & Bonnefon, 2019), especially women who perceive themselves as less desirable partners (e.g., Agthe et al., 2011, 2016), prefer long-term sexual relationships, or hold conservative sexual values (see Weeden et al., 2008; Weeden & Kurzban, 2013). These reasons for objectifying women are not mutually exclusive, and between and within male and female perceivers there are important differences in why and how they hold negative attitudes towards some women more than others. Understanding this variation in negative attitudes...
towards women—including in female objectification—is crucial for a broader understanding of what motivates sexism and oppressive behavior.

Previous research on the objectification or dehumanization of women focuses primarily on comparisons between sexualised women and non-sexualised women (Blake et al., 2016; Cikara et al., 2011; Loughnan et al., 2010; Loughnan et al., 2013; Puvia & Vaes, 2013; Puvia & Vaes, 2015; Rudman & Mescher, 2012; Tyler et al., 2017; Vaes et al., 2011). However, processes related to face perception are found to affect attributions of others’ minds as well (Deska & Hugenberg, 2017), including perceptions of competence (Etcoff et al., 2011). Due to makeup’s association with sexualization (Bernard et al., 2020) and a woman’s sexual availability (Batres et al., 2018, Osborn, 1996; Mileva et al., 2016), a quality which associates with greater objectification (Blake et al., 2016), women who wear makeup may be objectified more than women who do not wear makeup. The reasons for this objectification may associate with men’s activated sex goals (Vaes et al., 2011; Morris et al., 2018; also see Blake et al., 2017) or women’s intrasexual competitiveness (Agthe et al., 2011, 2016; also see Borau & Bonnefon, 2019). Therefore, we aimed to test whether women with more applied makeup were subjected to greater objectifying perceptions by other men and women.

**Consequences of makeup may affect how women think about themselves, too.**

Although there may be consequences for women due to others’ perceptions of makeup, applying makeup may be beneficial for women’s self-perception. Women use makeup to hide self-identified flaws and to enhance self-identified strengths in their facial features, improving self-image (Cash et al., 1989; Korichi et al., 2008). Consequently,
makeup may be useful in social interactions where women anticipate upward self-comparison with other highly attractive individuals (Regan, 2011) which can negatively impact self-perceived attractiveness and self-esteem (Thornton & Moore, 1993). Makeup’s positive effects on physical attractiveness can also increase women’s psychological well-being (Datta Gupta, Etcoff & Jaeger, 2016), especially when women are motivated to attract a partner (Ko & Suh, 2019). Thus, makeup application may provide both psychological and social benefits to women.

Discussion of how cultural standards, including those regarding women’s appearance, interact to define women’s subjective experiences has been a topic of debate for decades, particularly within feminist literature (see Gill & Organd, 2018). More recently, public discourse has highlighted the importance of women’s subjectivity and psychological well-being for women’s political equality, social equality and empowerment through sexual identity (Gill, 2017; Gill & Organd, 2015). Body-positivity may also shift discussion of gender equity issues away from anti-sexualisation and towards anti-sexism (Ringrose et al., 2013). Thus, the ability for women to dress attractively and feel confident in their appearance may have broader positive implications for women within society.

Although makeup can increase women’s attractiveness, the extent to which it influences women’s self-perceived traits may vary. The makeup women choose to apply may differ depending on who they anticipate they will see and the context under which they will be seen (Wagstaff, 2018). For example, higher amounts of makeup that highlight feminine traits and may be effective for attracting a partner may be more costly in contexts where women are present (Delpriore et al., 2018). As a result, women may adjust the amount and the style of makeup they choose to apply for each event, which may subsequently alter their own self-perceptions (Cash, Rissi & Chapman, 1985). Therefore,
makeup’s influence on women’s self-perceptions may vary between contexts, events and scenarios.

Although research suggests makeup application may positively affect women emotionally and psychologically (Datta Gupta et al., 2016; Korichi et al., 2011), the effects of makeup on women’s self-perceptions are still largely unexplored. In addition, it remains unclear to what extent the anticipated scenario alters the amount of makeup women choose to apply and, consequently, their self-perceptions. In the current research, we aimed to test whether makeup positively increases women’s self-perceived traits and whether these effects varied depending on the amount of makeup applied. More specifically, we were interested in testing whether wearing makeup positively affects self-perceptions of agency and humanness, perceptions that may mediate consequences of objectification, as well as intrasexual competitiveness and resistance to mate guarding, perceptions which relate to positive outcomes of greater self-perceived attractiveness and mate value.

The current research

We report the results of two experiments designed to test the effects of makeup on (1) women’s self-perceptions, specifically those related to self-assertiveness and intrasexual competitiveness, and (2) others’ attributions of mental capacity and moral status, two important psychological components of objectification (Gray et al., 2011; Loughnan et al., 2010). Experiment 1 tests whether makeup increases women’s self-perceptions and whether self-perceptions differ depending on the social context for which makeup is applied. Participants prepared for three hypothetical scenarios selected to represent differing motivations for applying makeup: a job interview, a romantic date, or an Instagram Post.
The scenarios were selected to capture women’s motivation to use makeup to promote perceived competence and prosocial biases (job interview), to attract a potential partner (romantic date), or to compete with other women in an online environment where women compete to earn “likes” from friends, acquaintances and strangers (Instagram Post). We selected an Instagram post as a scenario of intrasexual competition because evidence suggests that idealized images on Instagram can trigger appearance-related comparisons (Hendrickse et al., 2017) and competitive responses from women (Borau & Bonnefon, 2019), possibly because woman can utilize social media ‘sexy selfies’ when there are incentives to use physical attractiveness to out-do their competitors (Blake et al., 2018).

The fourth control scenario, shopping at a grocery store, was chosen as a routine event that we anticipated would not stimulate any specific agentic or emotional reactions. After completing their task, we measured participants’ self-perceived agency and humanness, characteristics that are affected by objectification, as well as participants’ intrasexual competitiveness and mate guarding resistance behaviors, traits indicative of feeling competitive on the mating market. We additionally measured participants’ self-perceived mate value and sociosexual orientation, important factors that explain variation in women’s willingness to engage in mate guarding resistance behaviors (Fugere et al., 2015) or be active on the mating market (Buss & Schmitt, 1993).

Experiment 2 investigated how the amount of makeup women applied in a subset of the images from Experiment 1 influenced objectifying perceptions made by other women and by men. Specifically, in the present research we test whether the amount of makeup women are perceived to wear affects how much mental capacity and moral status they are attributed by other men and women. Additionally, to test whether men and women hold objectifying perception of women for differing reasons, Experiment 2 also investigated
whether effects of makeup on attributed mental capacity and moral status of women are mediated by a woman’s perceived attractiveness or her perceived likeliness to have casual sex.

All of our predictions, methods and analyses plan were pre-registered and are available at the Open Science Framework (https://osf.io/szbkv/?view_only=64ecaa3f3a164725a13f86f1bee18067).

Experiment 1

Our first experiment investigated whether makeup application increases women’s self-perceived agency, humanness, intrasexual competitiveness or mate guarding resistance behaviours using a 4 (scenario prime: romantic date, job interview, Instagram Post, control) × 2 (condition: makeup, no makeup) factorial experimental design. Participants either applied makeup to an image of their face in the way they wished to appear for their scenario (makeup condition) or wrote about preparing for their scenario (no makeup condition). Participants then answered questions about their self-perceived traits.

We predicted that women who applied makeup would have higher self-perceived agency, humanness, competitiveness and mate guarding behaviour than women who did not apply makeup (H1). We also predicted that wearing more makeup would have a stronger positive effect on women’s self-perceived traits than wearing less makeup (H2). Our third prediction was that women would choose to apply more makeup for experimental scenarios (a romantic date, a job interview, an Instagram Post) compared to our control scenario (the grocery store), with the highest amount of makeup applied for a hypothetical romantic date
(makeup as mate attraction) or an Instagram Post (makeup as intrasexual competition) (H3).

**Methods**

**Participants**

A sample of 250 women participants ranging from 18 to 59 years ($M_{age} = 22.1$, $SD_{age} = 4.2$) were recruited to participate in a survey on makeup and first impressions using an online recruitment system at an Australian university. Of this 250 sample, 11 participants were excluded from analysis for not following experiment instructions, leaving a final total of 239 participants. All participants provided their consent before completing the study and were paid $10 AUD as compensation for participating in a 25- to 30-minute survey ($20 AUD/hr). Participants ranged in ethnicity, with the majority of women identifying as South East Asian (38.9%), Chinese Asian (37.6%) or North Western European, British or Irish (9.2%; see supplementary material for full list of participant ethnicities). The majority of participants were single (67.2%) or in a monogamous relationship (29.3%), with the remaining 3.4% of participants in an open relationship.

**Procedure**

Participants completed an online questionnaire under the supervision of an experimental researcher. Participants were allocated at random to one of eight treatment combinations (four scenario priming conditions crossed with two makeup conditions). Previous research finds that self-applied cosmetics and professionally-applied cosmetics may differ in their effects on women’s attractiveness (Jones & Kramer, 2016). Therefore,
we elected to have participants in the makeup condition use the iPad app MakeupPlus, an app which uses facial feature recognition to allow realistic makeup application, to apply makeup in order to standardize the skill-level of makeup application across women while enabling women to apply a range of both subtle and more obvious makeup to their faces. After completing the makeup task or the non-makeup writing task, all participants proceeded to complete explicit agency, humanness, competitiveness, mate guarding resistance and implicit agency scales (in that order). After completing the survey, all participants were thanked and debriefed about the study.

**Measures**

Generally, the order is presented in the same order as participants completed the study.

**Scenario priming condition**

Participants answered priming three questions about their allocated scenario (e.g., “When was your most recent date?”). Participants were then provided instructions about their allocated scenario. In the *romantic date* scenario, participants were asked to think of a person they were attracted to as a partner, either someone famous or someone they knew, and then to either apply makeup in the way they wished to appear for an imaginary date with this person or to write about preparing for an imaginary date with this person (depending on makeup condition allocation). In the *job interview* scenario, participants were instructed to imagine today was the day of a job interview and to apply makeup in the way they wished to appear or write about preparing for their interview. In the *Instagram post* scenario, participants were asked to imagine they were about to make a media post
about themselves on Instagram (or equivalent social media account) and to apply makeup in the way they wished to appear in the posted photo or write about how they wished to appear for their Instagram post. In the control scenario, participants were told to imagine they were about to go to the grocery store and to apply makeup in the way they wished to appear at the store or write about their grocery store routine. The sex of the romantic date, the job interviewer or the Instagram following were not specifically identified. To ensure participants took time to consider and apply their desired amount of makeup for their allocated scenario, participants were allocated 5 minutes apply makeup and were unable to progress with the survey until this time had elapsed. Participants were told that they could take as much time as they required until they were satisfied with their makeup application. Participants in the writing condition were required to write 200 words on their topic in order to ensure they completed the task and were unable to progress in the survey until this was completed (see Appendix 4A for full description).

**Makeup application condition**

Participants in the makeup condition had their photograph taken, with the help of the supervising researcher (DK), using a Logitech™ webcam in laboratory conditions. Photographs were taken in the same room under identical lighting conditions, including additional lighting directed at a 10-degree angle to the right of the participant in order to reduce shadows. Participants were instructed to hold a neutral expression and stare directly into the camera. After the photograph was successfully taken, the researcher transferred the photo of the participant to a 1st generation iPad mini running iOS version 9.3.5 and loaded the photograph into the MakeupPlus app (version 5.0.0).
Participants used MakeupPlus to add makeup effects to their photograph in the way that they wished to appear for the scenario condition. MakeupPlus is a free digital makeup application app that uses facial feature recognition to allow users to apply various types of cosmetics to their faces. Makeup effects that could be applied by participants included lipstick, eyeliner, foundation, blush, eyelashes, mascara, and contouring. Participants were also able to adjust the intensity or subtlety of each makeup effect using on-screen effect sliders. Participants were not allowed to use automatic themes, beautify effects (an automatic skin-smoother), contacts, decorations (e.g., tattoos, bowties, etc.) or fine-adjustment effects (i.e., altering automatic facial mapping of makeup effects).

When participants finished applying makeup to their photo, the makeup-applied photo was transferred from the iPad back to the computer by the researcher and positioned to occupy the entire right side of the computer screen. The phrase “This is the makeup you have chosen to wear for a \([\text{allocated scenario}]\)” was also displayed in the top right corner of the screen. Participants completed the remainder of the questionnaire with their photo and scenario displayed in this way (see Appendix 4B for examples of images).

**Non-make up condition**

In the non-make up condition, participants completed the priming questions and were provided the same instructions for each scenario as in the makeup condition. Instead of applying makeup in MakeupPlus, they were instructed to write 200 words about their preparation for, and desired outcome of, the allocated scenario into an open-answer panel of their online survey (see Appendix 4A). Participants were not allowed to continue unless they had written 200 words into the open-answer panel. This method was used to partition the effects of makeup application from more general effects of anticipating the event itself.
Explicit agency

Agency was measured explicitly using a 16-item measure from Blake, Bastian and Denson (2016; see Appendix 4C). Participants indicated to what extent each of 16 words described how they felt about themselves at the present moment. Eight words were associated with high agency (decisive, driven, a go-getter, self-aware, persistent, independent, productive, strong-minded) and eight words were associated with low agency (dependent, meek, hesitant, apathetic, idle, inactive, unconcerned, scatter-brained). Low agency items were reverse-coded. All items were assessed using a 7-point Likert scale (1 = Not at all, 7 = Extremely). Items were averaged to create an overall explicit agency score for each participant ($\alpha = .81$).

Humanness

Humanness was measured using the Humanness Scale (Bastian, Jetten & Radke, 2012; see Appendix 4C). This 20-item measure asks participants to rate how much they feel each word describes them using a 7-point scale from -3 to +3 (-3 = Not at all; 3 = Very much so). Examples of words include “broadminded”, “polite”, “active”, “curious”, “fun-loving”, “rude”, “impatient”, “jealous” and “shy”. Participants were also presented with 10 additional unrelated words (e.g., “bubbly”, “witty”). Participants answered the extent which they felt these words described them. Word order was randomized. Separating scores into two dimensions, following methods by Haslam et al. (2005) and Bastian et al. (2012), returned low internal measure reliability for each separate dimension (Dimension 1: $\alpha = .65$; Dimension 2: $\alpha = .58$). Thus, all 20 items were combined to create an overall average humanness score for each participant ($\alpha = .75$).
Intrasexual competitiveness

Intrasexual competitiveness was measured using an adapted version of the individual differences in intrasexual competition scale used by Buunk & Fischer (2009; see Appendix 4C). Participants viewed images of two women’s faces, one at a time, and judged her attractiveness (“How attractive do you think this person is?”), interpersonal traits (“How intelligent do you think this person is?”, “How warm do you think this person is?”), “How competent do you think this person is?”) and their desire to interact with her (“How likely would you be to hire this person as a colleague?”, “How likely would you be to be friends with this person?”). All items were assessed using a 7-point Likert scale (1 = Not at all, 7 = Very). Items for both women were averaged to create one overall intrasexual competitiveness score ($\alpha = .90$)

Mate guarding resistance behaviour

A short 6-item measure was used to assess to what extent women anticipated using various behaviours to avoid or undermine a male partner’s mate guarding tactics. This measure borrowed 6 items from a longer 12-item measure by Buunk and Fisher (2009; see Appendix 4C). Participants were asked to rate which behaviours they believed they were most likely to do if their current partner believed that they were interested in other men using a 7-point Likert scale (1 = Not at all, 7 = Very Likely). Examples include how likely women were to “Tell your boyfriend that you were going to visit family, but really go out with friends”, “Not let him put his arm around you in public”, and “Fight with him because he wants to spend more time with you than desired.” All 6 items were combined to create an average overall mate guarding resistance behaviour score ($\alpha = .79$).
Implicit Agency

Implicit agency was measured using an intentional binding task (Ebert & Wegner, 2010; Haggard, Clark & Kalogeras, 2002; Moore & Haggard, 2008; Moore & Obhi 2012; Voss et al., 2010; see Appendix 4C). Intentional binding tasks assess the subjective experience of temporal intervals through voluntary action and have been used as a paradigm to explore cognitive and neural processes in schizophrenia and neural intervention approaches (see Voss et al., 2010 for a review). Although intentional binding is suggested as an implicit measure of sense of agency, the mechanisms that mediate intentional binding and explicit agency may be partially separable and depend on situational contexts (Ebert & Wegner, 2010). Nonetheless, intentional binding has been shown to reliably link to and individual’s sense of agency (Voss et al., 2010).

In the intentional binding task, participants are informed that they will hear a tone which can be stopped by clicking on a “stop” button. After clicking on the stop button, participants are told that there will be a delay between when they click the button and when the tone stops which will be no longer than 1 second (1000 ms). After the tone has stopped, participants are asked to estimate how long they thought the delay was using a 9-point scale (1 = 100 milliseconds, 9 = 900 milliseconds). The actual delay between the participant selecting “stop” and the tone stopping was always either 100ms, 400ms, or 700ms. The delay for each question was predetermined by random selection prior to the experiment, and each participant was presented with the same delay times in the same order. Participants are considered more agentic if they answer that the delay is shorter on average because these individuals connect their voluntary action to the consequence more readily, demonstrating their belief that they are an agent that influences their environment.
(Haggard, Clark & Kalogeras, 2002; Moore & Obhi, 2012). Participants completed 5 practice trials and 20 recorded trials. For each trial, we calculated the difference between the actual delay and the participant’s selected delay. Differences for all 20 recorded trials were combined to create an average score ($\alpha = .90$).

**Sociosexuality**

The Revised Sociosexual Orientation Inventory (R-SOI, Penke & Asendorpf, 2008) is a 9-item measure used to assess participant’s attitudes, behaviours and desires for non-committal or casual sex. Items were assessed using a 9-point Likert scale. Examples of items are, “With how many partners have you had sex within the past month?” (0 to 20 or more), “Sex without love is OK” (1 = Strongly disagree, 9 = Strongly agree), and “How often do you have fantasies about having sex with someone with whom you do not have a committed romantic relationship?” (1 = never, 9 = at least once a day; $\alpha = .89$).

**Mate Value**

Mate value was assessed using a 4-item self-report measure (Edlund & Sagarin, 2014). Participants were asked to rate themselves using a 7-point Likert scale on how desirable they believe they are as a partner. The four items are “Overall, how would you rate your level of desirability as a partner on the following scale?” (1 = Extremely undesirable; 7 = Extremely desirable), “Overall, how would member of the opposite sex rate your level of desirability as a partner on the following scale?” (1 = Extremely undesirable; 7 = Extremely desirable), “Overall, how do you believe you compare to other people in desirability as a partner on the following scale?” (1 = Very much lower than
average; 7 = Very much higher than average), and “Overall, how good of a catch are you?” (1 = Very bad catch; 7 = Very good catch; α = .86).

Data Analysis

Following our preregistered analysis plan, to determine the effects of makeup and scenario on women’s self-perceived traits a series of 5 General Linear Mixed models were used to test each our five dependent variables – explicit agency, implicit agency, humanness, intrasexual competitiveness and mate guarding resistance behaviour. Each model included makeup condition, scenario, amount of makeup applied, and interaction effects of makeup condition × scenario and scenario × amount of makeup applied. Participant SOI and mate value were included as covariates in each model. Mate guarding resistance behaviour was analysed using a negative binomial regression to account for positively skewed residuals.

Results and Discussion

We found no significant effects of the makeup condition, scenario condition, or amount of makeup applied on any of our dependent variables (Table 4.2; see Table 4.1 for average self-perceived trait ratings). Therefore, our results show that applying makeup does not increase or decrease participants’ self-perceived agency, humanness, intrasexual competitiveness or anticipated mate guarding resistance behaviours. Our results also show that these self-perceived traits do not increase or decrease depending on the scenario each participant is primed to think about or apply makeup for. However, we did find a marginally significant effect of scenario on implicit agency (Table 4.2), suggesting that
regardless of makeup, women may feel less assertive in scenarios like posting to social media and job interviews than in more mundane scenarios like grocery shopping. Women’s self-perceptions of agency, humanness, competitiveness and mate guarding behaviour did not significantly increase or decrease depending on the amount of makeup applied. We also found no significant interaction effects on self-perceived traits (Table 4.2).

Covariates included in the model showed that that participants with higher self-perceived mate value also had greater self-perceived explicit agency and humanness (Table 4.2). This finding supports evidence that greater physical attractiveness is linked with positive self-perception (Diener, Wolsic & Fujita, 1995; Goodwin et al., 2012; Penke & Denissen, 2008). Women with higher mate value were also more likely to resist mate guarding tactics from their partner (Table 4.2), supporting evidence that high mate value women may be more open to the possibility of pursuing other romantic options (Fugère, Cousins & MacLaren, 2015). Additionally, participants who reported having a more unrestricted sociosexual orientation reported greater intrasexual competitiveness (Table 4.2). This relationship may denote that women with high sociosexuality compete more regularly within the mating market for partners than sexually restricted women (Buss & Schmitt, 1993). Nevertheless, due to the correlational nature of our covariates, our conclusions are mostly speculative.

We ran additional exploratory analyses comparing whether effects differed between single and partnered women. Results revealed no significant results, suggesting that relationship status does not affect the extent that makeup, scenario or the amount of makeup applied influence women’s self-perceived agency, competitiveness or mate guarding resistance behaviours.
Table 4.1. Average ratings of women’s self-perceived traits.

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit Agency</td>
<td>4.67</td>
<td>0.74</td>
</tr>
<tr>
<td>Implicit Agency</td>
<td>-21.34</td>
<td>120.23</td>
</tr>
<tr>
<td>Humanness</td>
<td>0.81</td>
<td>0.57</td>
</tr>
<tr>
<td>Intrasexual Competitiveness</td>
<td>4.64</td>
<td>0.89</td>
</tr>
<tr>
<td>Mate-Guarding Resistance Behaviour</td>
<td>2.53</td>
<td>1.16</td>
</tr>
</tbody>
</table>

Note: Explicit Agency, Intrasexual Competitiveness and Mate-Guarding Resistance Behaviour were measured using a 7-point Likert scale (0 = Low, 7 = High). Humanness was measured using a 7-point Likert scale (-3 = Low, 3 = High). Negative implicit agency score represents greater agency, with values further from zero indicating more extreme values.
Table 4.2. Results from general linear models of effects of makeup, scenario, amount of makeup applied and their interactions on women’s explicit agency, implicit agency, humanness, intrasexual competitiveness and mate guarding resistance behaviour. Participant sociosexual orientation and mate value are included as covariates.

<table>
<thead>
<tr>
<th></th>
<th>Explicit Agency</th>
<th></th>
<th>Implicit Agency</th>
<th></th>
<th>Humanness</th>
<th></th>
<th>Competitiveness</th>
<th></th>
<th>Mate Guarding Resistance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Makeup</td>
<td>1</td>
<td>0.10</td>
<td>.757</td>
<td>1</td>
<td>0.08</td>
<td>.777</td>
<td>1</td>
<td>0.18</td>
<td>.675</td>
<td>1</td>
</tr>
<tr>
<td>Scenario</td>
<td>3</td>
<td>0.650</td>
<td>.584</td>
<td>3</td>
<td>2.50</td>
<td>.061</td>
<td>3</td>
<td>0.33</td>
<td>.800</td>
<td>3</td>
</tr>
<tr>
<td>Amount of Makeup</td>
<td>1</td>
<td>0.73</td>
<td>.394</td>
<td>1</td>
<td>0.02</td>
<td>.895</td>
<td>1</td>
<td>0.21</td>
<td>.645</td>
<td>1</td>
</tr>
<tr>
<td>Scenario × Makeup</td>
<td>3</td>
<td>0.93</td>
<td>.926</td>
<td>3</td>
<td>0.64</td>
<td>.640</td>
<td>3</td>
<td>0.84</td>
<td>.473</td>
<td>3</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOI</td>
<td>1</td>
<td>1.90</td>
<td>.170</td>
<td>1</td>
<td>0.83</td>
<td>.834</td>
<td>1</td>
<td>0.55</td>
<td>.46</td>
<td>1</td>
</tr>
<tr>
<td>Mate Value</td>
<td>1</td>
<td>9.74</td>
<td>.002</td>
<td>1</td>
<td>0.31</td>
<td>.306</td>
<td>1</td>
<td>16.87</td>
<td>&lt;.001</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: Mate Guarding Resistance was analysed using a negative binomial distribution model to account for positive skew of residuals.
Experiment 2

In Experiment 1, we found that makeup has limited effects on women’s self-perceptions. In Experiment 2, we aimed to investigate how men and women’s objectifying perceptions may be influenced by women’s makeup. We measured objectification via measures of mind attribution and moral attribution. Perceptions of mind are found to consist of two dimensions: mental agency and mental experience. A person who has mental agency is viewed as capable of thinking, planning, acting on their intentions, and possessing self-control, whereas a person attributed mental experience is viewed as capable of feeling sensations including pain, pleasure, embarrassment and desire (Gray, Gray & Wegner, 2007). Perceptions of morality also divide into two similar dimensions: moral agency and moral patiency (Gray & Wegner, 2009; Gray, Young & Waytz, 2012). Those perceived to have moral agency are seen as able to knowingly commit good or bad actions to another person, whereas those perceived to have moral patiency are viewed as sensitive to moral actions that are committed to them (Gray & Wegner, 2009). Women who are perceived as lacking in mental capacity (Heflick & Goldenberg, 2009; Heflick et al., 2011; Bernard et al., 2012) and moral status (Loughnan et al., 2010; Loughnan et al., 2013) are viewed similarly to animals, inanimate objects or robots (Morris et al., 2018; Waytz et al., 2010). Through this process of being viewed as less than fully human, women are simultaneously objectified.

Measures of mental capacity and moral status are distinct from more literal measures of objectification such as in cognitive (Cogoni et al., 2018; Vaes et al., 2019) and face-processing research (Bernard et al., 2012; 2018) because mental and moral attribution is two-dimensional in nature (Gray et al., 2007) and inversely related; a person who is
perceived as an agent is no longer viewed as a patient, and vice versa (Gray & Wegner, 2009; Gray et al., 2011; Schroeder et al., 2017). For example, in cases of sexual assault both men and women attribute less moral patiency but greater moral agency to sexualised women than non-sexualised women (Loughnan et al., 2013). As a result, men and women have less moral concern for sexualised women but perceive them as more blameworthy (Loughnan et al., 2013). Findings like these suggest there may be multiple forms of female objectification which depend on factors such as individual perceiver biases towards women (see Morris, Goldenberg & Boyd, 2018). Using measures of mental and moral attribution may be better suited to capture more subtle variation in female objectification.

In Experiment 2, male and female participants rated a subset of images of women’s faces from Experiment 1 (50 makeup condition, 50 non-make-up condition) on how much makeup they perceived each woman was wearing and how much mental capacity and moral status they believed each woman had. Participants also rated women’s attractiveness and their likeliness to pursue casual sex. Following findings from previous research on moral attribution to sexualised women (Gray et al., 2011; Loughnan et al., 2013), we predicted that more makeup would decrease women’s attributed patiency but increase women’s attributed agency (H4) due to the dichotomous relationship between perceptions of agency and patiency (Gray et al., 2007; Gray & Wegner, 2009; Gray et al., 2011). Additionally, because makeup can increase perceptions of both attractiveness and unrestricted sexual behaviour (Batres et al., 2018), we also predicted that makeup effects on mental and moral attribution would be mediated by the target woman’s perceived attractiveness and perceived likeliness to pursue casual sex (H5). Women higher in attractiveness are expected to activate sex-goals in men but not women (Fredrickson & Roberts, 1997; Gervais, Holland & Dodd, 2013; Vaes et al., 2011). Thus, we predicted that greater perceived
attractiveness would be more likely to increase men’s objectifying perceptions than women’s (H6). Alternatively, unrestricted sexual behaviour is more detrimental to women’s ability to attract a high mate-value partner in the mating market than men’s (Baumeister & Vohs, 2004), and so we also predicted that greater perceived likeliness to have casual sex would be more likely to increase women’s objectifying perceptions than men’s (H6).

Methods

Participants

A total of 844 participants (422 men, 422 women) ranging in age from 18 to 70 (M_age = 34.8, SD = 10.9) were recruited on Amazon’s Mechanical Turk to complete an online survey. To control the demographic of participants within our survey, participants were only able to complete this survey if they had an approval rating of more than 97% on Mechanical Turk, resided in the USA and identified a valid state as their current state of residence. Additionally, given that a number of accounts on MTurk are non-human accounts, prior to viewing the Participant Information Statement, participants were only allowed to begin the survey after completing a robot CAPTCHA task and an additional photo identification task where participants were asked to identify the emotion depicted by the characters in a photo in an open response answer. Participants were paid $2.00 USD to complete a 15-minute survey (a rate of $8.00 per hour).

The majority of participants had completed an undergraduate university degree (50.5%), a post graduate degree (17.9%) or received a diploma (16.1%), with 12.6% having completed high school as their highest level of education and 3% reporting they had completed another level of education. Participants were mainly Caucasian/White (70.4%),
with the remaining participants reporting their ethnicity as African American/Black (10.5%), Hispanic (4.7%), East Asian (4.5%), South East Asian (3.4%), Mixed (3.1%), Native American (1.6%), Indian/Pakistani/Nepalese (1.1%) Middle Eastern (0.5%) or another unlisted ethnicity (0.2%). A small proportion of participants reported being single (5.4%) compared to those reporting they were in a long-term relationship (36.3%) or that they were married (20.2%), though 37.5% of participants selected their relationship status as “Other”. Participants self-identified themselves as being exclusively or mostly attracted to men (40.6%), being exclusively or mostly attracted to women (52.7%) and being attracted equally to both men and women (5.7).

**Procedure**

Participants first completed demographic, sociosexuality and mate value measures. Participants were then allocated to view one of 10 groups of faces consisting of images of women’s faces from Experiment 1. Within each group, no two faces were of the same woman. Each group of 10 faces consisted of 5 non-make up condition faces and 5 makeup condition faces from Experiment 1. For each group of faces, an identical group existed with the same women but with the photo of the women in the alternative condition (i.e., group 1 contains a photo of woman x from the makeup condition, whereas group 2 has a photo of woman x from the non-make up condition). We chose to use this design in order to gauge the judgements of participants on a large number of women while minimizing mental fatigue and task disengagement (Hopstaken et al., 2015; Lavrakas, 2008). In longer surveys where participants are more likely to become mentally fatigued, variation in question responses reduces in later questions as participants become more likely to choose identical
answers to previous questions (Galesic & Bosnjak, 2009; Herzog & Bachman, 1981). Due to the subtle variation in makeup between women’s faces across our sample, it was important that we maintained this variation in participant responses to allow us to discern between what were likely to be small but possibly meaningful differences in perceptions of women. To preserve the variation of first impressions, we aimed to limit the number of items that participants answered when rating each woman’s agency and patience, as some research shows that perceptions of women wearing makeup change as perceivers view women for longer (Etcoff et al., 2011).

Participants viewed each face one-at-a-time in a pre-randomised order and rated each woman on mental and moral indices, perceived amount of makeup, perceived attractiveness and perceived likeliness to have casual sex. Questions were also presented in a random order throughout the entire survey. Upon completion of this task, participants were debriefed about the study.

Measures

Indices of mental and moral perceptions

We asked a series of questions to assess the mental and moral perceptions of women using the same 7-point scale (1 = Not at all; 7 = Extremely). Mental Agency of a target woman was assessed using two items (from Gray, Gray & Wegner, 2007). These items were selected as the items with the highest factor loadings from Blake and colleagues’ (2016) shortened agency scale used to assess sexualised vs non-sexualised images of women. Items were “How capable do you think this person is at exercising self-restraint over
Moral Agency of a target woman was assessed using two items (from Holland & Haslam, 2013). Items were chosen by selecting the two items with the highest factor loadings from Blake and colleagues’ (2016) moral perceptions scale used to assess perceptions of sexualised vs non-sexualised images of target women. Items were “How much do you believe this person’s achievements and actions are due to their thoughts and intentions, rather than luck and circumstances?” and “In general, how responsible do you think this person is for their actions in life?”.

Mental Experience was assessed using two items (from Gray, Gray & Wegner, 2007). These items were chosen using the same method as mental agency items whereby we selected items with the two highest factor loadings from Blake & colleagues’ (2016) shortened agency scale. Items were “How capable do you think this person is at feeling afraid or fearful?” and “How capable do you think this person is at feeling physical or emotional pain?”.

Moral Patience of each target woman was assessed using two items (from Holland & Haslam, 2013). These items were selected using the same method as moral agency whereby we selected the two items with the highest factor loadings from Blake and colleagues’ (2016) moral perceptions scale. Items were “How bad do you think you would feel if someone took advantage of this person?” and “How bad do you think you would feel if you manipulated this person?”

desires, emotions, or impulses?” and “How capable do you think this person is at telling right from wrong?”.
Determination of final mental and moral dimensions

Following our preregistered methods (https://osf.io/szbkv/?view_only=64ecaa3f3a164725a13f86f1bee18067), a Principal Components Analysis was used to test whether indices of mental and moral dimensions of agency and patiency cluster separately or together. All four mental and moral dimension measures would be analysed separately only if eigenvalues separating dimensions were greater than 1.0. Analysis revealed that the first two dimensions accounted for 83.2% of the overall variance captured within all mental and moral perceptions measures, but only the first dimension had an eigenvalue greater than 1. Principal Component 1 (eigenvalue = 2.71; 67.7% of variance) consisted of mental agency (rotated factor loading = -.85), mental experience (-.85), moral agency (-.83) and moral patiency (-.75), forming an overall “humanness” dimension. Principal Component 2 (eigenvalue = 0.62; 15.5% of variance) separated variables mental agency (.31) and moral agency (.39) from mental experience (-.17) and moral patiency (-.59), forming an agency/patiency measure. Eigenvalues separating agentic and patiency measures were less than 1 (Principal Component 2 eigenvalue = 0.62; Component 3 = 0.37; Component 4 = 0.30).

Our preregistration dictated that if eigenvalues separating dimensions were not greater than 1.0, we would create two overall indices based on empirical and theoretical research indicating that mind and moral perceptions are dyadic (Gray et al., 2007; Gray & Wegner, 2009; Waytz et al., 2010; Schein & Gray, 2017), although some research suggests that, as our PCA shows, mind and moral attribution consist of only one overall dimension (Khamitov, Rotman & Piazza, 2016; also see Bastian et al., 2011a; 2011b). Following our preregistered methods, we combined indices to make two dimensions: one overall agency measure, consisting of the average of mental agency and moral agency items (α = .83), and
one overall patiency measure, consisting of the average of mental experience and moral patiency items ($\alpha = .86$). See Table 4.3 for average agency and patiency ratings.

**Table 4.3.** Average ratings by men and women of target women’s overall agency and patiency.

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th></th>
<th>Women</th>
<th></th>
<th>Overall</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Agency</td>
<td>5.60</td>
<td>1.12</td>
<td>5.72</td>
<td>0.97</td>
<td>5.66</td>
<td>1.04</td>
</tr>
<tr>
<td>Patiency</td>
<td>5.91</td>
<td>1.17</td>
<td>6.15</td>
<td>1.08</td>
<td>6.03</td>
<td>1.13</td>
</tr>
</tbody>
</table>

Note: Agency and patiency were assessed using a 7-point Likert scale (1 = Low, 7 = High)

**Perceived Amount of Makeup**

The perceived amount of makeup of each target woman was assessed using one item: “How much makeup do you think this person is wearing?” (0 = No makeup, 7 = A lot of makeup; $M = xx, SD = xx$).

**Perceived Attractiveness of Target Woman**

The perceived attractiveness of each target woman was assessed a single item: “How attractive do you think this person is?” (0 = Not at all; 7 = Extremely; $M = xx, SD = xx$).
Perceived Likeliness to Pursue Casual Sex of Target Woman

The perceived likeliness of each target woman to pursue casual sex was assessed using two items adapted from the Revised Sociosexual Orientation Inventory (R-SOI; Penke & Asendorpf, 2008; Stillman & Maner, 2009). Items were “How likely do you think this person is to have a one night stand?” and “How likely do you think this person is to have (or have had) a lot of sexual partners?”. (0 = Not at all; 7 = Very; $M = xx$, $SD = xx$, $\alpha = .86$).

Individual Differences Measures

Sociosexual orientation ($\alpha = .86$) and mate value ($\alpha = .92$) of participants were measured using the same measures as in Experiment 1.

Data Analysis

General Linear Mixed Regression Analysis

We conducted two General Linear Mixed regression models using the lme4 (Bates et al., 2015) and lmerTest (Kuznetsova, Brockhoff & Christensen, 2017) packages on agency and patiency indices to determine whether the amount of makeup a woman “wore” affected the agency (mental and moral) or patiency (mental and moral) she was attributed by others. Models included sex (of the participant), amount of makeup (of the target woman), scenario (condition group of target woman from Experiment 1), and their interactions. Participant SOI and mate value were included as covariates. Participant identity and target woman identity were included as random effects in the model. As an exploratory analysis, we additionally conducted these statistical tests using the humanness
dimension according to our PCA analysis as the dependent variable. Results of this exploratory analysis are reported below.

Mediation Analyses

We investigated whether the perception that a woman is attractive or is likely to pursue casual sex mediated the effect of the amount of makeup that a woman wears on attribution agency and patiency. We used second-stage moderated mediation bootstrapping analyses following methods reported by Hayes (2015) with 5,000 resamples using the lavaan package (Rosseel, 2012) on R 3.5.1 (R Core Team, 2019). We conducted two bootstrapped moderated mediation models to determine whether the direct effects of makeup on perceptions of agency or patiency of target women was mediated by perceptions of the target women’s attractiveness or likeliness to pursue casual sex. We included target women’s attractiveness rating and average perceived SOI rating as predictors of the dependent variable (Figure 4.1; Figure 4.2). Sex of the participant was included as a moderator between the effect of perceived likeliness to pursue casual sex or perceived attractiveness on agency/patiency ratings. Mediation was considered significant if 95% bootstrapped confidence intervals (CI) for the indirect effect did not include zero (Preacher & Hayes, 2004).

Results and Discussion

Regression results for both agency and patiency are shown in Table 4.4. Men and women did not significantly differ in their overall perceptions of women’s agency. There were also no main effects of the allocated scenario a woman prepared for or the amount of
makeup a woman wore on women’s attributed agency. We found a significant sex ×
perceived makeup interaction, indicating that the difference between men and women’s
agency attributions grew larger when rating women wearing more makeup than when rating
women wearing less makeup. Specifically, female participants tended to attribute women
wearing more makeup slightly more agency, whereas men tended to attribute them slightly
less agency (Men: $\beta = -.01, SE = .01, F_{1,2481} = 2.94, p = .086$; Women: $\beta = .02, SE = .01,$
$F_{1,2556} = 2.81, p = .094$). We found no other interaction effects (see Table 4.4).

Patiency attributions differed significantly between male and female participants,
with female participants attributing significantly more patiency to women than male
participants (see Table 4.1 for average ratings). The perceived amount of makeup a woman
wore and the scenario the woman applied makeup for did not significantly affect the
amount of patiency she was attributed. We found a significant sex × perceived amount of
makeup interaction, indicating that for female but not male participants there was a
significant negative relationship between ratings of patiency and increasing amounts of
makeup (Men: $\beta = .004, SE = .006$; Women: $\beta = -.01, SE = .005$). This interaction effect
also shows that although female participants attributed greater patiency than male
participants to women who wore little or no makeup, this difference was eliminated as
women wore moderate to high amounts of makeup. We found no additional interaction
effects (see Table 4.4).

| Table 4.4. Results of preregistered mixed linear regression models of agency and patiency ratings of women |
|-------------------------------------------------------|-------------------------------------------------|
|                                                        | Agency                                          | Patiency                                       |
|                                                        | d.f.   $F$   $p$ | d.f.   $F$   $p$ |
| Sex                                                   | 1,1191  0.80  .371 | 1,1067  14.32 < .000 |
As predicted, mediation analyses (Figure 4.1; Figure 4.2) found a significant direct effect of perceived makeup on women’s attributed agency (CI [-.04, -.02]) and attributed patiency (CI [-.11, -.08]). The effects of makeup on perceptions of both a woman’s agency and patiency were partially mediated by her perceived attractiveness. Women wearing more makeup were viewed as significantly more attractive (CI [.24, .28]), which significantly increased perceptions of their agency (CI [.06, .11]) and their patiency (CI [.10, .14]). The sex of the participant moderated the relationship between attractiveness and agency, with female participants attributing more attractive women slightly more agency than male participants (Women: $\beta = .04 \pm .003$, CI [.03, .04]; Men: $\beta = .02 \pm .003$, CI [.02, .03]). The sex of the participant also moderated the relationship between attractiveness and patiency, with female participants attributing more attractive women slightly more patiency than male participants as well (Women: $\beta = .05$, SE = .004, CI [.04, .05]; Men: $\beta = .03$, SE = .004, CI [.02, .04]).

<table>
<thead>
<tr>
<th>Table 4.4. Results of preregistered mixed linear regression models of agency and patiency ratings of women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario</td>
</tr>
<tr>
<td>Amount of Makeup</td>
</tr>
<tr>
<td>Sex $\times$ Amount of Makeup</td>
</tr>
<tr>
<td>Sex $\times$ Scenario</td>
</tr>
<tr>
<td>Scenario $\times$ Amount of Makeup</td>
</tr>
<tr>
<td>Sex $\times$ Scenario $\times$ Perceived Makeup</td>
</tr>
<tr>
<td>Covariates</td>
</tr>
<tr>
<td>SOI</td>
</tr>
<tr>
<td>Mate Value</td>
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</tbody>
</table>
The effects of makeup on perceptions of both a woman’s agency and patiency were also partially mediated by her perceived likeliness to have casual sex. Women wearing more makeup were viewed as significantly more likely to pursue casual sex (CI [.33, .37]), which significantly decreased perceptions of their agency (CI [-.12, -.07]) and their patiency (CI [-.06, -.01]). The sex of the participant moderated the negative relationship between likeliness to pursue casual sex and patiency, with women rating target women slightly lower than men on patiency (Women: $\beta = -.04$, $SE = .004$, CI [-.05, -.03]; Men: $\beta = -.01$, $SE = .006$, CI [-.02, -.004]). This moderation effect was not found for agency, indicating that the ratings of women’s agency were similar for male and female participants.

Exploratory analysis revealed a significant overall difference between perceived SOI ratings and women’s actual SOI ($F_1 = 299.54$, $p < .001$). Yet, when testing the correlation between perceived SOI and women’s actual SOI, results showed a significant positive correlation ($r = .19$, $p < .001$). This result suggests that although not all perceivers are perfectly accurate, perceivers can determine SOI on women with makeup and without makeup.

Exploratory analysis using the ‘humanness’ dimension according to our PCA analysis (measured from -1 to 1, with negative numbers indicating lower attributions of humanness) found that men attributed significantly less humanness than women ($\beta = .22$, $SE = .13$, $F_{1,1063} = 5.94$, $p = .015$). There was no significant sex × amount of makeup effect ($p = .649$), suggesting that our findings from our preregistered models that men’s and women’s perceptions are differentially affected by the amount of makeup a women wears may require additional tests to verify the robustness of these differences.
Figure 4.1. Mediation model for agency attribution. Dashed lines indicate non-significant paths. Parameter estimates are unstandardized. For moderator effects, beta values represent the difference in effects of women from men (men coded as baseline predictor). * $p < .05$, ** $p < .01$, *** $p < .001$. 
Figure 4.2. Mediation model for patiency attribution. Dashed lines indicate non-significant paths. Parameter estimates are unstandardized. For moderator effects, beta values represent the difference in effects of women from men (men coded as baseline predictor).
The results of Experiment 2 tell a consistent story: that the amount of makeup a woman wears can influence others’ perceptions of her perceived ability to think, act intentionally, feel emotions, and receive moral treatment. Whether these perceptions were positive or negative depended upon the perceiver’s associations between a woman’s makeup, her attractiveness, and her likeliness to pursue casual sex. However, substantial variation in the average perceptions of women in our experiment suggests that each woman’s identity plays a considerable role in determining how these perceptions interact. Nonetheless, our results show that although the face is an important aspect of mentalization (Deska & Hugenberg, 2017), women can still be subjected to objectifying perceptions due to the amount of makeup they wear.

**General Discussion**

Makeup can increase women’s attractiveness and femininity at the possible expense of simultaneously increasing perceptions of unrestricted sexual behaviour (Batres et al., 2018, Osborn, 1996; Mileva et al., 2016). Here we tested whether the application of makeup increases women’s self-perceived capabilities, adding additional explanation to why women choose to apply facial cosmetics. In our first experiment, we tested whether applying makeup under differing hypothetical scenarios increases women’s self-perceived agentic and competitive traits. Contrary to our predictions, we find no evidence that the application of makeup alters women’s self-perceived agency, humanness, intrasexual competitiveness or anticipated mate-guarding resistance behaviours (H1). Furthermore, self-perceived traits remained unaffected regardless of the amount of makeup a woman applied (H2) or the scenario a woman applied makeup in preparation for (H3). Our results
suggest that viewing themselves in makeup does not influence women’s self-assertiveness or competitive mating behaviour.

We find that objectifying judgements of women’s mental capacity and moral status are sensitive to makeup. Results show that women’s perceptions of other women’s mental capacity and moral status are more positive overall compared to men. However, we find that women but not men attribute less patiency, but also slightly more agency, to women as they wear more makeup. This finding suggests that women view other women wearing more makeup less as patients (i.e., less capable of feelings and sensations) but slightly more as agents (i.e., more capable of thoughts and decision-making), partially supporting our fourth hypothesis (H4). Alternatively, though we find some evidence that men attribute slightly less agency to women wearing higher amounts of makeup compared to women, men’s objectifying perceptions remained mostly similar towards women regardless of makeup, on average.

From our second experiment we also find that both men’s and women’s positive mental and moral perceptions of women wearing more makeup are due to an association between wearing more makeup and being more attractive. Alternatively, negative mental and moral perceptions of women wearing more makeup, again for both men and women, are due to an association between wearing more makeup and being more likely to have casual sex. Therefore, our results do not support our hypothesis that an association between makeup and attractiveness increases men’s sexually objectifying perceptions of women (H5), but we do find weak evidence that makeup increases women’s (and men’s) objectifying perceptions of other women due to the belief that women in more makeup have more sex (H6). Taken together, although makeup is positively associated with attractiveness, women wearing more makeup may be assumed to be less sexually restricted
and perceived to have less mental capacity and moral status. Women, in particular, may be more sensitive than men to changes in women’s makeup when makeup judgements of other women’s patiency, which suggests that wearing higher amounts of makeup may be more costly for women when interacting with other women who are opposed to promiscuous behaviour.

**Makeup and self-perceptions**

We find no evidence that applying makeup influences self-perceived agency, humanness, competitiveness or resistance behaviours to partner jealousy. This is inconsistent with evidence that suggests wearing makeup can positively influence other self-perceptions such as body-image and self-perceived attractiveness (Cash et al., 1989; Datta Gupta et al., 2016; Korichi et al., 2008). One possible explanation for our null findings is that women may apply makeup regularly in order to meet social expectations of gendered cultural standards of femininity (Loegel et al., 2017, Henderson-King & Brooks, 2009) rather than for agentic reasons, suggesting makeup application may not influence women’s true self-image. Nonetheless, makeup may still function to “camouflage” negatively perceived aspects of self-image for some women and increase sociability and desirability for other women (Korichi et al., 2008; Cash & Cash, 1982). Our findings suggest that although women may choose to apply makeup regularly, makeup plays a smaller role in positive self-perception than previous literature suggests.

An alternative reason for our null findings may be that our makeup manipulation was not effective enough at altering women’s self-image. It has been suggested (though not tested) that the sensory aspects of makeup (e.g., touch, smell, sight) may evoke positive and
psychological stimulation (see Korichi et al., 2008). As a result, altering makeup application to an image rather than directly and literally to one’s face may have insufficiently stimulated responses associated with makeup application. Similarly, participants may have felt little social consequence to their selected makeup application due to the allocated scenario being hypothetical, suggesting self-perceptions may be different in real-life scenarios. The limited research that has been conducted on the effects of makeup on agentic outcomes using real-life social interactions has revealed mixed results (see Batres et al., 2019). Further research using literal makeup application and real-life social interactions are necessary to fully discern the effects of makeup on self-perceived traits.

**Makeup and other-perceptions**

We find that although women may be more generous than men in their perceptions of women overall, especially to women wearing little to no makeup, women’s but not men’s perceptions of patiency became more negative as women wore more makeup. As a result, women’s lower patiency attributions towards women wearing more makeup were comparable to attributions made by men, on average. These findings suggest that women who wear more makeup can be perceived to have less mental capacity and moral status by others, similar to negative perceptions directed towards women who appear more sexualised (Loughnan et al., 2013, Bevens & Loughnan, 2019; Vasquez, Ball, Loughnan & Pina, 2017; Arnocky et al., 2019). Furthermore, although some objectification literature posits that men primarily hold objectifying perceptions of women (Fredrickson & Roberts, 1997), our results indicate that some women may be motivated to hold more negative perceptions towards other women who choose to use methods of beautification (Delpriore,
Bradshaw & Hill, 2018). Therefore, both men and women may negatively perceive women wearing greater amounts of makeup as less able to feel emotions or sensations and less deserving of moral treatment.

Our findings showed that men and women differ in how much agency they attribute to women who wear higher amounts of makeup, with women slightly increasing and men slightly decreasing their agency attributions. This supports previous research that why and how men and women objectify women may differ (Vaes et al., 2011; Morris et al., 2018), and indicates that positive or negative perceptions resulting from makeup may also depend on the identity of the individual woman. Due to weak effects of makeup on agency attribution, we only find partial support for the dyadic relationship between agency and patiency (Gray et al., 2007; Gray & Wegner, 2009; Gray et al., 2011). However, negative agency attribution may be more closely related to body-focus (Gray et al., 2011), as faces and especially eyes are an important part of mind attribution (see Deska & Hugenberg, 2017 for a review). Thus, makeup may only have small effects on how much a woman is viewed as an agent.

Negative mental and moral attribution due to women’s makeup was mediated by the perception that women wearing more makeup are more likely to have casual sex. This supports recent findings that makeup is a signal used to assess sociosexuality (Batres et al., 2018). Past work has shown that women, especially women motivated to appear attractive, can dehumanize other women (Vaes, 2011; Puvia & Vaes, 2013). Women are likely aware that some women wear makeup to increase their own desirability (Korichi et al., 2008) and may therefore attribute less mental and moral patiency to women who are believed to have intentions of attracting men (Agthe et al., 2011; 2016; Delpriore, Bradshaw & Hill, 2018; Waytz et al., 2010). Attributing less mental and moral status to women may minimize
potential damage to self-esteem from upward self-comparison (Puvia & Vaes, 2013; Parks-Stamm et al., 2008) and enable women to feel more able to gossip or derogate women who appear competitive on the mating market (Reynolds, Baumeister & Maner, 2018; also see Muggleton, Tarran & Fincher, 2018; Baumeister & Vohs, 2004). Hence, women may attribute less mental capacity and moral status to women wearing makeup as a reaction to believing these women are active in the mating market.

Makeup can positively affect women’s attractiveness (Law Smith et al., 2006; Batres et al., 2018; Jones, Russell & Ward, 2015; Jones & Kramer, 2016; Cash et al., 1989; Mileva, Jones, Russell & Little, 2016). Our findings also demonstrate that positive evaluations of attractiveness due to makeup correlate with positive attributions of mental capacity and moral status. This is supportive of evidence that makeup can increase perceptions of women’s competence and warmth (Etcoff et al., 2011). However, it is difficult to discern whether these effects are the result of an extended phenotype or the individual woman’s identity (enhancement vs phenotype), though it has been suggested that makeup may account for as little as 2% of overall variance in attractiveness evaluations (Jones & Kramer, 2015). Nonetheless, women wearing high amounts of makeup may trigger positive attractiveness biases which contribute to greater mental and moral attribution by other men and women.

We did not find that makeup motivates men to sexually objectify women. Previous research shows that makeup increases the perception that women are unrestricted sexually (Batres et al., 2018, Osborn, 1996; Mileva et al., 2016). Openness to sex, a quality associated with unrestricted sexuality, is found to reduce women’s attributed agency, increasing women’s vulnerability objectification and sexual aggression by men (Blake et al., 2016). Our results show that makeup does not significantly affect men’s attributions of
agency or patiency, even if the woman is perceived as more attractive as we predicted. This suggests that sexual objectification may relate less with perceptions of women’s faces and more closely to perceptions of women’s bodies (Confer, Perilloux & Buss, 2010; Heflick et al., 2011).

Our findings suggest that both men and women may perceive women in ways that suggest a desire that female sexuality is suppressed. For men, negative perceptions may increase due to reactions that sexually active women reduce men’s control of the mating market (see Smuts, 1995), rather than solely due to sexual motivations as previously suggested (see Fredrickson & Roberts, 1997). For women, negative perceptions may stem from feelings that sexually active women perpetuate a culture of objectification (see Vaes et al., 2011), or from feelings that sexually active women limit women’s opportunities in the mating market. Due to our null results that makeup increases self-perceived competitiveness, it is difficult to make inferences beyond speculation. Men’s stronger overall dehumanization of women, however, may indicate the presence of patriarchal structures theorized to encourage that men perceive women as commodities (Lerner, 1986). Nonetheless, that both men and women had some members who dehumanized women provides evidence against more simple dichotomies that the suppression of female sexual suppression is exclusively male-controlled or female-controlled (see Muggleton et al., 2018 for a discussion).

**Limitations and future directions**

Some aspects of our experimental design may limit the conclusions we can make from the current research. In Experiment 1 we did not specify the anticipated biological sex
of the anticipated audience member(s) for any scenario (e.g., a male date, a female job interviewer, a majority female Instagram audience), nor did we specify whether the type of job a woman was interviewed for required many interactions with people (e.g., sales, modelling) or few interactions (e.g., backroom stock organizer). Our decision not to specify this information may have resulted in unintended variation within and between scenario conditions that may have contributed to our null results. In addition, social media platforms vary in their purposes, uses and audiences. Our instruction to ask participants in the Instagram scenario to imagine posting a picture to ‘Instagram or equivalent social media account’ may have led to differences between participants in their anticipated audience who use alternative platforms such as Facebook, Twitter or Tinder, ultimately limiting the effects the social media scenario on self-perception. Using an Instagram post as a scenario of intrasexual competition may not accurately match theoretical conditions of partner competition whereby women compete to secure partners, which subsequently narrows the available pool of partners. The “likes” that women can receive on social media are not reduced by the number of prospective partners online or the relationship status of a woman who makes a post, suggesting that the relationship between an online Instagram environment and theoretical mating market dynamics is unclear, limiting our ability to make interpret these findings.

Although we find evidence that makeup can influence mental and moral attribution, it is difficult to know to what extent these perceptions influence behaviour. The effects we present in these experiments are subtle and possibly less important than other perceptions that men and women use to guide their attitudes and behaviours towards women. Furthermore, it is possible that our findings are driven by other biases which we did not include in our analysis such as racial biases or ideological orientation (see Haslam &
Loughnan, 2014 & Haslam & Stratemeyer, 2016 for reviews on dehumanization), though we statistically controlled for both participant and target woman identity to minimize the effects of varying person biases. It is also possible important to consider that objectification is shown to vary between cultures (Loughnan et al., 2015). Future research should investigate to what extent perceptions of makeup in different populations or different cultures affect positive or negative behaviours towards women.

**Conclusion**

We find that although wearing more makeup may not strongly influence a woman’s perception of her own abilities, makeup can influence the amount of mental capacity and moral status she is attributed by others. In particular, women but not men perceive women wearing more makeup as less mentally capable of feeling emotion or sensation and less deserving of moral treatment than women wearing less makeup. This negative effect is due to an association that women who wear more makeup are more likely to pursue casual sex, suggesting that women’s negative perceptions of other women may be motivated by competitive feelings towards romantic rivals. Both men and women were found to dehumanize women they believed to have more casual sex, suggesting that attitudes and behaviours that lead to the suppression of female sexuality may not be exclusively from men or from women. Instead, the extent that an individual holds suppressive perceptions due to associations with a woman’s sexual activity may depend on the individual perceiver, rather than on their biological sex. However, makeup’s positive influence on attractiveness is associated with increased perceptions of women’s mental capacity and moral status, mitigating possible negative effects of wearing makeup. Thus, although women are
culturally pressured to wear makeup, there may be unintended consequences for women who choose to do so.
Chapter 5

Negative mental and moral prejudice towards women depends on their level of sexual engagement in their work, hobbies and daily activities

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DJK, KRB and RCB conceived and designed the experiment; DJK implemented the experiment, conducted statistical analysis, wrote and edited the manuscript; KRB and RCB provided manuscript edits and supervision throughout the experiment implementation, statistical analysis and writing processes
Abstract

Women are more likely than men to be sexualized, objectified, and dehumanized. Female sex workers in particular experience stigma and violence at far higher rates than other women. Here we use an experimental design to consider the origins of objectifying and dehumanizing judgements of women, including women who earn money from sexual activities. Understanding who judges women harshly, and which aspects of the sexual transaction drive these judgements, may offer useful insights into the links between sex and dehumanization, and cogent tests of theoretic predictions concerning the origins of sexual suppression. We test which associated aspects of sex work – the required level of sexual engagement, earning an income, or perceptions of sex worker autonomy – drive dehumanizing perceptions directed towards women. An initial group of male and female participants \((N = 217)\) rated vignettes each describing a fictional woman varying in type of full-time employment, main hobbies and interests on measures of dehumanization (mental agency and moral patiency). These ratings were compared to ratings from a second group of participants \((N = 774)\) that rated the same vignettes, but with an added sentence describing a part-time job, hobby or activity that varied sexual engagement (Sexual engagement: penetrative sex, nudity, sex-associated or no sex), income from sexual engagement (Income: income or no income), and autonomy over sexual engagement (Autonomy: autonomy or exploited). We find that women and especially men dehumanize women when they believe those women engage in penetrative sex. We report only limited evidence that women’s income or autonomy from sexual engagement increase dehumanization. Our findings suggest an opposition to women’s ability to pursue casual
sex, rather than the exchange of sex for money or perceptions of autonomy, primarily drive negative prejudice towards some women.
Introduction

Across cultures, women’s sexuality is suppressed more intensely and through more varied means than men’s. From associations of female virginity with purity (Valenti, 2009; Manastlas & David, 2018) to cultural practices such as female genital cutting (Berg & Denison, 2013; Howard & Gibson, 2019) and mandatory religious veiling (Blake, Fourati & Brooks, 2018), women are stifled in their ability to enjoy, express and control their own sexuality both physically and psychologically (Valenti, 2009; Baumeister & Mendoza, 2011). Social norms dictate that women should regulate their sexual behaviour and, from a young age, women are communicated messages of sexual restriction (see Baumeister & Twenge, 2002). As a result, women are judged more negatively than men for appearing sexually open or behaving promiscuously (Reiss, 1967; Crawford & Popp, 2003; Tate, 2016).

One group that receives particularly strong negative stigma associated with promiscuous sexual behaviour is female sex workers (Vanwesenbeeck, 2001; Sprankle et al., 2018). Since the early 19th century, sex work has been politically and socially discussed as an issue of social disorder, unwieldy female sexuality (Sanders & Brents, 2017) and unrestricted sexual autonomy (Anderson, 2002; but see Gauthier, 2011), with limited discussion of male sex work beyond the association between male homosexual sex work and AIDS/HIV (Vanweesenbeeck, 2001). Further associations of female sex workers with sexually transmitted diseases, violence and drugs (Cusick, 2006; Sanders & Brents, 2017) have spurred stereotypes that sex workers are shameless (Wong, Holroyd & Bingham, 2011), dirty (Whitaker et al., 2011) and unattractive (Ruys, Dijksterhuis & Corneille, 2008). Law enforcement officials are found to disregard and even abuse sex workers (Rhodes et
al., 2008; Jorgensen, 2018). Internationally, countries continue to debate the usefulness of policies that criminalize sex work at the expense of protecting the human rights of sex workers (Sanders & Campbell, 2014). This tendency in government policy to separate the rights of sex workers from the rights of all other individuals reflects the potential strength of anti-sex-work biases on perceptions of sex workers’ humanness.

**Prejudice and the dehumanization of women**

Perceiving and treating another person as less than fully human, a process known as *dehumanization* (Haslam, 2006), involves fundamentally denying that person has a mind capable of thoughts and intentions, and that they are deserving of moral treatment (Nussbaum, 1999; Haslam, Loughnan & Holland, 2013). People intuitively separate judgements of others’ minds into two distinct dimensions: *mental agency* and *mental experience* (Gray, Gray & Wegner, 2007; Waytz et al., 2010). People possessing mental agency are viewed as capable of thinking, making decisions and committing to their intentions, whereas people possessing mental experience are viewed as capable of feeling emotions like joy, sadness and embarrassment as well as sensations like pain and pleasure (Gray, Gray & Wegner, 2007). Correspondingly, moral status is perceived using two similar dimensions of *moral agency* and *moral patiency* (Gray & Wegner, 2009). People possessing moral agency are viewed as able to knowingly commit good or bad actions to another person, whereas people possessing moral patiency are viewed as able to knowingly receive good or bad deeds committed to them (Gray & Wegner, 2009). The process of attributing another person less mental capacity or moral status often parallels comparisons of that person with nonhuman entities such as animals, robots or objects (Boudjemadi, Demoulin
& Bastart, 2017; Loughnan et al., 2014; Morris, Goldenberg & Boyd, 2018; Heflick & Goldenberg, 2009; Haslam & Loughnan, 2014). For some people, these perceptions can justify that a person or group is treated inhumanely.

Dehumanization is a phenomenon that is often associated with prejudice (see Haslam & Loughnan, 2014; Haslam & Stratemeyer, 2016). For example, dehumanization is associated with racial comparisons of African-Americans with apes (Goff et al., 2008), negative stereotypes of social classes with low socioeconomic status (Loughnan et al., 2014), and moral outrage against women and their male partners who choose to get an abortion (Pacilli et al., 2018). The generalized and undifferentiated stigmatism that female sex workers frequently receive is characteristic of outgroup prejudice (Vanwesenbeeck, 2001). Research also finds that women who are sexualised are dehumanized more than women who are not sexualised (Morris et al., 2018; Puvia & Vaes, 2013; Puvia & Vaes, 2015; Vaes et al., 2011) and, as a consequence, perceivers are more willing to harm them (Arnocky et al., 2019; Gray & Wegner, 2009) and less morally concerned for the sexualised women they dehumanize (Loughnan et al., 2013; Bevens & Loughnan, 2019; Waytz et al., 2010). This suggests that women, and especially women who are associated with stereotypes of promiscuity, can be vulnerable to negative effects of dehumanization.

**Suppression of female sexuality and sex work**

Although both men and women dehumanize sexualized women (Puvia & Vaes, 2013; Loughnan et al., 2013; Morris et al., 2018; Vaes et al., 2011; Heflick & Goldenberg, 2009; Heflick & Goldenberg, 2011), they differ in their reasons for doing so (Morris et al., 2018; Vaes et al., 2011). In the case of female sex workers, these differences may reflect
underlying motivations of female sexual suppression. Feminist (Travis & White, 2000) and psychoanalytic (Sherfey, 1966) writers have hypothesized that men suppress women’s sexuality to maintain social order and sustain institutional power. Evolutionary scientists have instead treated women’s sexual suppression as a strategy to bolster paternity certainty (Smuts, 1992, 1995; Trivers, 1972). These motivations are both suggested to drive men’s commodification of female sexuality, whereby men are able to regulate women’s sexual behaviour for men’s overall gain (Lerner, 1986). Women who pursue casual sex, especially women who autonomously engage in sex work, undermine societal structures that suppress women’s ability to do so (Strassman et al., 2012; Pazhoohi et al., 2017). Thus, men’s prejudice towards female sexuality may emerge from negative reaction to a loss of social control, or an evolved reaction to growing risks of paternity uncertainty.

Alternatively, the strength of men’s negative attitudes towards female sexuality, and female sex workers in particular, may depend on men’s relative position within the mating market. Due to large differences in the required costs of reproduction, men tend to prefer a greater number of sexual partners over their lifetime than women, on average (Buss & Schmitt, 1993). Men with higher attractiveness, status, resources and prestige have higher mate value (Buss, 1989) and are better able to optimize their reproductive success using this strategy than men with low mate value (Betzig, 1993). Low mate value men, however, may attain greater evolutionary fitness from pursuing and maintaining sexually exclusive relationships (Buss & Schmitt, 1993; Gavrilets, 2012). Therefore, men who value sexually exclusive relationships may express more negativity towards women who pursue uncommitted sexual opportunities because they increase the likelihood of sexual infidelity. Negativity may be especially strong in populations with high parental investment where sexual infidelity is considered more severe (Scelza et al., 2019). Thus, rather than all men
holding prejudice towards female sexuality, men who have lower mate value or prefer long-term relationships may hold stronger negative opinions of women who engage in casual sex, especially female sex workers.

An alternative framework is provided by a ‘Sexual Economic’ analysis of sexual suppression (Baumeister & Twenge, 2002; Baumeister & Vohs, 2004; see also Luberti et al., in review). Sexual economic theory postulates that sex is a female-controlled resource, exchanged with men for commitment, money, social status and other resources. When perceived to be rarer within a market, the “price” of sex grows, increasing the average value women can receive in sexual exchange. Female sex work, however, undermines the non-cash exchange value of sex (Baumeister & Vohs, 2004), and in where high sexual exchanges may be most beneficial to women, women hold stronger anti-promiscuity attitudes (Price et al., 2014). Due to the market benefits of sexual restriction to women not involved in sex work, those women might be expected to hold the strongest prejudice towards women who pursue sex work or other casual sex opportunities.

**Experimentally disentangling sources of prejudice**

The transactional nature of sex work, and its relation to other forms of sexual transaction, are of particular interest both to general theories of the suppression of female sexuality, and to the strong observed prejudice towards female sex workers. Are prejudice toward, dehumanization of, and, ultimately, attempts to suppress sex workers due to the direct exchange of money involved in sex work? Or is it the sex act itself, conducted outside the bounds of long-term commitment or marriage, rather than the money, that prompts dehumanization? Finally, is the degree of autonomy, and preconceptions that sex
workers are exploited by clients, brothel-owners and pimps, salient? The notion that sex workers are ‘prostituted’ has a long history, and there has been a resurgent insistence by anti-sex feminists (Bindel, 2019; Dines, 2010; Dworkin, 1997; MacKinnon, 1989; Richardson, 2018) on using this term, despite strong opposition by many sex workers and sex work advocates (e.g., Call Off Your Old Tired Ethics, Scarlet Alliance; also see Leigh, 1997; Abel et al., 2010; Weitzer, 2018) who stress their autonomy and agency in choosing their work. Here we attempt an experimental disentangling of the effects of sex acts, its relation to money earned, and autonomy of choice, on the judgments people make about the agency and patience of fictional women depicted in brief vignettes. We test pre-registered predictions derived from a variety of theories in order to test ideas about attitudes to sex work and, more generally, the suppression of women and women’s sexuality.

**Level of required sexual engagement**

Negative prejudice towards women’s sexuality may be driven by an opposition to women’s ability to pursue casual sex. The perception that women are having casual sex may stir some people to view these women as less than fully human (Kellie, Blake & Brooks, 2019) and, as a result, view and treat these women more negatively. For example, research shows that people are more willing to withhold resources from (Muggleton et al., 2018), gossip about (Reynolds, Baumeister & Maner, 2018) and act sexually aggressively towards women they think are likely to have casual sex (Blake et al., 2016). Additionally, men and women who live low-promiscuity, marriage-centered lifestyles are more likely to support institutions and policies that restrict others’ sexual freedoms (Kurzban & Weeden, 2014; Pazhoohi et al., 2017; Weeden et al., 2008; Weeden & Kurzban, 2013), especially
when policies target groups assumed to be more promiscuous (Pinsof & Haselton, 2016; Pinsof & Haselton, 2017). Therefore, men and women may strongly disapprove of women who pursue casual sex.

**Income**

Hostility towards women’s ability to exchange sex for income may explain broader negativity towards female sexuality. Monetarily, sex work can provide young women opportunity to earn a higher income than young women who pursue non-sex (Arunachalam & Shah, 2008; Edlund & Korn, 2002; Sahni & Shankar, 2016), especially work conducted in private (e.g., private escorts) or offering emotional intimacy (e.g., a “girlfriend experience”) which can more than double the wages earned from a single shift (Holt, Blevins, & Fitzgerald, 2016). However, by exchanging sex for money, sex workers are suggested to violate one of the most powerful taboos in western cultures (Rubin, 1984). The opportunity to earn money through sexual exchange is not limited to sex work; women can also engage in other sexualised labour whereby women can feign sexual interest or offer sexualized appearance in exchange for income (e.g., Drenten, Gurrieri & Tyler, 2019). Therefore, negativity towards female sexuality may stem from disapproval towards women who ostensibly exchange honour (Pheterson, 1993) and marriageability (Edlund & Korn, 2002) for money or other benefits.

**Autonomy**

Alternatively, the perception that female sex workers are autonomous in their decision to partake in conditions that are often exploitative may drive dehumanizing
perceptions towards women. A large focus of previous research has been on street prostitution (Cusick, 2006) and the victimization and harms of sex work and sex trafficking (Ditmore, 2008; Doezema, 2002). These conditions strip women of their sexual agency and, as a result, female sex workers are often discussed as devoid of sexual agency and power over their consent to sex (Miriam, 2005). However, women from a wide variety of social positions autonomously choose to engage in sex work as a flexible, relatively well-paid work to earn supplemental wages, often used to pay for education (Bleackley, 2014; Hardy & Sanders, 2015; Sagar et al., 2015). Women’s pursuit of sexual opportunities may additionally increase their feelings of sexual agency and empowerment (see Ringrose et al., 2013; also see Vanwesenbeeck, 2009). Consequently, men and women’s dehumanizing perceptions may relate to views that women, especially female sex workers, are exploited and lack in agency. Alternatively, the perception that some women autonomously choose to pursue sexual opportunities may result in more negative perceptions of sexually agentic women (see Fetterolf & Sanchez, 2015).

Hypotheses

Hypotheses for this experiment were preregistered and can be found on the Open Science Framework (https://osf.io/xnm53/?view_only=e3e5133ed80e4dd6a8636b523d03f783).

Paternity certainty prediction

Opposition to women’s sexuality stems from men’s desire to ensure paternity certainty (Smuts, 1992; 1995; Trivers, 1972). Men attempt to limit women’s sexual
expression and sexual opportunity through behaviours and attitudes associated with male sexual jealousy (Daly et al., 1982; Scelza et al., 2019) in order to increase their confidence of paternity. We would expect men to hold more negative views towards women, particularly towards women whose work or hobbies involve non-marital sex. We would also expect men to hold more negative views of women who commit to work or hobbies involving sexual intimacy autonomously and who earn income from sex. Therefore, work that has a high level of sexual engagement and is autonomous or pays income will have a strong negative effect on men’s ratings of mental agency, mental experience, moral agency and moral patiency compared to women’s ratings and compared to work that is non-sex, unpaid or exploitative.

*Sexual strategies and costs of reproduction*

Due to the large differences in required energetic investment of reproduction, men are more likely than women to pursue casual sex opportunities than women (Buss & Schmitt, 1993). However, men with lower mate value may find more success pursuing long-term relationships and may therefore be more likely to hold negative views of women who behave openly to extramarital sexual opportunity than high mate value men. According to this explanation, we would expect mate value and people’s willingness to engage in uncommitted sex, or their sociosexual orientation, to be strong predictors of views towards women’s sexual behaviour. Therefore, we would predict mate value and SOI to closely predict ratings of mental capacity and moral status, whereby work with high levels of sexual engagement is rated more negatively by women and especially men with low mate value and low SOI compared to high mate value, high SOI women and men.
Female control of sexual supply

According to sexual economics, women can gain more in a sexual exchange with men if they cooperate to limit the supply of sex within the mating market, increasing the overall ‘price’ of sex (Baumeister & Vohs, 2004). Under this explanation, we would expect women to be more negative towards other women who engage in work or pastimes that involve sex or nudity. Therefore, we would predict a two-way interaction (sex of participant : level of sexual engagement) driven by a strong negative effect of higher levels of sexual engagement on women’s ratings of mental capacity and moral status compared to men’s ratings.

Methods

Participants

A sample of 999 men and women ranging from 18 to 71 (M_{age} = 36.4, SD_{age} = 10.9) were recruited to participate in an online survey on attitudes to the labor force using Amazon’s Mechanical Turk (MTurk). Eight participants were excluded for not completing the survey, leaving a total of 991 participants (512 men, 479 women). Inclusion criteria involve an MTurk approval rating of more than 98%, residing in the USA, and identifying valid state as their current state of residence. In order to restrict bot and non-human accounts from accessing the survey, participants were required to complete a robot CAPTCHA task and an additional photo identification task in which they identified an emotion depicted by characters in a photo using an open-response answer. Participants were paid $2.00 USD to complete a 15-minute survey (a rate of $8.00 per hour). Of these 991
participants, 774 (390 men, 384 women) completed the experimental survey and of 217 (122 men, 95 women) completed a “baseline” vignette survey, explained below.

The majority of participants had completed an undergraduate university degree (48.1%), a postgraduate degree (18.2%) or received a diploma (16.5%), with 13.3% of participants indicating high school as their highest level of education, 37% selecting that they had an unlisted level of education, and 1 participant choosing not to answer. Most participants identified their ethnicity as Caucasian/White (75%), with the remaining participants selecting their ethnicity as African American/Black (6.4%), Hispanic (5.2%), East Asian (4.5%), Mixed (2.8%), South East Asian (2.8%), Native American (1.2%), Indian/Pakistani/Nepalese (0.5%), Middle Eastern (0.5%), or another unlisted ethnicity (0.3%). A large proportion of participants selected that they were in a long-term relationship (34.6%) or married (20.2%), with remaining participants indicating they were single (2.3%), recently single (0.9%) or in an open relationship (0.5%), though 41.5% of participants selected their relationship status as “Other”. The majority of participants identified as heterosexual (91%) with 4.7% identifying as homosexual, 4.1% identifying as bisexual, and 1 participant electing not to answer. Participants ranged in political orientation with 54.1% identifying as liberal, 31.5% identifying as conservative and 14.4% identifying as moderate.

**Design**

We used a 4 (Sexual engagement: Penetrative sex, Nudity, Sex-associated, Non-sex) × 2 (Income: income or no income) × 2 (Autonomy: autonomy or exploited) within-subjects experimental design to test how men and women perceive women’s mental
capacity and moral status depending on the sexual, monetary, and autonomous nature of their part-time jobs or hobbies.

**Fictional woman vignettes**

*“Baseline” vignette*

Within each vignette, the same information was provided about one fictional woman: her name, full-time job, number of siblings, main hobby and interests. One name, one full-time job, a sibling number, one main hobby and two interests were randomly allocated to each vignette in order to create variation within our experiment similar to that of real-life. In addition, one dislike (negative statement) was added within each vignette for added realism, detailing something that each fictional woman disliked or was unhappy with in her full-time job, family relationships, hobbies or interests. Women’s names were acquired by selecting an assortment of names from the lists of the one hundred most common baby names of the 1990s and 2000s in the USA, UK and Australia. Full-time jobs varied widely in type, professional level, and average income. Hobbies and interests varied in type, topic, introversion, extraversion, and required physical activity. Number of siblings ranged from 0 to 3, with all possible combinations of brothers and sisters. To calculate a “baseline” average rating for each fictional woman vignette, a separate group of participants rated each vignette without the manipulation sentence.

**Manipulation**

Our experimental manipulation was an additional part-time job or hobby of the fictional woman matching one combination of variables of interest (see Appendix 5A for a
table of all manipulations). The part-time job or hobby statement was randomly allocated to one of the “baseline” vignettes. The manipulation was always the final sentence of the vignette. For example, one of four possible vignettes participants rated with a part-time job manipulation of penetrative sex, income and high autonomy was:

Anna loves ping pong and plays against her friends a couple nights a week [Hobby]. She works mainly as a cashier at a gas station [Full-time job], though she doesn’t like how long her commute is to work each day [Dislike]. She has one younger sister who she lives very close to [Siblings]. She likes trying to learn new skills [Interest 1]. She also enjoys going on picnics in the summer [Interest 2]. She earns extra income working as an independent sex worker (an escort/call girl), managing her own advertisements, appointments and meeting places for offering sexual services [Manipulation: penetrative sex].

To calculate the effect of the manipulation sentence on perceptions of the fictional woman, we subtracted the “baseline” vignette rating from the participant ratings of vignettes including the manipulation (see Appendix 5B for full list of vignettes).

**Procedure**

For each combination of variables (level of required sexual engagement, income, autonomy; 16 total combinations) there were either four vignettes (the three levels of sexual contact) or eight vignettes (the non-sex conditions). This design was to ensure that at least 40% of the vignettes had no sexual content. There was also one “control” vignette that all participants viewed which described an “average” woman with an unrelated part-time job. Thus there were a total of 81 different vignettes.

Participants were randomly allocated to view only one of the possible vignettes within each treatment combination, as explained below. In total, participants were allocated
to read 15 vignettes. To ensure that all participants began with a similar baseline vignette, the first vignette read by all participants was the “control” vignette. Participants were then randomly allocated 14 vignettes of a possible 80 to read and rate one-at-a-time. Of these 14 vignettes, 4 were penetrative sex condition vignettes (one for each income and autonomy condition combination), 4 nudity or sex-associated condition vignettes (randomly selected across all income and autonomy condition combinations), and 8 non-sex condition vignettes (randomly selected across all income and autonomy conditions). We decided on these proportions (a) to ensure a sufficient number of answers to our penetrative sex condition vignettes because this condition represents the most important group for our hypotheses, and (b) to have participants read a greater number of non-sex condition vignettes which provides some disguise for the experimental manipulation. After completing the survey, participants were thanked and debriefed.

**Materials**

*Indices of mind and moral attribution*

All mental and moral attribution dimensions were assessed using a 7-point Likert scale (1 = Not at all; 7 = Extremely). Mental agency of each fictional woman was assessed using two items. Items were selected by choosing the two items with the highest factor loadings from Blake and colleagues’ (2016) shortened agency scale (originally from Gray, Gray & Wegner, 2007) used to assess sexualised vs non-sexualised images of women. Items were “How capable do you think this person is at exercising self-restraint over desires, emotions, or impulses?” and “How capable do you think this person is at telling right from wrong?” Mental Experience of each fictional woman was assessed using two
items, also chosen by selecting the two highest factor loading items used by Blake and colleagues’ (2016) shortened experience scale. Items were “How capable do you think this person is at feeling afraid or fearful?” and “How capable do you think this person is at feeling physical or emotional pain?”

Moral Agency of each fictional woman was assessed using two items. Items were chosen by selecting the two highest factor loading items from Blake and colleagues’ (2016) moral perceptions scale (originally from Holland & Haslam, 2013) used to assess perceptions of sexualised vs non-sexualised images of women. Items were “How much do you believe this person’s achievements and actions are due to their thoughts and intentions, rather than luck and circumstances?” and “In general, how responsible do you think this person is for their actions in life?”. Moral Patiency of each fictional woman was assessed using two items, also chosen by selecting the two highest factor loading items from Blake and colleagues’ (2016) moral perceptions scale. Items were “How bad do you think you would feel if someone took advantage of this person” and “How bad do you think you would feel if you manipulated this person?”.

Mental perception is a key component of moral judgement. Accordingly, attributions of both mental capacity and moral status are shown to be dyadic between similar dimensions reflecting agency and patiency (Gray, Gray & Wegner, 2007; Gray & Wegner, 2009). Evidence suggests that dimensions of mental agency and moral agency covary, and dimensions of mental experience and moral patiency covary (Gray et al., 2012). Therefore, although mental attribution and moral attribution are measured separately, they assess similar constructs of human perception.
**Determination of final mind and moral attribution dimensions**

Following our preregistered methods (https://osf.io/szbkv/?view_only=64ecaa3f3a164725a13f86f1bee18067), we used a Principal Components Analysis (PCA) to test whether indices of mental and moral dimensions of agency and patiency clustered separately or together. We predetermined that we would analyse each dimension separately only if all four mental and moral dimension measures had an eigenvalue equal to or greater than 1.0. Otherwise, we would combine and analyse mental and moral measures within their theoretically defined dimensions of agency and patiency (Gray, Gray & Wegner, 2007; Gray & Wegner, 2009; Waytz et al., 2010; Gray et al., 2012; Schein & Gray, 2017). Analysis showed that two dimensions accounted for 78.2% of the total variance within mental and moral perception measures, but only one dimension had an eigenvalue greater than 1.0. Principal component 1 (eigenvalue = 2.51; 62.7% of variance) consisted of mental agency (-.84), mental experience (-.81), moral agency (-.76) and moral patiency (-.75), forming an overall “humanness” dimension. Principal component 2 (eigenvalue = 0.62; 15.5% of variance) separated mental agency (.11) and moral agency (.53) from mental experience (-.09) and moral patiency (-.56) forming an “agency vs patiency” measure as predicted (Gray, Gray & Wegner, 2007; Gray & Wegner, 2009). Additional eigenvalues for principal components separating agentic and patiency measures were less than 1 (Principal Component 3 eigenvalue = 0.46; Principal Component 4 = 0.41). Following our preregistered methods, we combined indices to form two dimensions: one overall agency measure, consisting of mental and moral agency (Cronbach’s $\alpha = .78$, $M = 6.62$, $SD = 1.07$), and one overall patiency measure, consisting of mental experience and moral patiency ($\alpha = .82$, $M = 5.90$, $SD = 1.10$).
Individual Differences Measures

Sociosexual Orientation

Participants completed the Revised Sociosexual Orientation Inventory (R-SOI; Penke & Asendorpf, 2008), a 9-item measure used to assess participants’ attitudes, behaviours and desires for non-committed relationships or casual sex (e.g., “Sex without love is OK,” 1 = Strongly disagree; 9 = Strongly agree; α = .86, M = 4.45, SD = 2.00).

Mate Value

Participants completed the Mate Value Scale (Edlund & Sagarin, 2014). This 4-item measure asks participants to rate themselves on how desirable they believe they are as a partner using a 7-point scale, with high scores indicating higher mate value (e.g., “Overall, how would you rate your level of desirability as a partner on the following scale?”; α = .93, M = 4.67, SD = 1.23).

Data Analysis

Analysis was conducted using two General Linear Mixed regression models which tested whether the nature of the part-time job or hobby of a woman affected how much agency or patience she was attributed. In both models, we tested the effect of the part-time job or hobby manipulation on agency or patience ratings of fictional women. Required level of sexual engagement, income and autonomy were included as fixed effects. Sex of the participant was also included as a fixed effect, as well as all two-way and three-way interactions between variables. To statistically control for variation in ratings related to random differences between participants and vignettes, participant identity and vignette
identity were included in the models as random effects. Analyses were completed using
{lme4} (Bates et al., 2015) and {lmerTest} (Kuznetsova, Brockhoff & Christensen, 2017)
packages on R 3.5.1 (R Core Team, 2019).

Results

Regression results can be found in Table 5.1. Overall, women rated fictional women
to have more agency (Women: $M = 5.71$, $SD = 1.07$; Men: $M = 5.54$, $SD = 1.09$) and
patiency (Women: $M = 6.02$, $SD = 1.06$; Men: $M = 5.81$, $SD = 1.14$) than men did. Both
men and women attributed fictional women less agency and less patiency as their part-time
job or hobby increased in its required level of sexual engagement (see Figure 5.1). Results
also found a marginal participant sex × required level of sexual engagement interaction
effect for agency ratings ($F_{3,12838.0} = 2.25$, $p = .081$), suggesting that an increase in the
required level of sex of the part-time job or hobby had a marginally stronger negative effect
on men’s attribution of agency than women’s. Additionally, both men and women
perceived women with exploitative jobs or hobbies to have less agency than women with
autonomous jobs or hobbies. There was no effect of autonomy on patiency attributions.

As shown in Table 5.1, we found no significant main effects of income on agency or
patiency attributions. However, results showed a marginally significant income × required
level of sexual engagement interaction effect for patiency ratings, indicating that as
women’s jobs or hobbies required more sexual engagement, women who earned an income
from their jobs were rated more negatively than women who did not earn income. There
were no other interaction effects on agency or patiency ratings. Covariate effects showed
that participants with higher sociosexual orientation had more positive ratings of women’s
agency. Alternatively, participants with higher mate value had more negative ratings of women’s patiency.
Figure 5.1. Average difference in the agency (left) and patiency (right) attributed by other men and women to women with and without a part-time job or hobby, depending on the level of required sexual engagement of the job or hobby. Error bars represent standard error.
### Table 5.1. Results of mixed multiple regression models of agency and patiency ratings.

<table>
<thead>
<tr>
<th></th>
<th>Agency</th>
<th>Patiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
<td>$F$</td>
</tr>
<tr>
<td>Sex</td>
<td>1, 1006.6</td>
<td>13.93***</td>
</tr>
<tr>
<td>Level of Sexual Engagement</td>
<td>3, 64.3</td>
<td>16.63***</td>
</tr>
<tr>
<td>Autonomy</td>
<td>1, 64.4</td>
<td>18.36***</td>
</tr>
<tr>
<td>Income</td>
<td>1, 64.4</td>
<td>0.23</td>
</tr>
<tr>
<td>Sex × Level of Sexual Engagement</td>
<td>3, 12838.0</td>
<td>2.25†</td>
</tr>
<tr>
<td>Sex × Autonomy</td>
<td>1, 12856.4</td>
<td>2.29</td>
</tr>
<tr>
<td>Sex × Income</td>
<td>1, 12857.9</td>
<td>0.10</td>
</tr>
<tr>
<td>Level of Sexual Engagement × Autonomy</td>
<td>3, 64.3</td>
<td>1.19</td>
</tr>
<tr>
<td>Level of Sexual Engagement × Income</td>
<td>3, 64.3</td>
<td>0.57</td>
</tr>
<tr>
<td>Autonomy × Income</td>
<td>1, 64.4</td>
<td>2.25</td>
</tr>
<tr>
<td>Sex × Level of Sexual Engagement × Autonomy</td>
<td>3, 12858.1</td>
<td>0.46</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOI</td>
<td>1, 987.5</td>
<td>6.92**</td>
</tr>
<tr>
<td>MV</td>
<td>1, 987.2</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Note: *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$. 
Discussion

There has been a long history of negative stigma directed towards female sex workers which continues to influence political discourse about the human rights of sex workers (Sanders & Campbell, 2014), as well as individual stereotypes of female sexuality (Sanders & Brents, 2017). It remains uncertain, however, whether strong prejudice towards female sex workers, and more broadly female sexuality, is due to (a) their engagement in sexual behavior outside of culturally enforced long-term commitments, (b) their ability to earn income in exchange for these sexual activities, or (c) their autonomy, or lack thereof, which is often minimized by pimps, brothel-owners or other employers. We find that men and women attribute less mental capacity and moral status to women that they learn partake in jobs, hobbies or interests that require penetrative sex, and to a less extent nudity and intimacy. These results indicate that dehumanizing prejudice towards female sex workers, and women more generally, is closely linked to their known or inferred sexual behavior. We also find that beyond a consistent overall difference by which male participants attributed less mental capacity and moral status to women than female participants did, there was little that distinguished men’s and women’s perceptions of other women. We do, however, find some evidence that women’s dehumanizing perceptions of other women may become marginally more negative with greater sexual activity compared to men’s. These findings highlight that negative stigma towards female sex workers, and women more generally, is powerfully driven by an opposition to women’s pursuit of casual sex.

We find weaker evidence that autonomy or income affect dehumanization towards women and female sex workers. Specifically, we find that women whose part-time jobs, hobbies or activities are under exploitative conditions are perceived to have less mental and
moral agency. We also find women who earn an income from their sexual exploits are perceived to have less mental and moral patience than those who do not. Therefore, our results show that the interactions between sexual engagement, income and autonomy that are characteristic of female sex work do not multiply the strength of dehumanizing perceptions towards women. This finding suggests that the effects of a woman’s sexual behaviour, income and autonomy on negative perceptions of female sex workers, and women more generally, are individually considered on a case-by-case basis.

**Prejudice against promiscuous women**

Our finding that men and women are more willing to dehumanize women who engage in more sexual jobs or hobbies suggests that both men and women hold strong prejudice against women who are sexually active. Theories of why female sexuality is suppressed divide into categories of male control or female control, whereby women’s sexuality is controlled almost exclusively by one sex or the other (for a discussion see Blake, Fourati & Brooks, 2018; Muggleton et al., 2018; Rudman et al., 2013). However, we find both men and women hold similar prejudice against women who they perceive as sexually active, providing mixed support for both male and female control predictions. Past work has shown that variation in men and women’s negativity towards promiscuity and infidelity may depend on environmental conditions like economic equality (Price et al., 2014) and paternal investment (Scelza et al., 2019). Thus, the dichotomy between male and female control theories may over-simplify the complexity of female suppression, as both men and women may have reasons to restrict women’s sexual opportunities depending on their environmental circumstances.
Our finding that women in exploited positions are attributed less patience, whereas women who earn income are attributed more agency, may reflect the dyadic nature of agency and patience (Gray, Gray & Wegner, 2007; Gray & Wegner, 2009). Research shows that individuals perceived as less able to make decisions are viewed as less blameworthy and less praiseworthy, qualities associated with being an agent (Gray & Wegner, 2009; Gray et al., 2011). Women who are subjected to exploitative conditions that restrict their ability to independently make decisions may also be viewed to lack in agency. Likewise, women who earn income through sexual exchange may be assumed to be making a decision to earn money from their jobs or activities, and therefore viewed more like an agent. Thus, the effects of autonomy and income on dehumanizing perceptions of women may reflect perceived vocational independency, rather than a relationship to sex work, adding additional explanation to why sex workers are viewed as both offenders and victims (Loughnan & Haslam, 2013; Sanders & Brents, 2017). Nonetheless, our results indicate that the ability of women to be autonomous or to earn income explains only a small fraction of the negative judgements made towards female sex workers and women more generally.

Our results add to existing research on why men and women may dehumanize some women more than others. Previous research on dehumanizing perceptions of sexualized women showed that women’s dehumanization was due to a desire for distance from a subgroup of women that promotes an oppressive culture (Vaes et al., 2011; Puvia & Vaes, 2015), whereas men’s dehumanization was due to activated sexual goals (Vaes et al., 2011). Our findings suggest that negative attitudes towards women they know or infer to have casual sex can also drive both men and women to dehumanize women. The extent that negative attitudes towards women’s sexual behaviour influence dehumanizing perceptions may depend on the individual, and we find some evidence that differences in sociosexual
orientation and mate value can affect perceptions of women. Men and women with more restricted sexual lifestyles and long-term relationship preferences are found to support sexually restrictive social institutions and political policies (Weeden et al., 2008; Weeden & Kurzban, 2013; Weeden & Kurzban, 2014; Pinsof & Hasleton, 2016; Pinsof & Haselton, 2017). These individuals may also be more likely to hold dehumanizing prejudice towards female sex workers as well.

**Future directions and limitations**

We find that women’s sexual behavior, rather than their income or autonomy, has the strongest influence on men and women’s dehumanization of women. However, factors of sexual exchange such as income and autonomy are most relevant when within men’s and women’s local community, and our experimental design may have been inadequate at making the factors of income and autonomy salient for participants. In addition, we found a great deal of variation within our models was explained by random variables of participant identity (see Supplementary Material), suggesting that negative attitudes towards women’s sexual engagement are far from the only reason why men and women stigmatize female sex workers. It is possible that other stereotypes of female sex workers, like an association of sex workers with sexually transmitted diseases, are important drivers of anti-sex work prejudice as well (Cusick, 2006; East et al., 2012; Sanders & Brents, 2017). Furthermore, our use of a large, heterogeneous, online sample of men and women from the USA limits application of this research to westernized populations as the relationship between sexual behavior, income and autonomy with prejudice may differ across cultures. It would be worthwhile for future research to compare the extent to which sexual engagement, income
and autonomy interact to influence prejudice towards female sex workers across a range of international and non-westernized populations (see Henrich, Heine & Norenzayan, 2010).

Conclusion

We find that men and women are more willing to dehumanize women who engage in jobs, hobbies, interests or activities that require sex. These perceptions are largely unaffected by whether women have independence or earn wages from their sexual engagements. Our findings suggest that harsh prejudice towards female sex workers, and women more generally, is driven primarily by negative biases towards female promiscuity. That female sex workers are frequent targets of stigma, harassment and physical violence and portrayed unfavourably within international social policy demonstrates the strength that anti-promiscuity prejudice has on attitudes and behaviours towards women. When more subtle, however, negative stereotypes of female promiscuity may pervade everyday judgements and lead some men and women to attitudes and behaviours which perpetuate sexist double standards.
Chapter 6

General Discussion

There is a widespread acceptance that women’s sexuality is culturally suppressed more often, more intensely and more harshly than men’s. In this thesis, I aimed to draw from multiple theories using cultural, evolutionary and economic frameworks to explore why female sexuality is suppressed. The goal of exploring the predictions of cross-disciplinary theories was to investigate who benefits from female sexual suppression and, therefore, understand who might be most responsible and how suppression might arise. To do this, I observed differences and similarities between men’s and women’s perceptions of women and considered how these perceptions relate to broader processes of female sexual suppression and sexism. My research questions were as follows:

1) Who places the most pressure on men and women to behave in ways that match sexual double standards?

2) What interpersonal perceptions of women cause men and women to hold objectifying perceptions of women?

3) Do men and women differ in their objectifying perceptions of women?
In the following sections, I summarise findings designed to answer these research questions. I examine how my findings have expanded knowledge of gendered sexual norms, objectification and female sexual suppression. Then, I integrate findings to discuss broader theoretical implications. Finally, I acknowledge limitations and discuss future directions.

**Summary of findings**

In Chapter 2, I tested who men and women anticipate lying to most when asked questions about their sexual history in order to test who men and women feel most pressured by to behave in gender-stereotyped ways. I found that both men and women anticipate lying most frequently to their parents more than their friends, acquaintances, colleagues, partners and potential partners. Women, in particular anticipated lying most to their fathers, anticipating they would tell the biggest lies, the most frequent lies, and would be least likely to disclose information about their sexual history to their fathers. I also found that both men and women anticipated lying in ways that made them appear more sexually restricted, on average. Therefore, these findings suggest that parents place the strongest pressure on their sons, and especially on their daughters, to restrict their sexual behaviours.

These findings suggest that parents, especially fathers, are agents of sexual suppression. This matches evolutionary predictions that parents are invested in the reproductive success in their children (Buunk, Park & Dubbs, 2008; Buunk, Park & Duncan, 2009; Perilloux et al. 2008; Apostolou, 2007; Apostolou, 2012; Burnstein, Crandall & Kitayama, 1994) and, as a result, are more disapproving of promiscuous
behaviour of their daughters due to the potential costs of unwanted pregnancy (Perilloux et al., 2008). Findings also suggest that it may be socially desirable for both men and women to downplay their sexual history, following evidence that men and women may be judged similarly negative for having a greater number of sex partners (Marks & Fraley, 2005; Allison & Risman, 2013; but see Marks et al., 2019). Overall, these findings support evolutionary predictions that the costs of reproduction influence female sexual suppression, but reveal little support for patriarchy, paternity certainty and sexual economic explanations of why female sexuality is suppressed compared to male sexuality.

In Chapter 3, I conducted a large correlational study to find how appearance-based perceptions of a woman’s youth, attractiveness and sexual behaviour influence the extent that men and women objectify her. I found that the degree that a woman was attributed objectifying perceptions increased with judgements that she was more likely to pursue casual sex, can decrease from perceptions that she is more attractive, is unrelated to her perceived age, and is greater by men than women overall. Additionally, we found that the objectifying perceptions that men and women held of women were similar. Thus, results show that multiple judgements interact when men and women make appearance-based judgments of women, with perceptions of sexual behaviour associating most strongly with greater objectifying perceptions.

Findings from Chapter 3 suggest that greater objectification of sexualised women than non-sexualised women (Loughnan et al., 2010; Loughnan et al., 2013) may largely, though not entirely, be due to perceivers associating this appearance with unrestricted sexual behaviour (see Stillman & Maner, 2009). Furthermore, that both men and women’s greater objectifying perceptions were associated with assumptions that women had more casual sex suggests that both men and women may disapprove of women who have casual
sex (Vaes et al., 2011). My findings also suggest that positive attractiveness biases (Dion et al., 1972) may mitigate the strength of negative objectifying perceptions. This replicates previous findings that attractiveness can increase perceptions of agency (Gray et al., 2011).

In Chapter 4, I tested (a) the effects of wearing more makeup on women’s self-perceived agency and competitiveness, and (b) how makeup influenced others’ objectifying perceptions of women. Contrary to our predictions, I found no evidence that the application of makeup alters women’s self-perceptions of agency competitiveness. I also found that both men and women’s objectifying perceptions were influenced by makeup, though men’s overall objectifying perceptions were more negative relative to women’s. However, higher amounts of makeup had a stronger negative effect on women’s objectifying perceptions, particularly those relating to women’s capacity to feel emotions and sensations. Furthermore, we found that for both men and women, positive perceptions of women’s mental capacity and moral status were related to perceptions that women wearing more makeup were more attractive, whereas negative perceptions were related to assumptions that women wearing more makeup had more casual sex. These findings replicate our findings in Chapter 3 that objectifying perceptions of women increase due to appearance-based perceptions that women are sexually unrestricted.

Findings from Chapter 4 show that men and women react negatively to women who they believe have more casual sex. Like Chapter 3, these findings suggest that sexualised women may be objectified and dehumanized more than non-sexualised women due to negative reactions to women they believe have more sex – a frequently used but inaccurate stereotype of women who wear more makeup (Batres et al., 2018). Additionally, results indicate that makeup can increase positive perceptions of women due to its positive effects on attractiveness (Law Smith et al., 2006; Batres et al., 2018; Jones, Russell & Ward, 2015;
Jones & Kramer, 2016; Cash et al., 1989; Mileva, Jones, Russell & Little, 2016). Together, findings from Chapters 3 and 4 show that men and women’s appearance-based stereotypes may pressure women to balance their daily appearance choices to avoid unintended negative perceptions of appearing more sexually unrestricted while still appearing attractive (for a related example see Krems et al., 2019).

In Chapter 5, I tested whether strong prejudice towards female sex workers, and more broadly female sexuality, was due to their level of required sexual engagement, their ability to earn income in exchange for these activities, or their level of autonomy in committing these activities. I found that men and women increased their dehumanizing perceptions of women that they learned partake in jobs, hobbies or interests that require penetrative heterosexual sex, and to a lesser extent nudity and intimacy. I found only weaker evidence that autonomy or income affect dehumanizing perceptions of women. Furthermore, like Chapters 3 and 4, I found that men dehumanized women more than women did overall, but men and women’s perceptions of women were similar. These findings show that negative perceptions of women are primarily driven by negative attitudes towards women they believe pursue or engage in sex, but only weakly influenced by perceptions of women’s ability to earn income or their autonomy.

Findings from Chapter 5 suggest that both men and women are more willing to dehumanize women who engage in activities involving sex, and also nudity or intimacy to some extent. Therefore, strong prejudice towards female sex workers, and women’s sexuality more generally, is driven by negative biases towards women’s sexual activity. This prejudice was not found to multiply due to women’s ability to earn income in exchange for sexual activities or women’s level of autonomy in conducting these sexual activities. This suggests that both men and women may be motivated to restrict women’s
sexuality (Muggleton et al., 2018), supporting evidence that support for social institutions and political policies is driven by preferences for sexual restriction (Weeden et al., 2008; Weeden & Kurzban, 2013; Weeden & Kurzban, 2014; Pinsof & Hasleton, 2016; Pinsof & Haselton, 2017).

Expanding knowledge of sexual norms, objectification and female sexual suppression

Sexual norms

Previous evidence shows that men tend to inflate and women tend to deflate their answers about their sexual history in order to fit gendered-social norms (Crawford & Popp, 2003; Fisher, 2007; Fisher, 2009; Fisher, 2013). In Chapter 2, however, I found that when asked about their sexual history by certain members of their family and friends, men and women both lied in ways that made them appear more sexually restricted, on average, especially to their parents. This suggests that both men and women may experience pressure to behave sexually restricted, though this restrictive pressure may be stronger from some members of their social circle than others. Some research suggests that endorsement of sexual double standards is waning as men and women are held to more similar sexual standards (Marks & Fraley, 2005; Marks & Fraley, 2007). However, a recent online study of 4,455 men and women found that female friends and acquaintances were evaluated more negatively as their number of sexual partners increased, whereas number of partners did not influence evaluations of men (Marks, Young & Zaikman, 2019). My findings suggest that although friends and acquaintances may still endorse sexual double standards, restrictive pressure from parents may be more likely to induce lying behaviour.
My finding that parents enforce sexual restriction for both sons and daughters demonstrates that gendered social norms may be influenced by both cultural and evolutionary factors (also see Eagly & Wood, 2013). Recent findings show that women across the USA are having fewer children and choosing to have children later in life (Ely & Hamilton, 2018). This trend suggests that men and women are choosing to invest greater time and resources into fewer children, an investment that is shown to increase offspring success in humans (Lawson & Mace, 2011; Walker et al., 2008) and other animals (Perrone & Zaret, 1979; Thornhill, 1976). As a consequence, it may be advantageous for parents to raise both sons and daughters with reinforced morals of sexual restriction to encourage their children to pursue long-term commitments and greater offspring success. This may be especially true for wealthier individuals in areas with recent economic development (Lawson & Mace, 2011; Schacht, David & Kramer, 2018). Thus, modern environmental circumstances may increase parents’ pressure on both their daughters and sons to restrict their sexuality and pursue long-term commitments.

In Chapters 3 to 5, I showed that the perceptions of men and women become more positive or more negative for similar reasons, highlighting that perceptions of women are highly dependent on the individual identity of the perceiver, rather than only on their biological sex (but see Marks, Young & Zaikman, 2019). Still, some evidence suggests that there may be important differences in what specific perceptions are driving positive or negative reactions based on women’s appearances. For example, women rated faces wearing makeup as more dominant whereas men rated faces wearing makeup as more prestigious compared to women wearing no makeup (Mileva et al., 2016). Therefore, there may be differences in the types of positive perceptions men and women make towards certain appearances. Alternatively, evidence suggests that negative reactions towards
women’s sexual behavior varies between populations (Scelza et al., 2019). Future research may benefit by considering alternative cultural or environmental reasons of why people might endorse sexual double standards (e.g., Kurzban & Weeden, 2014) rather than primarily basing studies upon differences between men and women.

Who is objectified?

Research using neural (Vaes et al., 2019), cognitive (Bernard et al., 2012; Bernard et al., 2018), and social psychological techniques (Heflick & Goldenburg, 2009; Heflick et al., 2011) has shown that women, when objectified, are deprived of human traits. Depriving women of human traits is shown to encourage active harm (Bevens & Loughnan, 2019; Rudman & Mescher, 2012; Waytz et al., 2010) and reduce moral concern for women (Cogoni et al., 2018; Loughnan et al., 2010; Loughnan et al., 2013). Evidence suggests that for men, sexual interest increases dehumanizing perceptions of women, whereas for women, a desire for distance from a disliked subgroup increases dehumanizing perceptions of women (Vaes et al., 2011). Collectively, this research demonstrates that men and women can hold similar perceptions that deprive women of their human traits, though their reasons for these perceptions are associated with different motivations.

Complementing research on why men and women dehumanize women, I show that dehumanizing perceptions of women can increase due to the assumption that they are more likely to pursue casual sex (Chapter 3-4). These findings suggest that men read appearance-based cues as evidence of sexual interest in a way that is different from the way women read these cues (Moor, 2013), supporting evidence that men’s dehumanisation may be due to activated sexual goals (Vaes et al., 2011). For women, this finding suggests that not only
may women dehumanize sexualised women because they believe they perpetuate an objectifying culture (Vaes et al., 2011; Puvia & Vaes, 2015), but also because they disapprove of women being more sexually unrestricted. In particular, findings from Chapter 5 highlight that both men and women dehumanize women that engage in jobs, hobbies or activities that encourage or involve unrestricted sexual behaviour. Thus, negativity towards women’s unrestricted sexual activity may explain why many studies find that both men and women objectify (Loughnan et al., 2010; Loughnan et al., 2013; Bevens & Loughnan, 2019; Strelen & Hargreaves, 2005; Rudman & Mescher, 2012) and dehumanize sexualised women (Vaes et al., 2011; Morris et al., 2018).

Furthermore, I find that even subtle differences in women’s overall appearance (Chapter 3) and makeup application (Chapter 4) or daily activities (Chapter 5) can prompt men and women to view women as less mentally capable and morally deserving. Previous research often compares women in sexualised attire to women in everyday, non-sexualised clothing (e.g., Blake et al., 2016; Bevens & Loughnan, 2019; Rudman & Mescher, 2012; Bernard et al., 2012; Bernard et al., 2018; Cikara et al., 2011). Findings from my research suggest that even on a continuous scale in which differences between women’s appearance are more varied, men and women may still make appearance-based assumptions about women’s sexual behaviour that increases the extent that they dehumanize women. This suggests that even in everyday interactions, some women may be at least mildly objectified. Thus, stereotypes about female promiscuity negatively influence how women are viewed and treated.

Practically, these findings suggest that mediating misinformation and negative stereotypes about women (and men) who are sexually active may positively influence everyday perceptions of women in social and professional contexts. For example, compared
to men, feminine women are deemed less likely to be scientists (Banchevsky et al., 2016) and female bosses who wear more sexy clothing are perceived as less competent and intelligent (Glick et al., 2005). My findings suggest that the association between feminine, sexualized appearances with unrestricted sexual behavior may partly explain these negative perceptions of women (Chapter 3-5). Addressing that this association between sexual behaviour and appearance is not necessarily true (Batres et al., 2018; Stillman & Maner, 2009) may increase positive perceptions of women. In support, evidence that attitudes against marriage equality decrease when gay men are presented as less promiscuous suggests that understanding anti-promiscuity stereotypes can attenuate negative attitudes towards some groups of people (Pinsof & Haselton, 2017). Separating stereotypes of women’s sexual behavior from stereotypes of women’s competence may be an effective strategy for mitigating sexist perceptions more broadly.

**Who objectifies women?**

Overall, I find that men objectify women more than women do (Chapter 2-3). This supports a large amount of previous evidence demonstrating men’s strong objectification of women (Blake et al., 2016; Cikara et al., 2011; Gervais et al., 2013; Rudman & Mescher, 2012; Saguy et al., 2010; Strelen & Hargreaves, 2005). Multiple reasons have been suggested for why men objectify women more than women do. One suggestion is that men are more likely to view women sexually, and therefore view them in terms of sexual goals (Rudman & Mescher, 2012; Vaes et al., 2011). Objectification is hypothesised to cause women to be viewed instrumentally (Nussbaum, 1999). Men’s stronger inclination to short-term mating than women, on average (Buss & Schmitt, 1993), may increase the likelihood
that men assess women in terms of their physical features over their personal qualities (Bernard et al., 2012; Bernard et al., 2018; Vaes et al., 2011). Findings from Chapter 3 suggest that these objectifying assessments may occur due to perceptions of women’s sexual openness rather than due to women’s attractiveness.

Another explanation for why men are more likely than women to objectify women relates to power dichotomies between men and women. Societal structures more frequently place men in positions of power over women (DeLamater, 1981; Travis & White, 2000). This positional power combined with men’s greater proclivity to hold hostile or benevolent sexist attitudes than women may increase that men dehumanise women as a subordinate subgroup (see Baraket et al., 2018; Cikara et al., 2011). Men’s power-related objectification, however, may be unrelated to women’s youth (Chapter 3). Although the ultimate reason of men’s objectification of women is less clear, men’s stronger proclivity to view women as lacking in mental capacity and moral status places doubt on theory that suggests female sexuality is female-controlled.

That is not to say, however, that female sexuality is exclusively male-controlled. My findings also show that women hold objectifying perceptions of women, supporting previous evidence that women also objectify and dehumanize sexualized women (Heflick & Goldenberg, 2009; Heflick et al., 2011; Morris et al., 2018; Puvia & Vaes, 2013; Puvia & Vaes, 2015; Strelen & Hargreaves, 2005; Vaes et al., 2011). Additionally, women’s objectifying perceptions of other women are surprisingly similar to men’s perceptions (Chapter 3-5). This suggests that although there are differences in why women and men might objectify women (Vaes et al., 2011), it is also necessary to consider the similarities in men’s and women’s perceptions of women (see Zell et al., 2016). For example, when attempting to understand the prejudice some people hold towards couples who choose to
have an abortion (Pacilli et al., 2018) or towards female victims of rape (Loughnan et al., 2013), it may be productive to avoid simplifying the issue to being one that pits men against women. In understanding why women’s voices are frequently disregarded in a decision which ultimately limits women’s control over their own bodies, anti-promiscuity attitudes may have a more pervasive influence on both men and women’s negative perceptions than previously suggested.

Implications of findings

Female sexual suppression depends on individual biases

My findings that both men and women hold objectifying perceptions of women (Chapters 3-5) imply that the extent that men or women restrict female sexuality may less dependent on their sex and more dependent on individual biases. Indeed, evidence shows that characteristics of perceivers explain impressions more than target characteristics (Xie, Flake & Hehman, 2019). This indicates that individual perceiver biases have strong effects on how they interpret characteristics of targets. Thus, understanding more about those who objectify women, rather than the women themselves, may be of greater importance to understanding why female sexuality is suppressed.

One factor that may influence the extent that women suppress female sexuality is their preferred relationship strategies. Evidence suggests that men and women who show strong preferences for monogamous, long-term relationships may also be more likely to support institutions and policies that enforce sexual restriction on others (Petersen, 2018; Weeden et al., 2008; Weeden & Kurzban, 2013). For example, religious groups are found to condemn promiscuous conduct and promote values of marriage and long-term, high-
fertility reproductive strategies (Weeden et al., 2008). Accordingly, support for restrictive sexual morals is found to predict regional levels of religiosity worldwide (Weeden & Kurzban, 2013). Other evidence shows that individuals with more conservative political values (often valuing marriage and high-fertility practices more than those with liberal political values) more strongly oppose marriage equality due to stereotypes that gay men are more promiscuous (Pinsof & Haselton, 2017). Alternatively, people seeking unrestricted mating strategies were found to be more supportive of political and moral regimes that promote individual autonomy as well as regimes that allow inequalities in power and resources (Petersen, 2018). My research showed that low SOI individuals are less likely to objectify women (Chapters 3 and 5), suggesting that people who pursue more conservative relationship strategies are more likely to perceive a woman to have less mental capacity and to be less deserving of moral treatment. My findings from Chapter 4, however, found no relationship between SOI and objectification. Therefore, the reproductive strategy that a person pursues may influence the extent that they view women more negatively, as well as their willingness to support female sexual restriction.

Mate value is another factor that may bias men and women’s suppressive attitudes and behaviours towards female sexuality. Research finds that low mate value men are more accepting of intimate partner violence when under the impression that gender equality is low, whereas high mate value men are more accepting of intimate partner violence when under the impression that gender equality is high (Blake & Brooks, 2018). This evidence suggests that men’s relative position in the mating market may influence their support for violence that is suggested to refrain women from pursuing extramarital sexual opportunities (Blake & Brooks, 2018; Daly et al., 1992). Indeed, mate value may also determine men and women’s relationship strategy preferences (Millar et al., 2018), which subsequently
influences their willingness to support moral regimes that suit their interests (see Petersen, 2018; Kurzban & Weeden, 2014; Weeden & Kurzban, 2017). My own research showed mixed results for how mate value influences objectifying perceptions, with some results showing that, compared to low mate value people, high mate value people were less likely (Chapter 3), more likely (Chapter 5), or neither more nor less likely to objectify women (Chapter 4). Chapter 4 also showed that high mate value women were more likely to resist mate guarding behaviours and held higher self-perceived agency and humanness than low mate value women, suggesting that mate value may determine women’s willingness to compete in the mating market. Thus, where individuals sit within the sexual marketplace may also encourage differences in their attitudes and behaviours of female sexual suppression.

The evolutionary fitness derived from their children may also drive men and women to support suppressive cultural practices. Men more than women are able to maximise their genetic fitness (i.e., their number of offspring that survive until they enter the mating market) by pursuing short-term, sexual relationships with a greater number of partners (Trivers, 1972; Buss & Schmitt, 1993). In contrast, women more than men are able to maximise their fitness by pursing long-term committed relationships (Buss & Schmitt, 1993). By supporting the fitness interests of their offspring and their genetically-related kin, men and women may ensure the success of their own genes via inclusive fitness (Hamilton, 1964; Gardner, West & Wild, 2011). Evidence shows that parents with daughters are more supportive of gender equality (Warner & Steel, 1999), less supportive of traditional gender roles (Shafer & Malhotra, 2011), and as I showed in Chapter 2, put more pressure on daughters to restrict their sexual behaviour. Furthermore, mothers are more supportive of Islamic veiling of their daughters, a practice that limits women’s sexual agency (Blake,
Fourati & Brooks, 2018). Thus, female sexual suppression may depend on gendered fitness interests of an individual’s genetic kin.

The effects of reproductive interests, mate value and kin likely inform the extent that men and women hold prejudice towards female sex workers. Internationally, policy makers deploy sex work policies with the ultimate goal of its eradication (Sanders & Campbell, 2014). In Chapter 5, I show that this goal is strongly driven by negative attitudes towards female sexual activity (Chapter 5), though other stereotypes that female sex workers spread disease may also increase desire for eradication (Cusick, 2006; Sanders & Brents, 2017). This finding suggests that individuals that support restricted mating strategies for themselves or their kin may also be most opposed to female sex work.

**Female sexual suppression depends on environmental pressures**

My research indicates that people’s attitudes and behaviours that restrict women’s sexuality may depend equally, if not more so, upon environmental pressures than a person’s sex. For example, evidence suggestively supports that whether men are in surplus or rare within a community (i.e., sex ratios) plays an important role in determining mating market dynamics, intrasexual competition, and attitudes towards sexual restriction (Baumeister & Vohs, 2004; Guttentag & Secord, 1983; Stone, 2017). Sex ratio is also found to predict parental care behaviour (Jennions & Fromhage, 2017; Barber, 2003). When women are rare (i.e., a male-biased sex ratio), men are more likely to marry, be part of a family and be sexually committed to a partner (Schacht & Kramer, 2016). Alternatively, when men are the rarer in the community, it is suggested that divorce rates are higher and women are devalued within society (Guttentag & Secord, 1983). The effects of sex ratio are important
to consider as the consequences of historic sex ratios within a community may even persist over time after the sex ratio has changed (Grosjean & Brooks, 2017). Preliminary analyses comparing data from Chapter 2 between men and women from the USA (a slightly female-biased ratio of 0.98 males per hundred females) and India (a slightly male-biased ratio of 107.48 males per hundred females) suggests that people in female-biased societies anticipate lying more frequently to parents and close friends than people in male-biased societies. However, our ability to determine the extent that these differences are due to differences in country-level sex ratio is extremely limited, particularly due to the relatively small sample of Indian participants in our Chapter 2 sample. Additionally, country-level sex ratio has a weaker effect on men’s and women’s attitudes and behaviours compared to local community-level sex ratios. Nonetheless, whether men or women are the rarer sex within their community may be an additional factor to explain my findings that some men and some women held more restrictive attitudes towards women’s sexuality.

Socioeconomic factors may also influence the suppression of female sexuality. Economic inequality is shown to increase competitive mate-attraction behaviours in women, including a greater desire to spend money on beautification items (Hill et al., 2012; Netchaeva & Rees, 2016) and post “sexy selfies” on social media (Blake et al., 2018). Areas of greater income inequality are also areas where female sex work is most frequent (Sahni & Shankar, 2016) and the benefits of sex work for young women are most salient (Arunachalam & Shah, 2008). Evidence shows that men and women hold stronger anti-promiscuity attitudes in areas that women rely more economically on men (Price et al., 2014), and, as shown in Chapter 3, can influence objectifying perceptions towards women. It is suggested that in these areas the importance of parental care and the costs of promiscuity are heightened (see Price et al., 2014; Schmitt, 2005), influencing the strength
of negative reactions to infidelity (Scelza et al., 2019). Comparisons between our USA and India sample in Chapter 2 also suggest that income inequality may influence who men and women anticipate lying to about their past sexual behaviour. Thus, economic inequality may promote competitive behaviour among women and increase overall sexual suppression due to greater costs of infidelity.

Gender equality may additionally influence female sexual suppression. Areas of greater gender inequality are also found to have greater pathogen prevalence, placing greater pressure on men and especially women to mate earlier, have more children and pursue short-term over long-term goals (Varnum & Grossman, 2016). As gender equality increases, individuals are less likely to encourage abstinence and more likely to experience casual sex (Baumeister & Mendoza, 2011). Although gender equality may decrease overall suppressive attitudes towards sexual behaviour, gender equality may also lead to negative effects for women including greater acceptance of intimate partner violence by high mate value men (Blake & Brooks, 2018). These findings suggest that equality between men and women is an important factor to consider when explaining relevant attitudes and behaviours to female sexual suppression.

Environmental factors are an important source of variation in the attitudes and behaviours of men and women. My findings suggest that these factors may reflect why some men and women view women who they believe pursue casual sex as less human (Chapters 3-5). In support, although objectification is found to occur cross-culturally, there are also important differences in objectification between western and non-western populations (Loughnan et al., 2015). These differences may reflect country-level and community-level differences in income equality, gender equality and the ratio of men to women. Where a person sits within the sexual marketplace is strongly determined by these
environmental factors, altering the individual biases that influence the extent that they restrict female sexuality.

**Female sexual suppression goes beyond simple dichotomies:**

Previous research often regards the control of female sexuality as dichotomous between male-control and female-control (Baumeister & Vohs, 2012; Baumeister et al., 2017; Rudman et al., 2014; Rudman, 2017). This distinction of suppressive processes as being exclusively male- or female-controlled has proven theoretically productive for testing unique hypotheses of suppressive behaviours (Muggleton et al., 2018; Blake, Fourati & Brooks, 2018). However, my findings suggest that in reality, processes underlying female sexual suppression may be more overlapping between men and women. In Chapter 2, I found that *both* mothers and fathers pressure their children to behave sexually restricted. In Chapters 3 to 5, I found that *both* men and women react in similar ways to women who they believe are sexually available or sexually active. These results also replicate other findings that both men and women behave in ways that are suppressive towards promiscuous women (Muggleton et al., 2018). As a result, maintaining rigidity in the dichotomy between male-control and female-control may limit future progress in understanding why female sexuality is suppressed.

Suppressive attitudes and behaviours towards female sexuality in my research were explained by both evolutionary and psychological theory. Men objectified women more than women did overall (Chapters 3-5), supporting patriarchal hypotheses of female sexual suppression (Fredrickson & Roberts, 1997; Travis & White, 2000). Still, women were also found to hold objectifying perceptions due to judgements about women’s sexual activity
(Chapters 3-5), supporting sexual economic predictions of female sexual suppression (Baumeister & Vohs, 2004). Furthermore, parents were found to place pressure on their sons and daughters to behave sexually restricted (Chapter 2), supporting evolutionary hypotheses of sexual suppression. This evidence suggests that nature-nurture dichotomies that have divided research on female sexual suppression are over-emphasised (Eagly & Wood, 2013; Nettle, 2009). My findings show that understanding why female sexuality is suppressed will depend on researchers’ willingness to consider and combine multiple hypotheses of why female sexuality is suppressed.

Future insight in understanding suppression may come from studies that embrace the complexity of evolutionary, cultural and economic interactions on the attitudes and behaviours of both men and women. Valerie Hudson and Hilary Matfess (2017) provide one example of how dynamics in cultural practices that restrict female sexuality may also predict membership in more extreme violent groups. In many patrilineal communities, women are subjected to a system of arranged marriages in which the bride is exchanged for assets provided by the husband’s family (i.e., a bride price). However, the bride price is sensitive to trends that increase its value within communities causing bride prices to skyrocket to amounts that are unaffordable by a majority of families (Hudson & Matfess, 2017). Due to fluctuations in the sex ratio that increase women’s rarity compared to men, many young men are unable to afford brides and the social status that comes with marriage. Consequently, many young men engage in riskier strategies that promise men wives, including joining terrorist groups that promise members brides in exchange for their life commitment (Hudson & Matfess, 2017). This example highlights how culture, inequality and sex ratios can interact to not only increase female sexual suppression, but predict
membership in radical groups due to a marriage system that disproportionately benefits some members of the community over others.

My findings additionally suggest that understanding the relationships that women uphold through sexual restriction, such as those with their parents (Chapter 2), may better explain some instances of female sexual suppression. For example, the surge of “forced adoptions” that occurred in Australia between 1950 and 1975 (see Cuthbert & Quarterly, 2012 for a summary; Ruzicka, 1975; Higgins, 2010) caused women to unwillingly place their daughters for adoption to appease their parents’ wishes (discussed in greater detail in Chapter 2). Events like forced adoptions were not unique to Australia at that time, as many similar global suppressive incidences occurred following the Sexual Revolution. Pressure from family, especially parents, can sway women to act against their own interests in order to support the interests of their family.

There are numerous factors to contemplate when attempting to understand men and women’s willingness to restrict female sexuality. Individual biases and environmental factors interact to determine men’s and women’s attitudes towards female sexuality. To understand to what extent these factors affect suppression, it is essential to conduct theory-testing experiments to critically evaluate whether evidence supports or refutes each theory, or under what circumstances each theory best predicts behaviour (see Oberhauer & Lewandowsky, 2019). Many factors discussed to affect female sexual suppression can shift over an individual’s lifetime, suggesting that attitudes towards restricting women’s sexuality have the potential to fluctuate. Therefore, under the current replication crisis facing the psychological sciences (Open Science Collaboration, 2015), it may be beneficial to create a more cumulative theoretical framework that combines evolutionary theory with
cultural theory and connects individual-level processes with broader society-level processes of female sexual suppression (see Muthukrishna & Henrich, 2019).

Limitations & Future directions

Causal links to female sexual suppression

My investigation has attempted to understand more about what motivates people to hold more negative or restrictive views of women and women’s sexuality. This research is valuable because it can provide insight into why women are the target of more harmful behaviours associated with objectification and dehumanisation than men are (Arnocky et al., 2019; Blake et al., 2016; Bevens & Loughnan, 2019; Loughnan et al., 2010). However, while dehumanising perceptions are associated with many forms of negative prejudice (Haslam & Loughnan, 2014; Haslam & Stratemeyer, 2016), it remains difficult to identify whether dehumanizing perceptions are a causal influence on behaviour (Haslam & Loughnan, 2014). Therefore, studies that test behaviours, not only attitudes, are of great value to understanding suppression. For example, using a series of economic games, Muggleton and colleagues (2018) found that although both men and women hold negative views of promiscuous women, women are more willing to punish these women in an economic game than men. Thus, future research may benefit from utilizing cross-disciplinary methods to experimentally test how, and under what contexts, anti-promiscuity attitudes affect behaviour.

Future research on female sexual suppression using dehumanization may find value in designing studies to understand what decreases dehumanising perceptions. Limited research has attempted to test ways to reduce dehumanizing perceptions (Haslam &
Loughnan, 2014). My research suggests that addressing anti-promiscuity attitudes may be one method for decreasing female dehumanization, including prejudice towards female sex workers (Chapter 5). Previous research has also found that minimizing anti-promiscuity biases increases support for marriage equality (Pinsof & Haselton, 2016; Pinsof & Haselton, 2017). Thus, experiments that test the most effective methods of increasing humanizing perceptions towards women will provide valuable insight on female sexual suppression, person perception and sexism.

There remains much opportunity to investigate the choices that women make to manage the potential consequences of stereotypes and sexism in their daily lives. It is valuable to understand and quantify the different ways that sexual double standards or, more broadly, sexual discrimination affect women compared to men. Less researched, though, are the ways that women might behave in order to navigate their social environment which, many times, may risk negative perceptions associated with negative gendered stereotypes of women. One recent example by Krems and colleagues (2019) showed that women alter their appearance to appear more modest to avoid making a negative first impressions when meeting potential new friends, especially to potential female friends. My research attempted to test a related premise that the amount of makeup that women apply depends on social context (Chapter 4). Although my research failed to find evidence for this hypothesis, there remains little research on how women alter their appearances, particularly makeup, depending on social context. Considering that makeup is suggested as a tool that women can use to be more competitive in the mating market (see Hill et al., 2012; Netchaeva & Rees, 2016), it is surprising that relationship has never been directly tested. Thus, future research should focus on the agentic choices that women make to manage their daily social interactions.
Sample sizes, reliable data and technology

Another avenue for future sexual double standards research is in using large, nationally representative, longitudinal data sets. The majority of the research I have presented in this thesis has been from a United States sample recruited using Amazon’s Mechanical Turk. More recently, it has been suggested that an overuse of Mechanical Turk samples in online research may limit the data’s applicability to other diverse populations (Hauser, Paulacci & Chander, 2018; Kennedy et al., 2018). Although difficult to acquire, large, nationally representative, longitudinal data sets will provide key insights into the variation of attitudes that exist among various populations. For example, Cowie and colleagues (2019) have recently used data from a survey of 18,266 participants residing in New Zealand to understand variation in sexist attitudes across sexualities, finding that certain forms of sexism are more related to heterosexuality than others. The use of large samples will be crucial for understanding the sources of variation in attitudes towards women and women’s sexuality.

Testing for sources of sexism is difficult. Many surveys that attempt to measure sexist attitudes, including those reported in this thesis, are self-report and often participants respond in self-report surveys in socially desirable ways (see Fisher, 2007; Fisher, 2013; Nederhof, 1985). However, technology and social media may offer exceptional opportunity to acquire large, diverse data that are less affected by social desirable responses. For example, recent studies have utilized smartphones to deploy short surveys that track the daily activity of participants in objectification (Holland et al., 2017) and emotion regulation research (Kalokerinos et al., 2017; Meers et al., under review). In addition, recent research
using Twitter data of over one million tweets tracked the number of selfies posted as a measure of self-sexualisation across 113 nations (Blake et al., 2018). Studies that are able to employ new techniques that collect data large samples of data beyond self-report questionnaires will provide valuable insight about men and women’s daily attitudes and behaviours that restrict women’s sexuality.

**WEIRD people and cross-cultural variation in female sexual suppression**

Although it is widely accepted that female sexuality is suppressed across cultures, a large proportion of studies on sexual suppression and sexual double standards use westernized, educated, industrialised, rich and democratic (WEIRD) samples (Henrich, Heine & Norenzayan, 2010). Due to the vast majority of studies in the psychological sciences using WEIRD samples, the applicability of many findings to non-WEIRD populations has been called into question (Henrich, Heine & Norenzayan, 2010). For example, a large amount of research on the effects of religion has studied these effects on WEIRD samples even though people from poorer parts of the world are more religious than those in richer parts, on average (Hackett, 2018). Norms of fairness and morality also vary across cultures (Henrich et al., 2010; Fessler et al., 2015). Moral and religious processes affect restrictive cultural norms towards female sexual behaviour, suggesting that the scope of research on female sexual suppression may be similarly narrow (for examples of non-WEIRD examples see Blake, Fourati & Brooks, 2018; Pazhoohi et al., 2017). Theory used over this thesis has been primarily postulated within and about WEIRD societies and, thus, findings from this thesis may be most useful to explain attitudes and behaviours within WEIRD populations.
Evolutionary and sexual economic hypotheses of sexual suppression depend upon mating market dynamics that vary between communities (Baumeister & Vohs, 2004) and social norms, stereotypes and perceptions of women’s role in society vary across cultures (Glick et al., 2000). Considering that perceiver characteristics affect impressions of targets more than target characteristics (Xie, Flake & Hehman, 2019), cultural differences may have considerable effects on how women are perceived more broadly. Studies have shown that there are important cross-cultural similarities and differences between populations in relevant traits and behaviours to predicted evolutionary drivers of female sexual suppression, including sociosexuality (Schmitt, 2005), mating strategies (Schmitt & Fuller, 2015) and parental investment (Scelza et al., 2019). Female objectification is also shown to vary in important ways across cultures (Loughnan et al., 2015). As a result, my findings are limited by their ability to determine the extent that population-level differences influence negative perceptions towards women. Thus, future research must place added priority on testing predictions and replicating findings on sexual suppression across multiple cultures.

Conclusion

Findings from this PhD thesis suggest that both men and women may play a part in the cultural suppression of female sexuality. Mothers and especially fathers may benefit from enforcing strong pressure on their children, especially their daughters, to remain sexually restricted. Indeed, both women and men may benefit from maintaining sexual double standards, as both men and women hold more negative views of women if they believe that they engage in more sex. This dehumanizing view that sexually unrestricted women are less mentally capable and less deserving of moral treatment can be pervasive.
First impressions that a woman engages in more casual sex based on her clothing or her makeup can subtly increase how much she is objectified. More extremely, learning that women partake in jobs, hobbies or activities in which they engage in sex substantially decreases the extent that women are viewed and, at times, treated inhumanely.

This PhD suggests that no single theory of sexual suppression can fully explain on its own why female sexuality is suppressed more strongly than men’s. Evolutionary, cultural and economic factors interact to determine who might benefit from supporting practices that undermine women’s sexual freedoms. However, the extent of men and women’s negative attitudes and behaviours towards women’s sexuality is largely determined by individual biases and environmental factors. Therefore, the tendency in research to create rigid dichotomies, such as nature vs. nurture or male-control vs. female-control, may be detrimental for understanding the cross-cultural drivers of sexism. To fully understand the underlying processes of sexism, it is essential to explore and consider all avenues of variation in attitudes and behaviours associated with female sexual suppression; even small or subtle negative stereotypes about female sexuality can have large implications for how women are treated. It is my hope that the data presented here can aid in ameliorating, and eventually eliminating damaging prejudice towards women by showing that there are a number of motivations that influence suppressive attitudes towards female sexuality.
Chapter 7

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Chapter 8

Appendices
## Appendix 2A

**Table 2A.1** Country of residence of participants

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Appendix 3A

Examples of Target Women Images

From freedigitalphotos.net (stockimages)*
## Appendix 3B

### Table 3B.1  Participants’ country of residence for Study 1.

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## Appendix 3C

### Table S1. Correlations between items measuring mental agency, mental experience, moral agency and moral patiency.

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Note: Mental Agency item 1 = Self-Restraint; item 2 = Right/Wrong. Mental Experience item 1 = Fear; item 2 = Pain. Moral Agency item 1 = Responsible; item 2 = Intentional. Moral Patiency item 1 = Take Advantage; item 2 = Manipulate. See Table 3 for a complete list of items.
### Appendix 3D

**Table 3B.2** Participants’ country of residence for Study 2.

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Appendix 4A

Survey 1 Makeup and Non-make up condition survey

instructions

Note: Participants first answer demographic questions and several individual measures. Participants are then randomly allocated to 1 of 2 conditions: Makeup or Non-make up. Within these conditions, participants are also randomly allocated to 1 of 4 scenarios. Participants in each condition will answer several priming questions to have them think about their allocated scenario. Then participants will be instructed to complete their allocated condition task.

Romantic date with an ideal partner

Makeup

We will now ask you to answer several questions about romantic dates you have been on.

First, you will need to take a photo of yourself to be used later. Get your experimenter now.

Take a selfie of your face using the camera on the computer. Here is an example of a good selfie. Please try to follow the steps as closely as possible. Be sure to look at the camera when taking the photo:

Please upload your unmodified selfie
(The photo is transferred by the experimenter to an iPad and loaded onto Makeup Plus for the participant to use. The participant is asked to continue with the survey and use the app when instructed.)

1. How often do you go on romantic dates?
2. When was the last time you went on a romantic date?
3. How much do you enjoy going on romantic dates?

_We will now ask you to think about a person who you are very attracted to as a partner. It could be someone famous or someone you know._

_Take a moment to think about what this person looks like and say their first name out loud to focus your mind on this person._

Imagine preparing to go on a romantic date with a person you are attracted to. Please use the MakeupPlus app to apply makeup in a way that you would wish to appear for your date.

You have 5 minutes allocated to complete this task but you can take more time if needed. You will not be able to continue the survey until this amount of time has elapsed. You may apply as much or as little makeup as you wish.

When you are finished and timer has stopped, stay on this page and get your experimenter

5:00 (timer)

**Non-make up**

_We will now ask you to answer several questions about romantic dates you have been on._

1. How often do you go on romantic dates?
2. When was the last time you went on a romantic date?
3. How much do you enjoy going on romantic dates?
We will now ask you to think about a person who you are very attracted to as a partner. It could be someone famous or someone you know.

Take a moment to think about what this person looks like and say their first name out loud to focus your mind on this person.

Imagine preparing to go on a romantic date with the person you are attracted to. Tell us how you would like the date to go in 200 words.

Job interview

Makeup

We will now ask you to answer several questions about job interviews you have been on.

First, you will need to take a photo of yourself to be used later. Get your experimenter now.

Take a selfie of your face using the camera on the computer. Here is an example of a good selfie. Please try to follow the steps as closely as possible. Be sure to look at the camera when taking the photo:

Please upload your unmodified selfie

The photo is transferred by the experimenter to an iPad and loaded onto Makeup Plus for the participant to use. The participant is asked to continue with the survey and use the app when instructed.

1. How many job interviews have you had before?
2. How recent was your last job interview?
3. How well do you think you performed at your last job interview?

*We will now ask you to think about a position at a current job or a potential job that you would love to work in.*

*Take a moment to think about the position that you have chosen and say the position title out loud to focus your mind on this position.*

Imagine that today is the day of the job interview. Please use the MakeupPlus app to apply makeup in a way that you would wish to appear for your interview.

You have 5 minutes allocated to complete this task but you can take more time if needed. You will not be able to continue the survey until this amount of time has elapsed. You may apply as much or as little makeup as you wish.

When you are finished and timer has stopped, stay on this page and get your experimenter

5:00 (timer)

*Non-make up*

*We will now ask you to answer several questions about job interviews you have been on.*

1. How many job interviews have you had before?
2. How recent was your last job interview?
3. How well do you think you performed at your last job interview?

*We will now ask you to think about a position at a current job or a potential job that you would love to work in.*

*Take a moment to think about the position that you have chosen and say the position title out loud to focus your mind on this position.*
Imagine preparing to go on a romantic date with the person you are attracted to. Tell us how you would like the date to go in 200 words.

**Instagram post**

*Makeup*

*We will now ask you to answer several questions about your social media presence.*

First, you will need to take a photo of yourself to be used later. Get your experimenter now.

Take a selfie of your face using the camera on the computer. Here is an example of a good selfie. Please try to follow the steps as closely as possible. Be sure to look at the camera when taking the photo:

![Selfie example]

- Head is close to or touching the top of the frame
- Neutral expression (not smiling or frowning)
- The entire face is in the frame of the photo
- Very little showing other than face and neck

Please upload your unmodified selfie.

The photo is transferred by the experimenter to an iPad and loaded onto Makeup Plus for the participant to use. The participant is asked to continue with the survey and use the app when instructed.

1. Which social media outlet do you use most?
2. How many followers (or friends) do you have on your favourite social media account?
3. How often do you view content on social media?
We will now ask you to think about your Instagram account or other form of personal social media that you share photos on. Take a moment to think about the number of followers you have and say the number out loud to focus your mind on your social media presence.

Imagine preparing to make a media post about yourself on your Instagram or equivalent social media account. Please use the MakeupPlus app to apply makeup in a way that you would wish to appear for your Instagram photo.

You have 5 minutes allocated to complete this task but you can take more time if needed. You will not be able to continue the survey until this amount of time has elapsed. You may apply as much or as little makeup as you wish.

When you are finished and timer has stopped, stay on this page and get your experimenter

5:00 (timer)

Please get your experiment to attach your makeup-applied selfie for an Instagram Post.

Non-make up

We will now ask you to answer several questions about job interviews you have been on.

1. Which social media outlet do you use most?
2. How many followers (or friends) do you have on your favourite social media account?
3. How often do you view content on social media?

We will now ask you to think about your Instagram account or other form of personal social media that you share photos on.
Take a moment to think about the number of followers you have and say the number out loud to focus your mind on your social media presence.

Imagine preparing to make a media post about yourself on your Instagram or equivalent social media account. Tell us some of the things that are important to you in a good post and how you choose to portray yourself in your photos in 200 words.

**Control Condition**

**Makeup**

We will now ask you to answer several questions about your grocery shopping routine.

First, you will need to take a photo of yourself to be used later. Get your experimenter now.

Take a selfie of your face using the camera on the computer. Here is an example of a good selfie. Please try to follow the steps as closely as possible. Be sure to look at the camera when taking the photo:

Please upload your unmodified selfie

The photo is transferred by the experimenter to an iPad and loaded onto Makeup Plus for the participant to use. The participant is asked to continue with the survey and use the app when instructed.

1. Which grocery store do you visit most frequently?
2. How often do you go to the grocery store?
3. When was the last time you visited the grocery store?

We will now ask you to think about your grocery shopping routine.

Take a moment to think about the grocery store(s) you visit regularly and say the shop names(s) aloud to focus your mind on grocery shopping.

Imagine you are about to go to the grocery store. Please use the MakeupPlus app to apply makeup in a way that you would wish to appear at the store.

You have 5 minutes allocated to complete this task but you can take more time if needed. You will not be able to continue the survey until this amount of time has elapsed. You may apply as much or as little makeup as you wish.

When you are finished and timer has stopped, stay on this page and get your experimenter

5:00 (timer)

Please get your experiment to attach your makeup-applied selfie for an Instagram Post.

Non-make up

We will now ask you to answer several questions about your grocery shopping routine.

1. Which grocery store do you visit most frequently?
2. How often do you go to the grocery store?
3. When was the last time you visited the grocery store?

We will now ask you to think about your grocery shopping routine.
Take a moment to think about the grocery store(s) you visit regularly and say the shop names(s) aloud to focus your mind on grocery shopping.

Imagine you about to go to the grocery store. Please tell us about your grocery shopping routine and what some of your staple food items are in 200 words.
Appendix 4B

Examples of Non-make-up and Makeup-applied images of participants
Appendix 4C

Measures used in Study 1

After completing the manipulation task, participants continue to answer the following measures of self-agency, self-humanness, intrasexual competitiveness and mate guarding avoidance behaviours.

Participants in the Makeup condition complete the rest of the questionnaire with their modified makeup selfie photo on the right side of their screen and the survey on the left side.

Explicit Agency

Please indicate to what extent you think each of these words describes how you feel about yourself at the present moment:

I feel that I am:
- Decisive
- Driven
- A go-getter
- Self-aware
- Persistent
- Independent
- Productive
- Strong-minded
- Dependent
- Meek
- Hesitant
- Apathetic
- Idle
- Inactive
- Unconcerned
- Scatter-brained

Note: 1 = Not at all, 7 = Extremely, a = High agency, b = Low agency (reverse-scored)

Humanness
Please rate how much you feel you are:

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</table>

Note: -3 = Not at all; 3 = Very much so.


**Competitiveness**

---

How attractive do you think this person is?

How intelligent do you think this person is?

How warm do you think this person is?

How competent do you think this person is?

How likely would you be to hire this person as a colleague?

How likely would you be to be friends with this person?

*Note: 1 = Not at all, 7 = Very*


**Implicit Agency – Intentional Binding Task**

Participants listen to a tone and voluntarily press the [Space] button to stop the tone. The time between when the button is pressed and the when the tone stops will be delayed randomly between 100ms, 400 ms, or 700ms. Subjects will estimate the perceived length of the delay on a 9-point scale. “The temporal shift in perception of action towards a subsequent [consequence] provides an implicit measure of the linkage between experience of one’s own internally generated actions and their consequences in the external world.” (Voss et al., 2010)

Example:

You are now going to complete a tone sounding task. For this task you will listen to an audible tone, and then press a key to stop the tone. After a delay, the tone will then stop. You will then be asked to estimate how long the delay was. All delays will be less than 1000ms (one second).

Be as accurate as possible when you estimate the delay. Remember to listen carefully.

---

Figure 1: Trial structure (from Haggard & Obhi, 2012)
Get ready for the tone

How long do you think the delay was?

1 2 3 4 5 6 7 8 9


### Appendix 5A

Table S1.5  List of jobs, hobbies or activities used as manipulations in vignettes of fictional women.

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<td>Sex slave (indebted)</td>
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<td>Chance hookup</td>
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<td>Snapchat sexting</td>
<td>Beer girl (no sex)</td>
<td>Art school muse (paying off debt)</td>
</tr>
<tr>
<td>Burlesque performer</td>
<td>Nudist beach member</td>
<td>Peepshow worker</td>
<td>Forced to perform live Upstairs Nude</td>
</tr>
<tr>
<td>Naked cleaner</td>
<td>Naked art muse (volunteer)</td>
<td>Camgirl worker</td>
<td>Girl shows at Club (paying rent debt)</td>
</tr>
<tr>
<td>Sex-associated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone sex</td>
<td>Sex tip writer/blogger</td>
<td>Bar girl</td>
<td>Camgirl slave (blackmail)</td>
</tr>
<tr>
<td>Instagram Influencer (sexy pictures paid through brand sponsorship)</td>
<td>Instagram user (sexy pictures but no brand sponsorship)</td>
<td>Professional sports team cheerleader (unfair wage)</td>
<td>Date as favour</td>
</tr>
<tr>
<td>Hooters worker</td>
<td>Video blogger model</td>
<td>Grid Girl (unfair wage)</td>
<td>Instagram photos shared on “hot girl” pages without permission</td>
</tr>
<tr>
<td>Professional mermaid</td>
<td>Amateur erotica writer</td>
<td>Grid iron girl (unfair wage)</td>
<td>Blackmailed phone sex</td>
</tr>
<tr>
<td>No sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Actress/Actor</td>
<td>Amateur Actress</td>
<td>Coaches brother’s basketball team for 1/5 of what proper coach gets paid</td>
<td>Forced to clean the houses of her extended family for free</td>
</tr>
<tr>
<td>Fitness/Yoga Instructor (volunteer)</td>
<td>Fitness/Yoga Instructor</td>
<td>Photographer asked to take photos for friend’s business for 1/6 the rate of professional</td>
<td>Helps a wealthy but disabled relative</td>
</tr>
<tr>
<td>Physio</td>
<td>Volunteer at Lifeline (crisis support)</td>
<td>Employee at friend's shop paid less than minimum wage</td>
<td>Parents force her to help in shop even though she doesn't live with them</td>
</tr>
<tr>
<td>Waitress</td>
<td>Volunteer guide at museum</td>
<td>Writes music for friend's start-up company web videos/advertisements for small wage</td>
<td>Musician asked to sing for free at weddings</td>
</tr>
<tr>
<td>Receptionist</td>
<td>Volunteer sports coach</td>
<td>babysits often for neighbours for 1/4 the normal rate</td>
<td>Owns truck asked to move friend's stuff for free</td>
</tr>
<tr>
<td>Tour guide</td>
<td>Improv actor</td>
<td>Creates and manages websites of several friends and colleagues for a fraction of cost of website companies</td>
<td>creates graphics for her friend's online store for free</td>
</tr>
<tr>
<td>Event Manager</td>
<td>Amateur podcaster</td>
<td>Street/sign advertising for company for only several dollars an hour</td>
<td>Parents force to do reception at their family-owned hotel for free</td>
</tr>
<tr>
<td>Nurse</td>
<td></td>
<td>works for a food delivery company and gets paid 1/3 of minimum wage</td>
<td>Edits friend's journalism writing for free</td>
</tr>
</tbody>
</table>
Appendix 5B

Full list of Vignettes
The final sentence of every vignette serves as the manipulation

Penetrative Sex, Autonomous, Income

Anna loves ping pong and plays against her friends a couple nights a week. She works mainly as a cashier at a gas station, though she doesn’t like how long she must commute to work each day. She has one younger sister who she lives very close to. She likes trying to learn new skills. She also enjoys going on picnics in the summer. She earns extra income working as an independent sex worker (an escort/call girl), managing her own advertisements, appointments and meeting places for offering sexual services.

Nicole loves being active and is an avid tennis player. Her main job is as an administrative assistant at a large food service company. She likes playing ping pong and she loves David Bowie. However, she doesn’t like listening to his final album because it reminds her of his recent passing. She has two younger sisters who she enjoys spending time with. To supplement her income, she is a part time sugar baby (i.e., she is in a sugar daddy arrangement where she earns money for providing sexual and companion services to an older wealthy man).

Maya has one younger sister who she sees every weekend. Maya likes playing retro Nintendo games. She also enjoys reading about celebrities and celebrity gossip. She works as a project officer for the government. She loves water polo and plays in a social league with her friends every Wednesday, although she doesn’t like how aggressive some of the players on other teams can become. She also works part time as a sexual surrogate, where she consults with men wanting to solve intimacy problems. Her services range from teaching men to hold intimate eye contact to having sex with them for therapeutic purposes.

Helen works as a piano teacher. She has two younger brothers that she sees only once or twice a year. She likes collecting vinyl records and her favourite colour is green. She loves stand-up comedy and frequently goes to her local open-mic night as both a listener and a performer. However, she doesn’t appreciate that some people seem to only come to heckle the comedians. To earn extra income, she also works part time as a self-managed, independent porn actress (where she retains all profits for her work).

Penetrative Sex, Autonomous, No Income
Alexa works as a stock clerk at a retail warehouse. She has one younger sister and one older brother who she loves very much, though she doesn’t like how much her siblings argue when they are together. Alexa likes playing frisbee golf and she enjoys soap making. She especially loves snowboarding and gets in at least 30 days of snowboarding every year. She has been married to her husband for 2.5 years, feels emotionally close to him, and regularly enjoys having sex with him.

Chelsea has one older brother who she is quite close to, and a younger brother who she is less close with. She loves puzzles and usually has an ongoing puzzle that she is solving on her coffee table. However, she doesn’t like how often she seems discover that she is missing puzzle pieces. She works mainly in retail at a clothing store. She also likes collecting coins and has three pet birds. She often goes out with friends to meet new people, and enjoys engaging in casual sex hookups with men she meets at bars and clubs.

Arianna is fond of going on weekend trips with friends. She loves writing and has a popular blog that she adds to every few days. However, she doesn’t like when people post hateful or insulting comments on her blog. She likes doing DIY projects when she has time. She works as a financial manager at manufacturing company. She is also a swinger (i.e., she has sexual encounters with multiple partners at pre-arranged sex parties with other like-minded swingers).

Rose has three older brothers whom she tries to visit as often as she can. She works mainly as a DJ and plays music at pubs, bars and events. She enjoys watching stand-up comedy and likes to go bowling. She also loves pottery and attends ceramics classes several nights a week, although she doesn’t like how expensive the classes have become. She also has a male friend who she visits some nights for sex (i.e., a “friend with benefits”), but she wouldn’t call him a boyfriend.

Penetrative Sex, Exploitative, Income

Beth loves bowling and competes in amateur competitions on weekends. Her main line of work is as an office clerk at a small logistics company. She likes exercising and enjoys going to music festivals, although she doesn’t like the larger festivals because they attract people who are less interested in attending festivals for the music. She has one older brother who recently visited her. She works part time as an unregistered sex worker on a well-known but dangerous street in her city to earn extra income.

Kristen loves fashion and spends much of her free time keeping up to date reading fashion blogs and articles. She also likes candle making and having time to herself. Her main job is as an airport baggage handler. She has one older sister who she speaks to often, though
Kristen doesn’t like how her sister only seems to want to talk about herself. Kristen also earns additional income providing sex work in a well-frequented brothel.

Jennifer loves learning new languages and spends time each night learning from various online language courses. However, at times she feels unhappy that she is unable practice speaking these languages with others in her day-to-day life. She works mainly as a property sales person. She likes wearing fun earrings and she enjoys having a midday nap. She has one older sister and one younger sister who she sees every few months. Occasionally she earns extra income as an escort, or call girl, for a private escort agency, although she is only paid half what the agency charges for sexual services.

Brianna has two older brothers who she speaks to regularly. She enjoys playing the piano although she doesn’t like the keyboard she currently owns. She mainly works as a bus driver. She loves television and tries to watch a few shows on Netflix every night. She also likes watching YouTube videos. She earns extra income working as a porn actress, and although she wishes to leave the industry, she feels that her employers psychologically manipulate her to continue by offering her access to substances.

Penetrative Sex, Exploitative, No Income

Jordan likes to stay updated about new music. However, she is not fond of the most popular pop artists over the last few years. She also enjoys playing mini golf with her friends. She has two younger sisters who she was close to when she was growing up. Her main job is working at a dry cleaners. She is an illegal immigrant, and her employer uses this knowledge to force her to have sex with him to stop him from revealing her illegal status.

Sophie likes snorkelling. Her favourite movies are the Lord of the Rings trilogy films, though she admits she doesn’t like the new Hobbit trilogy movies much. She has a twin brother who she tries to visit over holidays. She works mainly as a high school teacher. She loves writing and often writes reflectively about her day in her journal. She also enjoys writing short stories. Recently, she was caught stealing from her employer by a male colleague, who forces her to have sex with him in exchange for his silence.

Samantha works in phone sales and has one twin brother. Samantha enjoys watching TV shows at night and she likes reading graphic novels, although she is not very fond of super hero comics. She also loves travelling overseas to new places and tries to do this as often as she can. She is in an ongoing relationship with a man she feels emotionally close to, though she knows that he is only interested in her for sex.

Lisa works as a mechanic. She loves playing video games and plays her Playstation 4 before bed most nights. She also enjoys cross stitching occasionally, although she doesn’t
like how long it takes her to finish the cross-stitch patterns she starts. She has an older brother and an older sister, although she has never felt that they have been very close. Her favourite movie is *Memento*. Sometimes her boyfriend secretly makes sex tapes of them having sex and posts them online, even though she has repeatedly asked for him to not do this.

**Nudity, Autonomous, Income**

Sarah works mainly as a sales associate at a jewellery store. She loves volleyball and plays on a competitive team on Tuesdays and Thursdays. She also likes playing beach volleyball in summer and she has a huge seashell collection. She has one older brother who she speaks to regularly over the phone, though she doesn’t like how he never seems to be the one who calls first. She works part-time as an independent cam-girl, charging people a fee to watch live-stream videos of herself masturbating online (which she posts on her own website).

Angela loves extreme sports like sky diving and white-water rafting and tries to organise doing at least one extreme sporting activity each month. She has one younger brother and one older sister, but she doesn’t like spending time with either of them. She works mainly as an auditor. She likes going on walks when she can, and she likes spending time with her new puppy. She also works part time as a stripper to earn some additional income.

Jenna loves mountaineering and tries to hike the trails at her local mountain once every few weeks, although she doesn’t like the long travel time to the best hiking trails in her area. She also enjoys going to water parks when she can. She works as an environmental consultant. She has three younger brothers who she sees irregularly. She loves snakes and lizards. She works part time as a burlesque performer to earn extra money.

Gabriella loves playing drums and practices with her band every few days. She also likes visiting antiques stores. In the winter, she enjoys going sledding with her friends. She has one younger sister who is also a musician. Gabriella works as a shop cashier at a theme park, though she never liked roller coasters or theme parks when she was younger. She also earns extra money by cleaning people’s houses partially or fully naked, allowing a higher rate of pay.

**Nudity, Autonomous, No Income**

Maria loves photography and has a popular photography website that she updates regularly. Her main line of work is as a graphic designer. She has two dogs that she enjoys spending time with. She also enjoys scrolling through her Facebook feed, although she doesn’t like how Facebook uses user data. She has no other siblings. She occasionally volunteers to work as a nude model in public art displays.
Evelyn has three older sisters that vary widely in age. She enjoys receiving letters in the mail and likes creative writing in her spare time. She loves lacrosse and plays on several social teams each week although she doesn’t like how competitive the men can get in close games. Her main job is as a market research analyst. She is also a regular member at several nudist beaches in her area.

Annie works as a post office worker. She loves movies and tries to watch the newest releases at the movie theatre each week. Her favourite movie is La La Land even though she doesn’t like many other musicals. She likes wearing beanies in the colder months. She has a twin sister who she speaks to several nights a week. She regularly uses social media to send sexy self-portrait photographs (“sexy selfies”) to people she is romantically interested in.

Rebecca loves good food and likes to cook in her spare time. She also likes to play card games with friends. She is currently a full-time college student, although she admits that she doesn’t like her subjects very much at the moment. She has three older sisters who she is close to and her favourite colour is blue. Sometimes she volunteers as a naked art muse for drawing or painting classes.

Kate works mainly as a marketing consultant. She also loves soccer and plays on a competitive amateur team which trains during the week and plays games on weekends. She has a younger brother and a younger sister who live overseas. She has two cats, although she doesn’t like how much cat fur she finds on her clothing. She also enjoys sewing on occasion. She works as a playboy bunny to earn extra income, though she is unfairly paid much less than the other bunnies (she receives around on third as much as they do).

Melissa works as a waitress at a restaurant. She has one older brother who she is very close to. She loves birdwatching and competes in several bird identifying competitions each year. She isn’t fond of cats. Melissa likes freshly-squeezed grapefruit juice and has a signed poster by the cast of Hamilton (the musical). She also works part-time in a dangerous nightclub, where she is paid to wear provocative clothing and chat to the male nightclub patrons who are sexually forward and sometimes aggressive (though she is barely paid minimum wage to do so).

Michelle works full-time as an accounting intern. She has three younger brothers who are close in age and she admits she doesn’t like how loud the three can be at family get-togethers. She loves martial arts and attends classes several times each week. She also likes horseback riding and she enjoys sewing her own clothes in her spare time. She works part-
time as a peepshow model, where customers pay a meagre amount to see her posing naked in a private booth.

Jasmine has two older brothers who have successful businesses. Her main line of work is as a high school gardener and grounds keeper. She loves roller skating and competes in an amateur roller derby league on weekends. She also likes spending time outdoors and enjoys watching anime, although she doesn’t particularly like the overly violent or gory ones. She works part-time as a camgirl sex worker, earning less than minimum wage to perform sex acts in solo videos for a live-streaming pornography website.

Nudity, Exploited, No Income

Jessica has a massive book collection. However, she still loves being social and prioritises spending time with friends, although she doesn’t like how often she ends up staying out too late and losing sleep. She has two older sisters that she speaks to multiple times a week. She also has two dogs and one cat. She works mainly as an Interior Designer. Occasionally she sends sexy photos of herself over text or Snapchat to a colleague who has incriminating evidence of her (and has threatened to make this evidence public unless she sends him sexy pictures).

Natalie works in food preparation in a new modern food court added to the museum near her. She has one younger sister who she visits several times a week. She likes watching reality TV shows even though she doesn’t like how obviously scripted the shows can feel at times. She loves writing music and has a decent-sized collection of low-end synthesizers set up in her home for writing. She also enjoys cleaning regularly. After accumulating a large debt to her male friend, a professional artist, she is forced by him to spend time as his nude art muse as a way to pay off the debt she owes him.

Megan loves gardening and spends a lot of time outdoors with her plants. She works primarily as a research assistant at a university. She likes watching Game of Thrones even though she doesn’t like the new seasons as much as the older seasons. She also enjoys going to music festivals. She has one older brother who she is close with. Her landlord is the owner of a night club, and she is forced to do live nude shows at the club to pay off her extensive rent debt.

Jade works mainly as an elementary school teacher. She loves exercise and fitness and spends several hours at the gym each day. She likes to sing, although she doesn’t like how bad she is at singing harmonies with her twin sister. She also enjoys roller skating. She is also forced to post live stream nude videos of herself on the internet against her wishes, because her boss has threatened to fire her if she doesn’t comply.
Chapter 8 | Appendices

Still Sex, Autonomy, Income

Hannah has two younger brothers. She loves dancing and dances in a troupe a couple of nights a week. She likes Mexican food, although she doesn’t like spicy foods all that much. She also enjoys playing guitar. Her main job is as a doctor. On the side she works as a phone sex operator, where she “talks dirty” and feigns sexual intimacy with male callers to earn extra income.

Heather loves fantasy novels and is constantly finding new series to read. She has one older sister who she speaks to weekly. She likes to play squash for fitness. She also has a huge collection of board games, but she doesn’t like how most people are unwilling to try more time-consuming games. She works mainly as a housekeeper for several wealthy families. She earns additional income as a social media “Influencer”, where she is paid by several fitness and lingerie brands to model their clothing.

Kelly works as a sales coordinator at a clothing store. However, she doesn’t like her co-workers at the store very much. Kelly loves to dance and takes several different types of dance classes with her friends on weeknights. She has one younger brother who she is very close to. She enjoys watching the Olympics when they are on. When she can, she also likes weaving wall hangings. She works part time at Hooters restaurant, where she wears revealing clothing while waitressing to earn extra money to support herself.

Sydney works as a civil engineer at a mid-sized company. She loves music and spends much of her free time using a music production program on her computer to write and arrange her own songs. However, she doesn’t like how often her computer crashes when using the program. She has two older sisters and she speaks with them over the phone each week. She likes brewing kombucha when she can and she enjoys playing Sudoku. She also works part time as a “professional mermaid”, which involves her posing for photos and performing underwater dance shows in skimpy mermaid costumes to earn extra income.

Still Sex, Autonomy, No Income

Holly is a grocery store cashier. She loves hiking and tries to visit one or two of her favourite trails every weekend. She likes drinking tea, although she admits she doesn’t like green tea very much. She recently got a new iPhone. She has 2 siblings (a younger brother and a younger sister). Sometimes she volunteers to write sex tip columns for a magazine that she enjoys reading.

Alexandra likes white water rafting, although she doesn’t like how expensive it can be to go rafting at the most popular destinations. She also loves fishing and organises a weekend fishing trip at least once every few months as a way to relax. She works mainly as a social
media manager for a growing Kickstarter business. She likes doing origami when she can. She has two older brothers who she enjoys spending time with. She has a large following on Instagram, where she posts sexy pictures of herself to her followers.

Zoe has one younger brother who she talks with over the phone daily. Her main line of work is as a toy designer, though she is not fond of her manager. She has an extensive collection of Quentin Tarantino movie memorabilia. She also recently got a new kitten. She loves beach volleyball and plays casually with her friends several times a week in summer. She has a popular YouTube channel, where she posts videos of herself modelling and reviewing various sportswear and lingerie outfits for her followers.

Casey works full time as a travel agent. She likes visiting petting zoos and her favourite artist is Beyoncé. She has one younger brother who she was quite close to, although she feels unhappy that they have grown apart in recent years. She loves reading and tries to finish a book every one to two weeks. She also writes free amateur erotica in her spare time, which she posts online on a public erotica website.

Isabella works as a financial analyst. She loves drawing, especially on her iPad, and usually draws several new sketches each day. She has three older brothers who she loves, although she doesn’t like how much they end up arguing when they all get together. She also has a pet cockatiel. She enjoys watching Bob Ross’s show, The Joy of Painting. She works part time as a bar girl where she is paid less than minimum wage to entertain and perform stripteases for customers at the bar.

Alyssa loves ice hockey and plays on a team on weekends. However, she doesn’t like that she lives far from any professional team arenas. She also enjoys listening to audio books and using her new Android phone. She has two older sisters she gets along with well. Her main line of work is as a nurse. She also works part time as a cheerleader for a professional sports team, though she is only paid when the team wins.

Lauren loves modern art and visits art galleries on the weekends, although she hasn’t liked some of the more radical performance art she has seen lately. She also enjoys watching old films and wearing fun, colourful socks. She has two older sisters who both live overseas. She works mainly as a car sales person. She also works part time as a grid girl in a semi-professional racing circuit, where she wears provocative clothing while displaying nameboards and congratulating winners, though she is only paid at half the minimum wage to do so.
Lucy works primarily as a housekeeper at a hotel. She loves arts and crafts and usually makes her friends gifts for birthdays or holidays. She likes writing short stories and also enjoys scrolling through her Instagram feed, although she doesn’t like how often her friends post photos of food. She has one older sister and one younger sister. She also earns extra money playing women’s grid iron in a tight and revealing uniform, though she is only paid a fraction of what a professional men’s football players receive.

Still Sex, Exploited, No Income

Rachael works as a janitor. She loves Roger Federer and admits she doesn’t like Novak Djokovic very much. She enjoys going on roller coasters. She also loves knitting and spends time knitting every night. She has one older sister. She likes attending her town’s only bar/nightclub, but the manager, an old school friend, only lets her stay if she flirts with customers and encourages them to buy drinks.

Amy loves wine tasting and tries to organise visiting a new winery with friends at least once a month. She also likes to go hunting when she can. She mainly works as a general manager at a hotel. However, she doesn’t like how far she must travel for work each day. She has two puppies that she recently adopted. She often goes on romantic dates with a male friend of hers even though she only wants to be friends and feels uncomfortable on dates because he has threatened that their friendship will end if she does not date him.

Stephanie is a school teacher at a local primary school. She loves playing guitar and spends at least an hour practicing each day. She enjoys collecting expensive wines. She is also a huge fan of Venus Williams, but admits that she doesn’t like Serena Williams very much. She has one older brother who she visits yearly. She often posts photos and videos on her Instagram, though many of these photos and videos are shared on “hot girl” pages without her permission.

Kylie loves the theatre and spends a lot of her free time watching plays and musicals. She works mainly as a pilot of a major airline. She has three older brothers who she feels quite close to, although she doesn’t like how infrequently she sees them. She also likes Pixar movies and enjoys playing scrabble. She regularly is forced to have phone sex with a male colleague of hers, who has threatened to fire her close friend from her job if she doesn’t have phone sex with him.

No Sex, Autonomy, Income

Bailey loves fitness and attends fitness classes every evening. She also likes to do yoga although she doesn’t like the new instructor at her local yoga class very much. She works mainly as a violin teacher for students from kindergarten to 12th grade. She has one older
sister who she visits with every few weeks for lunch. Her favourite genre of movies is sci-fi. She also works part time as an actor in films, shows and commercials to supplement her income.

Kimberly loves volunteering and often volunteers to help at charity and sustainability events. She also likes gardening plants. Her favourite movies are animated movies. She has one younger sister who only sees at Christmas. Her main job is as an Uber driver although she doesn’t like how unpredictable her daily income can be. She works part time as a fitness and yoga instructor and hosts several classes a week for extra money.

Leah has two new kittens. She also enjoys watching live music when she can. She works mainly in over-the-phone customer service at a major bank. She loves playing tennis and plays competitively and socially with friends at least once a week. However, she doesn’t like that some of her close friends can be sore losers at times. She also works part time as a physical therapist at an injury centre in her area to earn supplemental income.

Kaitlyn works mainly at an electronics store. She loves good food and likes to visit new trendy cafes every weekend. She enjoys doing needlepoint and is fond of meditation when she has time alone. She has one younger brother who is close with, although she doesn’t like his new girlfriend very much. She also works part time as a waitress to earn extra money to support herself.

Caitlin loves making jewellery and spends much of her time making necklaces, bracelets and earrings for herself and for her online store. She has one older brother and one older brother who she speaks to every few weeks. She has a large stamp collection and enjoys eating Japanese food, although she doesn’t like how bad the Japanese restaurants near her are. Caitlin is recently unemployed from her full-time job. She now works part time as a receptionist at a large tourism information centre to supplement her income.

Emma loves music and always goes to see her favourite bands play live when they are in her area. She works mainly as a petrol station cashier. She likes visiting the aquarium and she likes scrolling through her Twitter feed, although she doesn’t like the constant negative political tweets she reads. She has one older sister. As a second job, she works part time as a tour guide to earn some additional money.

Julia works at a pizza shop. She has one older sister who she visits on fortnightly on weekends. Julia loves kickboxing and attends kickboxing classes each week for fitness training. She also likes sunbathing in the summer although she doesn’t like how easily she sunburns. In the evening she enjoys sewing. She works part time as an event manager for major sports competition events to supplement her income.
Rachel loves skiing and tries to ski at one new ski resort each year. She works mainly as a political campaign manager. She has no other siblings. She likes going to food markets and her favourite show is The Simpsons. She is not a fan of the show Family Guy. On the side, she works part time as a nurse at a smaller hospital near her for extra income.

No Sex, Autonomy, No Income

Haley works as a university lecturer. She loves golfing and plays regularly, usually a round of 18 holes every one or two weekends. She also likes kayaking and enjoys going bowling when she can, even though she doesn’t like how uncomfortable bowling shoes are. She has one younger brother. She spends some of her time working as an unpaid amateur actress for short films.

Morgan loves shopping and spends most of her weekends at the mall. She works as a customer service representative. Her favourite holiday is Christmas. Her favourite band is the Beatles, but she doesn’t like Sir Paul McCartney’s newest album. She has two older brothers who she doesn’t see very often. She sometimes volunteers for free as a fitness and yoga instructor and hosts weekly sessions for people who are interested.

Ellie works as a human resource administrator. She has one older sister and one younger sister who she is quite close to. She loves brewing beer and kombucha and spends much of her time reading about the best home brewing techniques. Her favourite movie is Anchorman. She also enjoys playing Fortnite, although she doesn’t like how good most Fortnite players are now. She volunteers some of her time at as a Lifeline crisis support operator, providing support often for suicidal, depressed or scared men and women.

Mikaela likes spending time at bookstores and she has a substantial comic book collection. She has two younger sisters who love books as well. Mikaela works as an administrative officer at a tech company. She loves playing basketball and plays on both a social and a competitive team during the week, although she doesn’t like a few of the new players on her competitive team. In her spare time she volunteers as a guide at the museum.

Danielle works as a substitute teacher. Her favourite movie is The Shining and her favourite holiday is Halloween. She loves swimming and spends as much time as she can swimming at the beach. She has one younger sister who she sees every week, although she doesn’t like her sister’s new boyfriend. She also volunteers to coach her local high school soccer team for free.

Sara works mainly as a computer user support technician. She loves listening to music and spends most of her weekends searching for new records to add to her collection. However, she doesn’t like how expensive how overpriced some records are at her local store. She
enjoys going on roller coasters and likes to do impressions of famous people. She has one younger brother and one older sister who live overseas. She also volunteers to work as an event receptionist at local events.

Georgia likes eating Thai food and loves the Harry Potter book series. However, she does not particularly like the Harry Potter movies. She loves filmography and spends a lot of her free time making short films and videos. She works mainly as a Lawyer at a well-regarded law firm. She has one older brother and one younger brother. She is also an improvisational actor and participates in many free live improv comedy shows with her improv group.

Grace likes going on nature walks. She also loves running and wakes up early every morning to go for a jog. She works as a journalist and loves coffee, although she doesn’t like how much money she spends on coffee these days. She has one younger sister who she visits fortnightly. In her spare time she also records her own free podcast, which has recently become quite popular.

No Sex, Exploited, Income

Madison loves to read and meets weekly with her book club that she and her friends organise. However, she hasn’t enjoyed the last few books they have chosen to read. She also likes scrapbooking and enjoys playing with Lego. Her main job is as a general manager of a highly rated restaurant. Madison has one younger brother. She works several days a week coaching his basketball team, though she is only paid one-fifth the rate of other coaches in the league.

Chloe loves to shop and spends a lot of her time at the mall. She also likes collecting postcards of places that she has visited. Her favourite artist is Drake. She has a twin sister who she speaks to regularly, but she doesn’t like that her sister recently moved overseas. She works mainly as a data analyst. Occasionally she works as a photographer at her friend’s business to earn supplemental income, though she is only paid a quarter of the rate of a professional photographer to do so.

Ashley is a computer software engineer. She loves swimming and swims at the pool nearest to her every day. She also likes ice cream and enjoys ice skating in the winter. She has a younger brother who is close to her in age, but she doesn’t like how irresponsible he is at times. She works part-time at her friend’s shop to earn some extra money, but she is paid less than minimum wage to do so.

Amanda’s main line of work is as a food service manager at a popular hotel. She has one younger brother. She loves podcasts and listens to several each day while she is travelling or at home, though she doesn’t like how many advertisements some podcasts plug at the
start. Amanda likes laser tag and enjoys going to cosplay events like comic-con. She also writes music for online videos and advertisements for her friend’s start-up company, but she is only paid a fraction of what musicians normally make for the same service.

Mackenzie enjoys reading communist texts and likes selling items on eBay. She also loves skateboarding and visits the skate park several times a week, though she doesn’t like how crowded her nearest indoor skate park usually is. She works mainly as a ski instructor. She has no other siblings. She regularly babysits for her neighbours, even though they only pay her a quarter the rate of other babysitters in her area.

Savannah likes to garden and she enjoys baking pies. She works mainly in administration at her local high school though she doesn’t like some of the colleagues she spends the most time working with. She has two older sisters who are much older than her. To earn some extra money, she also creates and manages several websites for friends and colleagues, but only earns a fraction of what professional web designers earn for the same service.

Brooke works as a pharmacist. She loves surfing and wakes up early most mornings to catch early morning waves. Brooke likes to stay updated with the news. She also has a huge collection of scented candles. She has no other siblings. She earns supplementary income doing street sign advertising for a small company part time, but she is only paid around $4 an hour.

Tiffany has three younger sisters who she feels close to even though they differ widely in age. She works mainly as a truck driver. She loves jogging and runs her favourite long distance tracks several days a week, although she doesn’t like how busy these tracks are becoming. She also likes makrame and enjoys visiting new beaches in the summer. She works part time for a food delivery company to earn extra money, though her company only pays half of what more well-known food delivery companies pay.

No Sex, Exploited, No Income

Phoebe loves improvisational acting and attends an improv class several nights a week. She is an only child and has no other siblings. Her favourite drink is a glass of freshly squeezed orange juice and she is the proud owner of a signed poster of Michael Jordan. She works mainly as a bartender, although she doesn’t like her manager very much. She is also forced by her family to clean the houses of her wealthy relatives for free when these relatives go on holiday.

Lily likes playing Mario Kart even though she doesn’t like other video games very much. She also loves painting and enjoys making watercolour paintings of nature. Her favourite
Lily is forced by her family to spend time helping her disabled relative because he is very wealthy, even though she does not want to.

Shannon has three younger brothers. She works mainly as a property manager. She has the latest Google phone and she likes listening to podcasts, although she doesn’t like how long the advertisements are at the start of the most popular podcasts. She loves cycling and goes on long rides on the weekends. She also is forced to help at her parent’s shop twice a week, even though she no longer lives with them and does not want to spend her free time at the shop.

Olivia has two older brothers who she has always been close to. Her main job is as a medical secretary. She loves poetry and tries to write short prose poems in her free time. She likes playing ultimate frisbee and going out with friends on the weekend, although she doesn’t like how hungover she usually feels the next day. She is a talented singer and is often obligated to sing at weddings by friends and family, even though they do not pay her to do so.

Brittney works as a dental assistant. She loves horror movies and watches the newest scary movie releases in theatres with her friends. However, she doesn’t like when movies are overly gory. She has three older brothers who she loves spending time with. When she can, Brittney likes to go on charity runs. She also enjoys an early morning swim. She regularly has to help her friends transport goods because she has a spacious car, but Brittney’s friends never offer to pay her for her help.

Faith works in food preparation at the local elementary school. She loves playing board games and spends much of her free time researching new board games to try with her friends. She also likes playing solitaire and has recently been enjoying adult colouring books for relaxation. She has three younger sisters who she tries to visit with every month. Faith is also a talented graphic designer and is frequently asked by her friend to create graphics for their online store, although Faith’s friend never offers to pay her for her work.

Hailey has two younger sisters who she is quite close to. She works mainly as a police officer. She loves rock climbing and goes indoor climbing several times a week. She also enjoys embroidery and likes to watch The Tonight Show with Jimmy Fallon in the evenings. However, she doesn’t like other late-night talk shows. Her family are the owners of a small hotel, and her parents force her to work part-time as a hotel receptionist for free.

Alice loves to bake and makes cakes, cookies and treats for herself and her friends every week. She works mainly as an intern. She has the latest Kindle device and her favourite animals are elephants. She strongly dislikes poaching and any other types of animal cruelty.
On the side she edits the writing of her friend who works as a journalist, though she is not paid by her friend for her work.

‘Average Joanne’ vignette (everyone reads)

Catherine works as an accountant for a design company. She loves quilting and spends many nights quilting while watching shows or movies. She likes doing crosswords and she enjoys watching documentaries, although she doesn’t like when the documentaries seem overly sensationalist. She has one younger sister who she sees on weekends. She also works part time as a coffee barista to earn additional money.