

Heterosexual men's reactions to infidelity revisited: Comparing the sex role presentation of extradyadic female partners

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Abstract

Heterosexual men report less distress at infidelity from female interlopers than male interlopers. In addition to presenting no risk of cuckoldry, men could also perceive these women as additional sexual opportunities if they assume mutual interest from the female interloper. The current study considered this possibility by experimentally manipulating the sex role assumption of a female interloper (either masculine or feminine presentation) for expected sexual interest in men. Heterosexual men reacted to infidelity from hypothetical long-term romantic partners in two experiments. The extrapair mate was another man, a feminine woman, or a masculine-presenting woman. Although infidelity elicited an overall negative reaction, men reported less distress when the extradyadic partner was female. The feminine woman was additionally regarded as affording the most sexual opportunity. Effects were particularly amplified when this information included images of the extradyadic partner. Studies provide evidence for complementary hypotheses based on intrasexual conflict and intersexual opportunities.

Statement of Relevance: Infidelity is highly distressing, yet heterosexual men are less distressed when the interloper is female. This invites several explanations, namely reduced concerns of cuckoldry and additional sexual opportunities. We developed two experiments to test these predictions based on presenting two female interlopers who would vary in their interest in men, namely masculine-presenting and feminine-presenting women. Men were less distressed overall from female interlopers but reported feminine-presenting women as the greatest sexual opportunity.

KEYWORDS

bisexuality, infidelity, intrasexual competition, sex role presentation, sexual arousal

1 | INTRODUCTION

Sexual infidelity is distressing. Reactions include jealousy, anger, and sadness, particularly among heterosexual men (Buss et al., 1992; Edlund & Sagarin, 2017; Sagarin et al., 2003; Sagarin, Martin, et al., 2012; Scelza et al., 2020; Schützwohl & Koch, 2004). Despite the overall negative reaction to *any* interloper, female interlopers are less distressing than male interlopers (Confer & Cloud, 2011; Wang & Apostolou, 2019). This reduced distress has led to various functional explanations. When considering a model of reproductive threats (Sagarin, Becker, et al., 2012), one possibility is that male interlopers threaten men's inclusive fitness by presenting risk of cuckoldry not imposed by women (Bailey et al., 1994; Platak & Shackelford, 2006). Although extradyadic female partners do not present this threat to men, they could present a reproductive opportunity if they have a sexual interest in men, with men finding this prospect sexually arousing (Apostolou, 2018a; Apostolou & Christoforou, 2018; Apostolou et al., 2018; Thompson & Byers, 2017; Wiederman & LaMar, 1998).

These competing possibilities invite empirical investigations to clarify the underpinnings of heterosexual men's reactions to same-sex infidelity. One route to consider is harnessing the potential implicit theories about a same-sex interloper's sexual orientation (Jayaratne et al., 2006; McConnell, 2001). An experiment could manipulate the interloper's appearance of relative bisexuality as proxy for perceived interest in men. One heuristic to shape these expectations could be the assumed sex role of the interloper. Perceivers exhibit above-chance accuracy in categorizing sexual orientation of social targets based on minimal cues (Rule, 2017; Rule et al., 2009). Such heuristics could inform perceptions of whether the extradyadic partner could be a sexual opportunity for the perceiver. Assumption of a masculine or feminine role elicits unique stereotypes for women's sexual orientation that could track expectations of women's sexual interest in men (Brambilla et al., 2011; Vaughn et al., 2017). Women assuming masculine sex roles could appear disinterested in men. These women's presumed lack of sexual interest in men would present them as neither a cuckoldry risk nor a sexual opportunity. Conversely, feminine women could be heuristically regarded as more interested in women *and* men (Burke & LaFrance, 2016; Flanders & Hatfield, 2013, 2014). Given the confluence of men's overestimation of sexual intent from women (Haselton & Buss, 2000), this perceived bisexuality could lead men to expect such women to be interested in them as a mate. This research clarified these possibilities by comparing reactions to same-sex infidelity across different sex role assumptions of women.

1.1 | Men's reactions to male and female interlopers

Infidelity is highly aversive, especially in long-term relationships. Long-term mating prioritizes prospective mates less prone toward promiscuity because of its heuristic association with infidelity (Brown, 2022; Brown & Sacco, 2019). However, the distress specific to sexual infidelity varies across sexes and sexual orientations. Relative to heterosexual women, heterosexual men

report greater distress at sexual infidelity (Becker et al., 2004; Buss et al., 1992; Frederick & Fales, 2016; Miller & Maner, 2009; Pietrzak et al., 2002; Sagarin, Martin, et al., 2012; Valentova et al., 2020). The distress is most apparent when the extradyadic partner is another man, whereas heterosexual men do not experience similar jealousy from same-sex infidelity (Sagarin, Becker, et al., 2012). From a perspective informed by parental investment theory (Trivers, 1972), this response could originate from concerns of parental uncertainty stemming from the ancestral problem of cuckoldry (Buss & Shackelford, 1997; Lopes et al., 2020; Platek & Shackelford, 2006).

Despite the potential fitness costs of infidelity that would leave heterosexual men vigilant toward relationship threats, not all acts of infidelity present the same costs. A perspective informed by the reproductive threats-based model of same-sex infidelity would suggest that male interlopers present a risk of cuckoldry (Sagarin, Becker, et al., 2012). Because of the mitigated concerns of cuckoldry from women, heterosexual men report considerably less distress at the prospect of same-sex infidelity (Confer & Cloud, 2011; Wang & Apostolou, 2019). In addition to the perceived lack of reproductive threats from female interlopers, tolerance toward female interlopers corresponds with evidence that men deem same-sex behavior between women erotic (Wiederman & LaMar, 1998).

Men's relatively less negative reaction to infidelity between women has invited several functional explanations. From a perspective rooted in sexual strategies theories (Buss & Schmitt, 1993; Schmitt, 2023), both the partner and the extrapair rival could represent reproductive opportunities to men whose mating success has historically been more contingent upon multiple, short-term heterosexual pairbonds that would be costly for women. Men report considerably greater interest in having multiple sexual partners at once, especially women, which has been argued to be the basis of their tolerance of same-sex attraction from partners (Apostolou, 2018a; Hughes et al., 2004; Thompson & Byers, 2017). The distress, and potential aggression, that men experience at opposite-sex infidelity would be less adaptive in the presence of an extrapair mate who would not threaten men's overall fitness goals (Sagarin, Becker, et al., 2012).

1.2 | Women's sexual fluidity and men's perceptions

Nonetheless, consideration of the female extradyadic partner as an opportunity to the perceiver remains contingent upon her own ostensibly mutual attraction toward the male perceiver. The unique biological underpinnings of sexual orientation can oftentimes lead to the emergence of different "types" of same-sex sexual attraction that may be processed heuristically as categories among perceivers (VanderLaan et al., 2022). For example, lesbian women oftentimes categorized based having a more masculine presentation (i.e., "butch") exhibit greater androgenic activity compared to feminine-presenting lesbian women and report substantial gender nonconformity from youth (Singh et al., 1999; Zheng & Zheng, 2016). Conversely, feminine women who have sex with other women are perceived as interested in men (Burke & LaFrance, 2016), which could implicate them as a sexual opportunity to perceivers. Men and women presenting a masculine sex role would probabilistically be disinterested in each other.

The origins of women's relatively greater interest in same-sex sexual behavior compared to men's are multifaceted. This sexuality could be the product of various selection pressures both within and between the sexes (Diamond, 2013, 2021). Theories of sexual fluidity posit that women's interest in same-sex sexual behaviors is partially based in recognition of other female

conspecifics as presenting opportunities for alloparenting (Baumeister, 2000; cf. Apostolou, 2018b). Other women could afford additional opportunities of child care within social groups. Women could view each other as mutually interested in ensuring offspring survival through a relatively symbiotic form of childcare (Kuhle & Radtke, 2013; Luoto et al., 2019). Indeed, women report greater fluctuation in sexuality compared to men (Mock & Eibach, 2012).

In addition to potential within-sex benefits to women's same-sex attraction, it remains critical to consider the between-sex selection pressures. Men report considerably greater tolerance toward having a bisexual partner than women while similarly indicating that such infidelity from women is not necessarily egregious enough to terminate a relationship (Apostolou, 2022; Wang & Apostolou, 2019). This tolerance corresponds with evidence suggesting that women's same-sex attraction is less of a deal-breaker for men relative to men's same-sex attraction to women (Confer & Cloud, 2011; Lippa, 2005). With men's sexual interest in women's relative bisexuality, a lay belief could also persist showing that bisexual women could be more heterosexual to perceivers and thus more likely to be a receptive sexual partner (McGorray & Petsko, *in press*).

Men could have an implicit theory of greater promiscuous interest among sexually fluid women. A basis for this implicit theory could be an awareness of bisexual women's relatively more unrestricted sociosexuality (Allen & Robson, 2020). Some arguments taking a life history theory approach suggest that adoption of such strategies could be based on a prioritization of pleasure through multiple sexual partners that may or may not include men (Diamond & Alley, 2019; Semenyna et al., 2018). With a confluence of men's generally greater over-perception of women's interest in them (Haselton & Buss, 2000), men could become more aroused toward other women as sexual opportunities during infidelity if he were to view the rival a reproductive opportunity herself. Perceptions of this woman as a sexual opportunity could be contingent upon a lay heuristic of relative sexual fluidity. Feminine-presenting women could appear more interested in having male *and* female partners. Conversely, masculine-appearing lesbian women would appear less sexually fluid and thus have no receptivity toward men (Diamond, 2005). Butch lesbians are indeed more likely to pair with feminine women (Rothblum et al., 2018), suggesting an unlikelihood of sexual encounters between men and masculine-presenting women.

1.3 | Current research

This research sought to clarify the nature of heterosexual men's reduced distress when presented with information of a partner's hypothetical infidelity with another woman (Confer & Cloud, 2011; Wang & Apostolou, 2019). We considered two possibilities, namely perceptions of the extradyadic woman as a nonconcern of cuckoldry or an additional sexual opportunity. As evidence for the former prediction as based on reproductive threat-based perceptions (see Sagarin, Becker, et al., 2012), men would be more distressed over an extradyadic male partner than a female partner. Both the feminine- and masculine-presenting female partner would additionally not differ in the distress that they elicit due to a lack of reproductive threat.

Evidence for the latter would be reflected by increasing perception of the extradyadic mate as a sexual opportunity for the perceiver, ranging from a man to a masculine-presenting woman to a feminine woman because of the heuristic that greater femininity of a woman would track a greater expected interest in men. These two predictions need not be mutually exclusive. Because of the number of potential selection pressures that facilitates same-sex behavior among women

(Diamond, 2005, 2013, 2021), we remained agnostic to whether these predictions would be competing or complementary. Both studies received IRB approval through the University of Arkansas (Approval Protocol: 2203391432). The data collection period was between October 2022 and April 2023.

2 | STUDY 1

This initial study served to determine whether the sex role assumption of a female extradyadic partner elicited differences in men's reactions to same-sex infidelity. We presented a scenario to heterosexual men in which they would have ostensibly discovered infidelity between a long-term girlfriend with a male or female interloper. Importantly, the female extradyadic partner was described as either having a feminine or masculine sex role presentation to assess whether this presentation tracks perceptions of them being an additional sexual opportunity.

2.1 | Method

2.1.1 | Participants

A sample of 164 men completed this experiment for course credit from a large public university in Southeastern US. Eight of these men identified themselves as either bisexual or homosexual, as indexed by their responses on a demographics item at the end of the study which tasked participants to report their sexual orientation among a list of discrete categories. These men were excluded from final analyses based on their reported attraction toward men. Our exclusion led us to have a final sample of 156 men identifying as heterosexual ($M_{\text{Age}} = 19.89$, $SD = 1.29$; 82.1% White, 9.6% Latino, 5.1% Black, 1.9% Asian, 1.3% Other; 92 single, 64 partnered). No other data warranted exclusion. Relationship status did not influence men's reactions in this study and was considered no further.

Our sample size was based on an interest in collecting as many participants as possible in a two-month window in a semester that aligned with an initial deadline for students to earn extra credit in an introductory psychology through research participation. Because we did not conduct an a priori power analysis, we conducted a statistical sensitivity analysis using G*Power (Faul et al., 2007). This analysis indicated that we were adequately powered to detect medium effects for a one-way experimental design with three levels for a between-subjects independent variable (Cohen's $f = 0.25$, $1 - \beta = 0.80$).

2.1.2 | Materials and procedure

Participants were randomly assigned to read one of three vignettes describing them as a protagonist. They imagined themselves as being in a committed relationship with a woman for 8 months and loving her, a methodological decision to standardize the frame of orientation for participants to that of someone currently partnered (Lustgraaf & Sacco, 2015). Men's distress over infidelity is most apparent across different types of interlopers in long-term partnerships, making this manipulation more likely to optimize feelings of distress (Wang & Apostolou, 2019). The scenario involves the protagonist coming home from work to his shared residence

with his girlfriend only to discover that she was being intimate with another person in their bedroom. As participants imagined themselves trying to surprise their girlfriend and unexpectedly discovering the encounter, the implication was that the girlfriend was cheating on the participant. The extradyadic partner was described as being on top of the girlfriend in bed and kissing her with clothing strewn about the room and romantic music.

The exposition for this scenario was the same across experimental conditions, barring the final paragraph. This paragraph describes the extradyadic partner, who was another man ($n = 53$), a masculine woman ($n = 50$), or a feminine woman ($n = 53$). The man and masculine-presenting woman used similar descriptors (e.g., short hair, muscular upper body, male clothing) as means of standardization. These descriptions of the other person critically differed with the latter having the revelation that the extradyadic partner is indeed another woman. The feminine woman was described as having feminized features (e.g., long hair, curvy figure, narrow waist) with the same backdrop as the other vignettes before the discovery from the protagonist. Appendix A provides the specific wording for each of the three vignettes.

2.1.3 | Reactions

We assessed negative reactions in the context of the participant's hypothetical relationship using six items (see Table 1). We aggregated these items into a composite to assess negative reactions ($\alpha = 0.91$). Two single-item measures assessed the extent to which the extradyadic partner appeared as another sexual opportunity and sexual arousal from the scenario. All items reported in this section operated along the same scales (1 = *Not at All*; 7 = *Very Much*).

2.1.4 | Perceived sexual orientation

We assessed perceptions of the extradyadic partner's sexual orientation using a 7-point Kinsey-type Scale (see Bailey et al., 2000). Anchors for this scale were *Completely Heterosexual* (coded as 0) to *Completely Homosexual* (coded as 6). Higher scores reflected less likelihood of being exclusively heterosexual. We coded *Primarily Heterosexual/Homosexual* as 1 and 5, respectively,

TABLE 1 Reaction items for both studies.

Reaction items
1. I would feel like this other person is a real threat to my relationship.
2. I would feel angry at my partner in this moment.
3. I would feel upset at my partner in this moment.
4. I would feel hurt by my partner in this moment.
5. I would feel betrayed by my partner in this moment.
6. I believe that my relationship would end from this situation.
7. I would think that the other person who is not my partner could be another sexual opportunity for me.
8. I would be sexually aroused by this scenario.

Note: Items 1–6 were aggregated into a composite tracking negative reactions in both studies. Items 7 and 8 were single-item measures assessing perceptions of the extradyadic partner as an additional sexual opportunity and feelings of sexual arousal, respectively.

whereas *Slightly More Heterosexual/Homosexual* were 2 and 4, respectively. *Bisexual* was explicitly coded as 3, given that it is the midpoint on this scale.

2.2 | Results

2.2.1 | Reactions

We conducted three one-way ANOVAs to assess negative reactions, arousal, and perceptions of a sexual opportunity. Table 2 provides relevant statistics. All main effects were significant, prompting relevant least significance difference tests (LSD) tests to identify pairwise comparisons. Participants reacted most negatively to the man, followed by the masculine-presenting woman, and then the feminine woman. Although the man elicited significantly more negative reactions compared to both women ($ps < .001$, $ds > 0.86$), the women did not differ in the negative reaction that they elicited ($p = .853$, $d = 0.03$).

The feminine woman appeared to afford the most sexual opportunity, followed by the masculine woman, and then the man. All differences were significant ($ps < .006$, $ds > 0.55$). A similar order emerged for reported sexual arousal of the scenario; these differences were also significant ($ps < .001$, $ds > 0.66$).

2.2.2 | Perceived sexual orientation

We conducted another one-way ANOVA for perceptions of the interloper's sexual orientation. Table 2 provides relevant descriptive statistics. The masculine-presenting woman appeared the least heterosexual, followed by the feminine woman, and then the man. The descriptive difference between the feminine and masculine woman was not significant, with means suggesting that the female interlopers appeared as *slightly more homosexual* (i.e., 4 on the Kinsey-type scale; $p = .776$, $d = 0.05$). Nonetheless, the differences between the man and both women were significant ($ps < .001$, $ds > 0.65$). The mean for the male interloper indicated him being perceived as *primarily heterosexual* (i.e., 1).

2.3 | Discussion

Results from the current study suggest that our hypotheses about men's reactions to same-sex infidelity are more complementary than competing. The similar levels of distress toward

TABLE 2 Descriptive and inferential statistics (with degrees of freedom) and effect sizes for reactions to each vignette in Study 1.

	Man	Masculine	Feminine	$F_{2,153}$	p	η_p^2
Negative reaction	6.65 (0.56) ^a	5.89 (1.12) ^b	5.85 (1.49) ^b	8.37	<.001	0.099
Sexual arousal	1.04 (0.19) ^a	2.26 (1.57) ^b	3.25 (2.03) ^c	29.39	<.001	0.278
Sexual opportunity	1.17 (0.75) ^a	2.08 (1.47) ^b	2.94 (2.11) ^c	17.33	<.001	0.185
Sexual orientation	0.75 (1.46) ^a	4.00 (1.31) ^b	3.92 (1.24) ^b	99.94	<.001	0.566

Note: Superscripts denote the level of significance between groups, although all main effects were significant. Each omnibus model had the same degrees of freedom. Masculine = Masculine female interloper; Feminine = Feminine female interloper.

infidelity for both women suggested a lack of concern over cuckoldry (Sagarin, Becker, et al., 2012), whereas the increased arousal toward the feminine woman suggested that perceivers can recognize potential sexual opportunities from interlopers. Despite theoretical consonance of these findings, these vignettes remain limited insofar as participants needed to extrapolate the appearance of the extradyadic partner rather than relying on other physical features that could be more putatively diagnostic of sexual orientation (e.g., physical appearance; Rule, 2017; Skorska et al., 2015). Study 2 sought to consider physical appearance as the basis of men's judgment.

3 | STUDY 2

Although Study 1 continued to demonstrate consistent effects with previous studies while providing additional nuance, these results could lack a degree of ecological validity. That is, written descriptions of an encounter may not elicit the predicted reactions with the same automaticity as other features. It could be possible that the effects of arousal are especially pronounced in the presence of visual cues to sexual receptivity through physical features (Landolfi et al., 2007). Physical features on social targets regarded as attractive foster greater perceptions of the target's sexual receptivity, including secondary sex characteristics in women (Brown et al., 2022; Puts et al., 2011). These perceptions correspond with greater sexual arousal in erotic contexts, particularly if such targets exhibit physical features relevant to their salient reproductive goals (e.g., lower waist-to-hip ratios; Hall et al., 2011; Singh et al., 2010).

In addition to written descriptions of sexual orientation, it could be possible that men's reactions could be driven by physical features putatively diagnostic of sexual orientation. Perceivers exhibit considerable accuracy in categorizing female sexual orientation, a categorization that occurs with considerable automaticity and with minimal cues (colloquially known as "gaydar," Rule, 2017; Rule et al., 2009). Many such inferences are tied to the sex-atypicality of the target (Freeman et al., 2010; Skorska et al., 2015), which similarly tracks the unique routes through which women's sexual orientation emerges throughout development (VanderLaan et al., 2022). Perceivers further regard more masculine presentations of women as diagnostic of greater same-sex attraction, which may additionally impede perceptions of masculine-presenting women as a sexual opportunity to men (Flanders & Hatfield, 2013).

Upon estimating a female interloper's sexuality, it should follow that perceivers would regard her as presenting no additional sexual opportunity while posing no risk of cuckoldry. Study 2 sought to replicate this original finding by presenting images of the extradyadic partner. We predicted that the difference in arousal would be higher when comparing images of a masculine-presenting woman versus a feminine-presenting woman and thus a greater impetus to perceive the latter as an additional sexual opportunity.

3.1 | Method

3.1.1 | Participants

A sample of 142 men from a large public university in Southeastern US completed this experiment for course credit. Four men were excluded from final analyses for identifying themselves as homosexual, using the same sexual orientation screening item from Study 1. The final

sample was 138 heterosexual men ($M_{\text{Age}} = 19.30$, $SD = 1.44$; 81.2% White, 7.2% Black, 5.8% Latino, 3.6% Asian, 2.2% Other; 88 single, 50 partnered). No other participants were excluded from final analyses. Like with Study 1, no effects emerged as a function of relationship status.

Data collection occurred within the first half of a semester with a stop rule similar to Study 1. A statistical sensitivity analysis indicated that we had adequate power to detect medium effects using the same basic one-way experimental design with three levels of a between-subjects factor from Study 1 (Cohen's $f = 0.26$, $1-\beta = 0.80$).

3.1.2 | Materials and procedure

Participants were tasked with reading a story with a similar exposition for the protagonist as Study 1. In this version of the task, we presented images of all parties involved to amplify effects. First introduced was a picture of the hypothetical girlfriend that we tasked participants to study briefly before reading more about the same scenario from Study 1 of the participant being in a romantic relationship with the woman for 8 months. This woman was represented by a stock photo from an Internet search for a young woman. Following this presentation was a subsequent presentation of the image of the hypothetical girlfriend juxtaposed to an image of another person. Above these images was a single sentence indicating that the participants discovered that their girlfriend had cheated on them with the person in the image next to the girlfriend.

Participants viewed one of three extradyadic partners on a between-subjects basis. The interloper was another man ($n = 47$), a masculine-presenting woman ($n = 44$), or a feminine-presenting woman ($n = 47$). These images originated from Internet searches to identify individuals for each category similar to the hypothetical girlfriend. Targets were all fully clothed and presenting a pleasant smile in a portrait-type image. Our use of stock photos was to increase a degree of realism to participants that may not have been afforded through normed stimulus sets (i.e., possible demand characteristics). The masculine-presenting woman had a short, male-typical hairstyle wearing a t-shirt and no makeup to increase similarity with the male target. Appendix B provides the images used. Participants responded to the same items as Study 1 in the context of this discovery assessing negative reactions ($\alpha = 0.89$), arousal, perceptions of the extradyadic partner as a sexual opportunity, and the Kinsey-type scale.

3.2 | Results

3.2.1 | Reactions

We used the same four one-way ANOVAs from Study 1 for the same outcome variables. Table 3 provides relevant statistics. All main effects were significant, prompting relevant LSD tests. Replicating Study 1, participants reacted most negatively to infidelity with the man, followed by the masculine woman, and then the feminine woman. The difference between the man and feminine woman was significant ($p = .002$, $d = 0.53$). The other two comparisons were not significant ($ps > .070$, $ds < 0.32$).

The feminine woman appeared to afford the most sexual opportunity to perceivers, followed by the masculine-presenting woman, and then the man. The feminine woman was significantly different from both the man and masculine-presenting woman ($ps < .006$, $ds > 0.56$). Unlike

TABLE 3 Descriptive and inferential statistics (with degrees of freedom) and effect sizes for reactions to each vignette in Study 2.

	Man	Masculine	Feminine	$F_{2,135}$	p	η_p^2
Negative reaction	6.35 (0.82) ^a	5.86 (1.16) ^{ab}	5.50 (1.70) ^b	5.15	.007	0.071
Sexual arousal	1.09 (0.28) ^a	1.11 (1.32) ^a	3.06 (2.27) ^b	32.98	<.001	0.328
Sexual opportunity	1.28 (1.01) ^a	1.25 (0.61) ^a	2.87 (2.20) ^b	18.66*	<.001	0.218
Sexual orientation	0.83 (1.22) ^a	4.75 (1.12) ^b	3.34 (1.42) ^c	113.09	<.001	0.626

Note: Superscripts denote the level of significance between groups, although all main effects were significant. All degrees of freedom are as noted by the column label, except when denoted with *, wherein the denominator degree of freedom is 134.

Study 1, no difference emerged between the masculine-presenting woman and the man ($p = .931$, $d = 0.01$). The same order emerged descriptively for arousal. Once again, both differences were significant for the feminine woman ($ps < .006$, $ds > 0.56$), whereas the difference between the masculine woman and feminine man was not ($p = .931$, $d = 0.01$).

3.2.2 | Perceived sexual orientation

The masculine-presenting woman appeared to be the least heterosexual, followed by the feminine woman, and then the man. All differences were significant ($ps < .001$, $ds > 0.56$). The mean for the man indicated him being perceived as *primarily heterosexual* (i.e., 1 on the Kinsey-type scale), whereas the masculine woman appeared *primarily homosexual* (i.e., 5), and the feminine woman appeared *bisexual* (i.e., 3), respectively.

3.3 | Discussion

In addition to replicating most of the basic effects from Study 1, we found additional nuance based on perceptions of sexual orientation. Perceivers could have been making an accurate estimate of the masculine-presenting woman's sexual orientation through her appearance (Rule et al., 2009). From this inference, they could view her as disinterested in male sexual partners and thus not an additional reproductive opportunity.

4 | GENERAL DISCUSSION

Two studies present continued evidence for a relatively reduced distress toward infidelity for heterosexual men when the interloper is female (Confer & Cloud, 2011; Wang & Apostolou, 2019). However, we offer additional nuance to clarify some complementary explanations for these effects as a function of the sex role presentation of a female extradyadic partner. Men reported consistently greater distress at a male interloper, consistent with the reproduction-based threats account of infidelity reactions (Sagarin, Becker, et al., 2012). Conversely, and consistent with an additional mating opportunities account (Thompson & Byers, 2017), men viewed female extradyadic partners as more of a mating opportunity when assuming a feminine sex role presentation.

The concurrence of these effects suggests complementarity of hypotheses that speaks to a relatively underdiscussed comparison between intrasexual and intersexual competition. Although male interlopers reflect competition for reproductive opportunities (Sagarin, Becker, et al., 2012), the relatively greater likelihood of same-sex sexual behavior among women could lead men to be mindful of female competitors. This awareness could serve men to make efforts in minimizing contact with rivals who could impede their fitness-enhancing goals, likely because female interlopers could engage in the same behaviors (see Vasey et al., 2014). Feminine and masculine-presenting women would be in competition, but the competition imposed by women who appear less bisexual to perceivers would present a threat to fitness. Akin to so-called third-gender males in non-Western cultures (e.g., Samoa), masculine-presenting women could engage in mate retention strategies (e.g., monopolization of time) that could reduce men's access to the reproductive opportunities afforded by their initial partner (Buss et al., 2008; Semenyina et al., 2020, 2022). Men may further not view masculine women as a reproductive opportunity based on an implicit theory of the lack of interest in male partners. Such women could further be expected to use male-typical mate retention tactics that would preclude men access to a mate (Brewer & Hamilton, 2014).

Much like with theories addressing the evolutionary underpinnings of opposite-sex attraction (Van Valen, 1977), it is important to recognize that the evolutionary underpinnings of women's sexuality is shaped by multiple competing selection pressures (Diamond, 2005, 2013, 2021) and biological underpinnings (VanderLaan et al., 2022). On one hand, a relatively flexible orientation among women would have been functional in creating alloparenting opportunities (Luoto et al., 2019). Additionally, the relative tolerance toward female bisexuality from men could have created more reproductive opportunities for women whose offspring could have similar interest in same-sex sexual behavior in mates (Apostolou, 2018a; Apostolou, 2020; Wiederman & LaMar, 1998). This tolerance contrasts with women's disinterest in men's same-sex attraction (Confer & Cloud, 2011), potentially rooted in an implicit awareness of the more categorical nature of men's sexual orientation that would preclude them from being consistent reproductive opportunities.

It should be noted that infidelity was rated as an especially aversive experience for participants in both studies, despite the degree of granularity in their negative reactions. The means for negative reactions were above the scalar midpoints across stimulus categories, whereas the receptivity to female interlopers were below the midpoints. Fluctuations in reactions appeared to reflect a degree of calculation for potential benefits relative to the major costs of infidelity regardless of the interloper. In a sense, these findings provide evidence for how individuals invoke trade-offs in costly environments based on the degree to which an opportunity to satisfy reproductive goals could emerge (Lassetter et al., 2021).

Previous research suggests that the experience of sexual infidelity is associated with greater distress over the prospect of infidelity in hypothetical scenarios (Sagarin et al., 2003). It would be advantageous for subsequent research to identify potential mismatches between heterosexual men's self-reported arousal in a hypothetical scenario compared to retrospective reflection on arousal from a partner's same-sex infidelity. Additionally, this work would benefit from considering actual infidelity cases that resulted in additional sexual opportunities for the victim; this consideration could clarify whether men's arousal at an ostensibly bisexual partner is based on actual receptivity from these women or merely an overperception of women's interest in men (Haselton & Buss, 2000).

4.1 | Limitations and future directions

Although our findings demonstrated both consistency with previous work and clarified these effects in a consistent manner themselves, several limitations present themselves that warrant further investigation. The most salient limitation is the comparison between sexual and emotional infidelity and whether men's reactions to emotional infidelity are similar (Buss et al., 1992). These future studies could describe or present different sex role presentations from female interlopers. Given the relatively greater likelihood of feminine female interlopers being perceived as an additional sexual opportunity, it could be possible that men could view such interlopers as an asset toward men's coalitional goals (Thompson & Byers, 2017). Feminine interlopers could represent an opportunity for male perceivers to increase the comfort from a partner for various sexual encounters that would increase his potential for inclusive fitness (e.g., threesomes). Men could view these women as a facilitator toward additional opportunities.

Our results were ultimately main effects that reflected more conventionally considered reactions to infidelity. It could be possible that various individual differences could inform these reactions, including positive reactions across contexts. One trait that would seem likely to moderate these results is sociosexual orientation, or one's dispositional interest in promiscuous mating strategies (Penke & Asendorpf, 2008). Those with an unrestricted sociosexuality could be seeking additional mating opportunities, which could heighten men's interest in women perceived as receptive (see Brown & Sacco, 2017). Conversely, those with a more restricted strategy could view even a feminine female interloper as threatening (Rodrigues & Lopes, 2017).

Research could additionally address directly specific positive emotional states. For example, consensually non-monogamous individuals report openness to their partners' engagement in extradyadic sex (Mogilski et al., 2023). Such a relational orientation could lead perceivers to view any interloper as less threatening (see Valentova et al., 2020), particularly among those who experience compersion, or arousal from a partner feeling sexual pleasure from an extrapair mate (Mogilski et al., 2019). When tracking specific positive emotions, it could then become possible to identify whether the perceiver could view the sexual encounter as infidelity in its own right or even view it as an opportunity for a threesome (Thompson & Byers, 2017).

Another route for future research includes consideration of reactions to same-sex infidelity across different cultures. For example, research could address whether these effects emerge in countries with less tolerance toward homosexuality or track individual differences in anti-gay prejudice (Ciocca et al., 2017; Wang & Apostolou, 2019). Within cultures recognizing third-gender males as distinctive from other sexual categories (e.g., fa'afafine in Samoa), effects may emerge in a manner that makes the components of intersexual competition more salient to perceivers (Semenyna et al., 2022).

5 | CONCLUSION

This research contributes to a body of literature investigating heterosexual men's reaction to infidelity. Namely, as we continue to demonstrate the heightened distress at male interlopers compared to female (Confer & Cloud, 2011; Wang & Apostolou, 2019), our work clarifies effects for female interlopers by considering sex role presentation. These findings suggest that infidelity research would benefit by addressing the potential sexuality of interlopers based on the expectations of a perceiver's reproductive goals.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

In compliance with IARR reporting standards, we report all measures, manipulations, and exclusions for two fully between-subjects experimental designs. Data and materials for both studies are available at: <https://osf.io/gkmvy/>.

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APPENDIX A

VIGNETTES FROM STUDY 1

Standard introductory paragraphs

You have been in a relationship and live in the same house with a woman whom you love for the past 8 months. It has been a long day, it is already dark outside, and all you want to do is go home and spend time with your partner. Once you arrive, you see her car in the garage, indicating that she came home early. Eager to see her, you excitedly make your way into the house. Once inside, you hear sensual music playing in the bedroom. Because you came home early yourself, you decide that you want to surprise her and quietly move to the direction of the music. You crack open the door and see the room shrouded in candlelight.

Male interloper

You glance over to the bed. To your surprise, you see a *masculine figure with short hair, broad shoulders, and well-defined muscles*. This person is wearing only boxer shorts on top of your partner, kissing her passionately. You quickly enter the room and turn on the light to investigate the situation. Both your partner and the other person look back at you. You discover that your partner *is kissing another man*.

Masculine-presenting female interloper

You glance over to the bed. To your surprise, you see a *masculine figure with short hair and well-defined muscles*. This person is wearing only boxer shorts on top of your partner, kissing her passionately. You quickly enter the room and turn on the light to investigate the situation. Both your partner and the other person look back at you. You discover that your partner is actually kissing *another woman*.

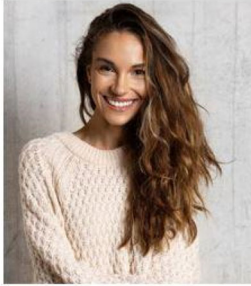
Feminine female interloper

You glance over to the bed. To your surprise, you see a *feminine figure with long hair, curvy hips, and a small waist*. This person is wearing only panties on top of your partner, kissing her passionately. You quickly enter the room and turn on the light to investigate the situation. Both your partner and the other person look back at you. You discover that she is kissing *another woman*.

APPENDIX B

STIMULI FROM STUDY 2

You discovered that your girlfriend has been cheating on you with *another* (man/woman).



Your girlfriend



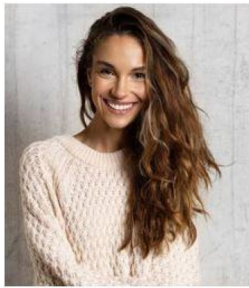
Other man



Your girlfriend



Other woman



Your girlfriend



Other woman

Note. Participants viewed the girlfriend with another man (a), the masculine-presenting woman (b), or the feminine woman (c).