



Jealousy, Consent, and Compersion Within Monogamous and Consensually Non-Monogamous Romantic Relationships

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Abstract

Evolutionary psychological research has studied romantic jealousy extensively within monogamous relationships, but has largely ignored jealousy among partners who mutually consent to forming extra-pair relationships (i.e., consensual non-monogamy; CNM). We examined monogamous ($n = 529$) and CNM ($n = 159$) individuals' reactions to imagining their romantic partner(s)'s extra-pair involvement. For each romantic partner, men and women completed measures of relationship jealousy and reacted to scenarios of their partner's extra-pair emotional and sexual involvement. Scenarios prompted participants to indicate which type of involvement would be more distressing and more enjoyable. They also described whether or not participants had consented to their partner's extradyadic relationship. Monogamous men were more distressed by a partner's extradyadic sexual versus emotional involvement (and a partner's emotional involvement was more enjoyable) whether the scenario was consensual or not. Monogamous women were more distressed by a partner's emotional versus sexual involvement (and a partner's sexual involvement was more enjoyable) for consensual, but not non-consensual, scenarios. There were no gender differences among CNM participants. Monogamous individuals reported greater emotional distress toward a partner's imagined extradyadic involvement, whereas CNM individuals reported thinking about their partner's extra-pair relationships more frequently. Monogamous (vs. CNM) individuals reported greater confidence that their partner would never cheat on them (i.e., enter another relationship without their consent), and CNM participants were more confident that their primary versus secondary partner would never cheat, although this effect was stronger among CNM women. Moreover, CNM participants rated that it was more important that their primary versus secondary partner did not cheat, and reported greater distress imagining that their primary versus secondary partner had cheated. Women in CNM relationships rated it more important that their partner did not cheat sexually than emotionally. Finally, we replicated previous research showing that monogamous individuals mate guard more than CNM individuals, who mate guard their primary versus secondary partner more frequently. Future directions for developing evolutionary and romantic relationship research on CNM are discussed.

Keywords Jealousy · Compersion · Consensual non-monogamy · Polyamory · Gender differences

Introduction

From an evolutionary psychological perspective, jealousy functions as an internal regulatory variable during romantic decision-making (Buss, 2014; Cosmides & Tooby, 2000). Its activation is sensitive to potential cues of a partner's involvement

in an extra-pair (i.e., extradyadic) relationship and motivates behaviors and attitudes that have helped individuals navigate relationship risks, such as mate poaching (Schmitt & Buss, 2001), mate switching (Buss, Goetz, Duntley, Asao, & Conroy-Beam, 2017), cuckoldry (i.e., unknowing investment in another person's offspring; Starratt, McKibbin, & Shackelford, 2013), sperm competition (Shackelford & Goetz, 2007), and divestment of relational and material resources (Campbell & Loving, 2016). Jealousy occurs in response to a real or perceived relationship threat, which comprises various features of the physical and social environment that produce the perception that one's current romantic relationship may be unstable or at risk of dissolution. Putative cues of relationship threat include the

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presence and quality of same-sex rivals (e.g., Dijkstra & Buunk, 2002; Pham et al., 2014), features of the romantic pair-bond (e.g., mate value or relationship satisfaction discrepancies; Sal-kicevic, Stanic, & Grabovac, 2014; Sela, Mogilski, Shackelford, Zeigler-Hill, & Fink, 2017; Sidelinger & Booth-Butterfield, 2007), imagined or recounted scenarios of a partner's extra-pair involvement (e.g., Buss, Larsen, Westen, & Semmelroth, 1992; Maner, Miller, Rouby, & Gailliot, 2009), and other indicators of a partner's emotional or sexual disengagement (Shackelford & Buss, 1997; Wade & Mogilski, 2018). Perceptions of relationship threat enhance experiences of jealousy (Rydell, McConnell, & Bringle, 2004), are more distressing among committed and female partners (Cann & Baucom, 2004), and vary with an individual's sexual interest in their partner (Shackelford et al., 2002). Mate value discrepancy between partners (i.e., when one partner is of higher partner quality than the other) predicts the likelihood of divorce (Shackelford & Buss, 1997) and the perceived likelihood of partner defection (Buss & Shackelford, 1997). In turn, jealousy motivates mate retention behaviors (see Buss, Shackelford, & McKibbin, 2008; Shackelford, Goetz, & Buss, 2005), which function to decrease the likelihood of partner defection. Together, this suggests that jealousy motivates attention to and maintenance of at-risk romantic relationships.

Imagining (Thompson, Zimmerman, Kulibert, & Moore, 2017) or discovering (Edlund, Heider, Scherer, Farc, & Sagarin, 2006; Kuhle, 2011) a partner's extra-pair romantic involvement typically elicits behaviors (e.g., mate guarding, vigilance, benefit-provisioning; see also Buss et al., 2008) and emotional experiences (disgust, jealousy; see also Al-Shawaf, Conroy-Beam, Asao, & Buss, 2016) that help to curtail the potential costs of that involvement, such as relationship divestment (i.e., loss of a partner's support) or cuckoldry. Compared to men, women typically report greater distress toward potential loss of a partner's interpersonal support (i.e., extra-pair emotional involvement), whereas men typically report greater distress toward a partner's sexual contact with another person (i.e., extra-pair sexual involvement). These gender differences in jealousy toward a partner's extradyadic emotional versus sexual relationships have been demonstrated across cultures (Bendixen, Kennair, & Buss, 2015; Fernandez et al., 2015; Fernandez, Sierra, Zubeidat, & Vera-Villarroel, 2006; Zandbergen & Brown, 2015) using varied methodologies and measures (Edlund et al., 2006; Maner & Shackelford, 2008; Sagarin et al., 2012; Wade & Mogilski, 2018) and within heterosexual and non-heterosexual samples (Bailey, Gaulin, Agyei, & Gladue, 1994; de Souza, Verderane, Taira, & Otta, 2006; Sagarin, Becker, Guadagno, Newcastle, & Millevoi, 2003; but see Dijkstra et al., 2001; Frederick & Fales, 2016; Howard & Perilloux, 2017; Hughes, Harrison, & Gallup, 2004). Yet, to date, no one has examined these gender differences within consensually non-monogamous relationships.

Consensual Non-Monogamy

Consensual non-monogamy (CNM) refers to an assortment of romantic relationship configurations (e.g., polyamory, open relationships, swinging; reviewed in Hauptert, Gesselman, Moors, Fisher, & Garcia, 2017; Loue, 2006) wherein partners openly agree that having sex or forming a romantic pair-bond with other people is permissible. These relationships comprise two or more individuals who explicitly agree that there is nothing morally inappropriate (i.e., condemnable; DeScioli & Kurzban, 2009, 2013) about their partner(s) having sex or falling in love with another person. Although sexual or emotional relationships with others are not prohibited within CNM relationships, individuals may still experience jealousy (Deri, 2015; Visser & McDonald, 2007), restrict their partner(s)'s extradyadic behaviors (Wosick-Correa, 2010), or otherwise engage in mate guarding (i.e., behaviors that thwart partner defection; Mogilski, Memering, Welling, & Shackelford, 2017).

For example, Mogilski et al. (2017) examined how often individuals within CNM relationships perform mate retention behaviors with primary and secondary partners. They found participants reported more effort in retaining their primary compared to their secondary partner, which suggests that individuals may distinguish between partners and allocate attentional resources according to each partner's relational value or role. Recent evidence (Balzarini et al., 2017) corroborates this interpretation by showing that there are reliable differences between primary and secondary partner evaluations across several relational measures (e.g., relationship secrecy, investment, and sexual frequency). This suggests that a partner's diversion of in-pair resources (e.g., time spent together, social status, information, money, sex) from one partner to another may produce distress within these types of relationships—similar to how infidelity may become problematic within a monogamous relationship (see Buss & Abrams, 2017; though see also Burleigh, Rubel, & Meegan, 2017; Mitchell, Bartholomew, & Cobb, 2014). Research on jealousy within CNM relationships (Deri, 2015) further supports this interpretation, such that individuals report jealousy most often when they are not confident in a partner's commitment, cannot trust the security of their relationship, or otherwise feel anxious about their partner's extradyadic involvement (Ritchie & Barker, 2006).

Extant research on how individuals within CNM relationships experience and navigate romantic jealousy (e.g., Deri, 2015; McLean, 2004; Ritchie & Barker, 2006; Visser & McDonald, 2007; Wosick-Correa, 2010) finds that CNM individuals often report experiencing jealousy, but process and manage this jealousy by communicating openly with their partner(s) about these experiences and negotiating

agreements about what types of extradyadic sexual or romantic behaviors are acceptable. For example, Wosick-Correa (2010) used survey and interview data to identify variation in how CNM individuals regulate their partner's sexual behaviors, negotiate romantic boundaries, and form rules about what information is expected to be shared among partners. These agreements putatively mitigate jealousy through enhanced communication, honesty, and trust among romantic partners. This suggests that individuals within CNM relationships still experience jealousy, but may engage in behaviors (i.e., consent-seeking) that minimize the negative affect typically associated with a partner's extradyadic involvement.

The ethical and interpersonal strategies used to establish consent in CNM relationships (see Klesse, 2018) set them apart from monogamy. Within CNM relationships, consent refers to an explicit acknowledgement that having sex and/or falling in love with another person will not be punished so long as it occurs within previously negotiated boundaries. Establishing consent involves communicating about which extra-pair behaviors cause distress for each partner and then negotiating which behaviors are acceptable (Sheff & Tesene, 2015; Wosick-Correa, 2010). Violation of consent occurs when these negotiated boundaries are transgressed, which can produce interpersonal distress akin to monogamous infidelity (e.g., McLean, 2004). To avoid consent violation, individuals within CNM relationships typically expect their partner to consistently and honestly communicate about their extradyadic attractions and behaviors. This policy of open information exchange may promote intimate discussion about extra-pair attractions and thereby diminish jealous anxiety. Indeed, CNM individuals report greater partner intimacy (Morrison, Beaulieu, Brockman, & Beaglaioich, 2013) and communication (Mogilski et al., 2017) than monogamous individuals, and honest discussion about relationship boundaries reportedly helps CNM individuals manage feelings of jealousy (Visser & McDonald, 2007). In this way, establishing explicit consent and open discussion may dampen negative emotional or cognitive experiences that are typically associated with discovery of a partner's romantic involvement with another person or with jealous rumination. That is, establishing consent may alter how individuals process the consequences of their partner's extradyadic behavior (e.g., will their having sex or falling in love with someone else *actually* lead to relationship divestment or cuckoldry?).

Alongside jealousy, some individuals report positive experiences while thinking about or seeing their partner enjoy other pair-bonds (Deri, 2015; Duma, 2009), although these experiences have been studied sparingly. To refer to these experiences, popular (Anapol, 1998; Chapman, 2010; Ritchie & Barker, 2006; Sheff, 2013; Taormino, 2008) and scientific (Aumer, Bellew, Ito, Hatfield, & Heck, 2014) literature has most consistently used the term compersion. There is

no unified definition for compersion, but it can be generally understood as a feeling of warmth, satisfaction, joy, or pleasure from knowing/imagining that your partner is emotionally or sexually involved with another person. It has been described as analogous to the happiness one feels after hearing that a loved one has achieved a major accomplishment (e.g., getting their dream job, earning social status among their peers, having sexual intercourse with someone they find attractive; Sheff, 2013). Compersion is often discussed as a relationship ideal that is achieved through introspection, effortful thought, and consistent interpersonal communication among partners (Taormino, 2008), although it has also been described as a more instinctual emotion opposite to jealousy (Anapol, 1998). Although there is no scientific evidence to suggest that compersion is the opposite of jealousy, its existence and continuation within CNM culture suggests that studying its phenomenology may reveal how CNM individuals manage feelings of jealousy.

Current Study

In the present study, we examine how jealousy is experienced within CNM and monogamous relationships using measures that assess several facets of romantic jealousy, including sexual and emotional extra-pair scenarios (Buss et al., 1992). There is no precedent for how reactions to a partner's emotional and sexual extra-pair involvement should vary between monogamous and CNM relationships, nor between two different partners within a CNM relationship. However, given the ubiquity of gender differences in reactions to a partner's emotional and sexual extradyadic involvement across various samples (e.g., Fernandez et al., 2015), we expected that men and women would respond in gender-typical ways, regardless of whether their relationship is monogamous or CNM. That is, we predicted that (*H1*) men would report greater distress toward a partner's sexual involvement with an extradyadic partner, whereas women would report greater distress toward a partner's emotional involvement with an extradyadic partner.

To explore the possibility that negotiating consent attenuates or otherwise alters experiences of jealousy, we altered the extra-pair scenarios (Buss et al., 1992) to indicate that the participant had either consented or not to their partner's sexual or emotional involvement with another person. If someone violates their relationship agreement (e.g., by having intimate contact with or investing resources into someone in a way which violates agreed upon relationship boundaries), then that behavior may be more aversive or elicit greater feelings of jealousy relative to consensual extradyadic relationships. We expected that men would be relatively more upset by sexual extra-pair scenarios compared to women and that women would be relatively more upset by emotional extra-pair scenarios compared to men, but that these gender-typical

reactions would interact with consent. Specifically, we predicted that (*H2*) specifying consent would attenuate gender-typical jealousy reactions to a partner's extra-pair involvement across CNM and monogamous relationships.

To supplement these scenarios, we also administered the multidimensional jealousy scale (MJS; Pfeiffer & Wong, 1989) and other continuous measures of jealousy that assessed (1) participants' confidence that their partner will never cheat (i.e., engage in an extra-pair relationship for which consent was not explicitly given), (2) how important it is that their partner never cheats, and (3) their distress imagining that their partner cheated. We expected the MJS to distinguish whether differences in CNM and monogamous individuals' reactions to a partner's extradyadic involvement are primarily due to emotional, cognitive, or behavioral jealousy, which have distinct associations with relationship quality and functioning (e.g., Pfeiffer & Wong, 1989; Sheets, Fredendall, & Claypool, 1997). Given the putative role of consent-seeking in the management of negative jealousy experiences (Visser & McDonald, 2007), we generally expected that (*H3*) CNM individuals would score lower on measures of jealousy and distress compared to monogamous individuals. We formed no a priori hypotheses for how facet scores on the MJS would differ across monogamous and CNM participants, but included a version wherein non-consent was explicitly defined for each item to permit cross-measure comparisons between groups.

To permit comparisons between a CNM participant's different partners, CNM participants were asked to respond to each set of scenarios and measures for each of the two partners with whom they currently spend the most time (i.e., a primary and a secondary partner). Based on prior findings (e.g., Balzarini et al., 2017; Mogilski et al., 2017), we expected that (*H4*) CNM participants would report greater distress toward a primary partner's extradyadic behaviors compared to those same behaviors from a secondary (i.e., less committed) partner. The importance of extradyadic sexual versus emotional relationships may vary within a CNM relationship according to a partner's relational value relative to another partner. We thus expected that (*H5*) a primary partner's extradyadic emotional pair-bonds would cause more distress and be rated as more important than a primary partner's extradyadic sexual pair-bonds insofar as falling in love with someone coincides with diversion of one's time, attentional resources, and potential offspring investment. In other words, an extradyadic emotional pair-bond may lead to a loss of relationship investment from the primary partner more so than a purely sexual pair-bond.

To assess compersion, we used a modified version of extra-pair jealousy scenarios (described below) to measure CNM and monogamous individuals' enjoyment/pleasure from imagining their partner's extradyadic emotional versus sexual involvement. As with the jealousy scenarios, consensual and non-consensual contexts were presented. Given

its exploratory nature, we did not generate a priori predictions for these data; however, we expected this measure to reveal potential differences in how men and women consider the potential enjoyment of a partner's sexual or emotional involvement with another person.

To replicate findings from a prior study (Mogilski et al., 2017), we also administered a measure of mate guarding behavior (the Mate Retention Inventory—Short Form [MRI-SF]; Buss et al., 2008). This measure assesses the frequency with which effort is expended to prevent the loss of a romantic partner, and predicts in-pair jealousy (e.g., Atari, Barbaro, Shackelford, & Chegeni, 2017). Inasmuch as CNM individuals experience greater jealousy with primary partners, we expected that (*H6*) CNM participants would more often engage in mate guarding behaviors with primary compared to secondary partners and that monogamous individuals would engage in more mate guarding than CNM partners.

Method

Participants

Participants ($N=756$) were recruited from social media Web sites, fora, and e-groups frequented by individuals in self-identified non-monogamous relationships (e.g., non-monogamy sub-Reddit forums, non-monogamy Facebook groups), as well as from a small liberal arts college in the Midwestern USA. Participants who completed the survey in less than 15 min ($n=63$; average time for these participants to complete survey: 11.31 min) were excluded from analyses, yielding a sample of 690 participants (510 women, 169 men, 11 "other"; age: $M=22.26$ years, $SD=6.86$, range = 18–71). All participants who identified as "other" specified themselves as genderqueer, non-binary, demi-girl, neutral, or agender; reported that they were assigned a female sex at birth; and were currently in a CNM relationship. These individuals were included in analyses comparing monogamous and CNM responses, but were excluded from analyses comparing men and women. Participants identified as White (81.0%), Black (8.3%), Asian (3.2%), Hispanic/Latino (1.8%), or Other (5.7%), and reported their sexual orientation as heterosexual (83.8%), homosexual (1.8%), bisexual or pansexual (14.0%), or asexual (0.4%).

All participants reported currently being in a romantic relationship of some type. Following previous methods (Mogilski et al., 2017), two criteria were used to distinguish between individuals in monogamous and CNM relationships. First, participants reported whether their romantic relationship was exclusive (i.e., you and your partner agree to not date other people) or non-exclusive (i.e., you and your partner(s) agree that dating other people is permitted) and whether they were currently in a romantic and/or physical

relationship with only one person or with more than one person. Participants who reported being in an exclusive romantic or physical relationship with only one person were classified as “monogamous.” Those who reported being in a non-exclusive romantic or physical relationship with more than one person were classified as “CNM.” Those who reported being in a non-exclusive romantic or physical relationship with only one person were classified into a third group called “open relationship.” The final possibility (an exclusive relationship with more than one person) was categorized as “infidelity/polyfidelity.” People in this category ($n=3$) were excluded because we could not determine whether they were engaging in non-consensual non-monogamy or a closed non-monogamous relationship.

Using these criteria (see Table 1 for additional details), the final sample consisted of 529 monogamous (405 women; age: $M=20.31$ years, $SD=3.85$, range = 18–55; sexual orientation: 93.5% heterosexual, 1.7% homosexual, 4.4% bisexual/pansexual, 0.4% asexual), 94 CNM (59 women; age: $M=31.26$ years, $SD=9.561$, range = 18–55; sexual orientation: 41.5% heterosexual, 41.5% bisexual/pansexual, 1.1% asexual), and 65 open relationship (46 women; age: $M=24.82$ years, $SD=9.38$, range = 18–71; sexual orientation: 64.2% heterosexual, 4.5% homosexual, 28.4% bisexual/pansexual) participants. CNM participants reported their current number of partners (54.3% two partners, 27.7% three partners, 17.1% four or more partners) and described their romantic relationships using one (81.8%) or more (18.1%) of the following descriptors: (1) “I am in a primary relationship with one person (i.e., an emotional/sexual relationship characterized by a high degree of commitment, shared life goals, and affection) and in secondary relationships with one

or more other people (i.e., close, ongoing emotional/sexual relationship(s), but with a lesser degree of commitment than a primary relationship)” ($n=54$); (2) “I am equally involved with only two people” ($n=23$); (3) “I am equally involved with more than two people” ($n=12$); and (4) “I am involved in a poly ‘web’, ‘family’, or ‘intimate network’ (i.e., a social web resulting from having romantic relationships among you, your romantic partners, their romantic partners, and so forth)” ($n=24$). Monogamous and open participants did not report involvement in any of these relationship structures.

This research meets Simmons, Nelson, and Simonsohn (2011) six requirements for authors. Upon terminating data collection, we confirmed that our sample provided more than 20 observations per cell. We report all variables analyzed as part of our analyses, summary statistics for all nonsignificant effects, all manipulations, and all data exclusions. We do not include covariates in our analyses.

Materials and Procedure

All measures were presented using the online survey program Qualtrics. Procedures were approved by a university Institutional Review Board prior to data collection. Participants were told that the purpose of the research was to learn more about how peoples’ personalities and romantic relationship experiences affect the way they initiate and maintain romantic relationships and react to imagining a partner’s extra-pair involvement. The order in which participants completed each set of measures was randomized across and counterbalanced within tasks. Informed consent was obtained from all individual participants included in the study.

Table 1 Questions used to determine current relationship status and the categories to which participants were assigned

Relationship status questions	Relationship categories
1. How would you describe your current romantic relationship?	Monogamous ($n=529$)
a. <i>Exclusive</i> (i.e., you and your partner agree to not date other people)	1a. Exclusive relationship
b. <i>Non-exclusive</i> (i.e., you and your partner(s) agree that dating other people is permitted)	2a. One and only one other person
2. How would you describe your current romantic relationship(s)?	CNM ($n=94$) ^b
a. You are currently in a romantic and/or physical relationship <i>with one and only one other person</i>	1b. Non-exclusive relationship
b. You are currently in a romantic and/or physical relationship <i>with more than one person</i>	2b. More than one person
	Open relationship ($n=65$) ^b
	1b. Non-exclusive relationship
	2a. One and only one other person
	Infidelity/polyfidelity ($n=3$) ^a
	1a. Exclusive relationship
	2b. More than one person

^aExcluded from the final sample

^bCombined into one group for analyses

After providing informed consent, participants completed a demographic questionnaire (age, gender, race/ethnicity, and sexual orientation) and other measures that were unrelated to the current research, including the Sociosexual Orientation Inventory-Revised (SOI-R; Penke & Asendorpf, 2008), the Mate Guarding Resistance Scale (MGRS; Cousins, Fugère, & Riggs, 2015), the Intrasexual Competitiveness Scale (ICS; Buunk & Fisher, 2009), and the Coalitional Mate Retention Inventory (CMRI; Pham, Barbaro, & Shackelford, 2015). These latter inventories (i.e., the SOI-R, MGRS, ICS, and CMRI) were to investigate hypotheses that are separate to those considered here, and these data have not yet been analyzed. Next, participants answered questions about their romantic partner(s). CNM participants were asked:

Think of the two romantic partners with whom you currently spend the most amount of time. Of these two individuals, now think of the person who *best* fits the following description: The person you give the most time, energy, and priority in your life. Your relationship with this person includes high levels of intimacy, attraction and commitment; shared life paths and goals; similar beliefs with respect to parenting, economics, housing, important values, ongoing emotional support, etc. You could see yourself having a shared lifelong future together with this person. This description may not completely describe either individual, but please think of the person who is *best* described in this way.

Participants were then asked to provide the first name of their primary partner (i.e., the partner who best fits the description above), the first name of their secondary partner, and the gender/sexual orientation of each partner. Using piped text, each partner's name was inserted into future questions to increase clarity about which questions were in reference to each partner (e.g., imagine [John] became interested in someone else...). Thus, participants' partners were never referred to as "primary" or "secondary" within the survey. Monogamous and open relationship participants were also asked to provide their partner's first name, gender, and sexual orientation.

Partner Measures

Participants completed several inventories assessing their perceptions of each romantic partner, including the MRI-SF (Buss et al., 2008) and the Multidimensional Jealousy Scale (MJS; Pfeiffer & Wong, 1989). The MRI-SF is a 38-item measure of the effort one devotes to preventing the loss of a romantic partner and measures five categories of mate retention behavior: (1) direct guarding (e.g., "I called to make sure my partner was where she said she would be"; $\alpha = .74$), (2) intersexual negative inducements (e.g., "I talked to another person at a party

to make my partner jealous"; $\alpha = .73$), (3) intrasexual negative inducements (e.g., "Stared coldly at a potential romantic rival who was looking at my partner"; $\alpha = .49$), (4) positive inducements (e.g., "Made myself extra attractive for my partner"; $\alpha = .69$), and (5) public signals of possession (e.g., "Put my arm around my partner in front of others"; $\alpha = .50$). The MJS measures individual differences across three facets of relationship jealousy: emotional (e.g., "How upset would you be if your partner commented to you on how great looking someone of the gender they find romantically attractive is"; $\alpha = .90$), behavioral (e.g., "I question my partner about previous or present romantic relationships"; $\alpha = .81$), and cognitive (e.g., "I suspect that my partner may be physically intimate with another person without my consent"; $\alpha = .93$). The MJS has been shown to predict attentional adhesion to romantic rivals (Maner, Gailliot, Rouby, & Miller, 2007), communicative directness with a romantic partner about experiences of jealousy (Theiss & Solomon, 2006), perceptions of relationship stability (Sheets et al., 1997), and feelings of interpersonal support and attraction within a relationship (Pfeiffer & Wong, 1989). Alpha reliabilities for both measures were similar across monogamous, primary, and secondary partner ratings.

All participants also responded to forced-choice extra-pair involvement scenarios for each partner (Buss et al., 1992) in which individuals report whether they would be more upset or distressed by their partner's extradyadic sexual versus emotional involvement. Because CNM individuals consent to their partner(s) having sexual and romantic relationships with other people, we created two versions of each scenario in which they were asked to imagine that they had (1) consented or (2) had not consented to their partner's behavior. An example scenario is provided below (brackets indicate inserted text):

For the following questions, we ask that you imagine two hypothetical scenarios. Imagine that {your partner} became interested in someone else and you consent (do not consent) to {your partner} initiating a romantic relationship with this person. Imagine that {your partner}:

- 1) Formed a deep emotional attachment with that person, but had no interest in having sexual intercourse with them, or...
- 2) Was enjoying passionate sexual intercourse with that person, but had no interest in forming an emotional connection with them.

Which scenario would upset or distress you more?

To quantify compersion, we also modified the forced-choice extra-pair scenarios such that participants rated which scenario (sexual vs. emotional) would give them greater enjoyment/

pleasure. All participants were again asked to assess four scenarios.

Next, participants responded to six (three emotional, three sexual) continuous measures of their response to non-consensual extradyadic partner involvement:

1. Please think about the level of confidence you have that {your partner} will never sexually/emotionally cheat on you with someone outside of your relationship (i.e., have sexual intercourse with someone you would not want or approve of them having sex with; fall in love with someone you would not want or approve of them falling in love with)? (anchors: 1=0% [no confidence], 11=100% [complete confidence]).
2. How important is it that {your partner} never sexually/emotionally cheats on you (i.e., has sex with someone without your consent; falls in love with someone you would not want or approve of them falling in love with) with someone outside of your relationship (anchors: 0 [not at all], 9 [extremely]).
3. If {your partner} ever sexually/emotionally cheated on you with someone outside of your relationship (i.e., has sex with someone without your consent; falls in love with someone you would not want or approve of them falling in love with), how upset or distressed would you be? (anchors: 0 [not at all], 9 [extremely]).

The order in which participants completed each set of partner measures was counterbalanced.

Results

We first ran each analysis treating individuals in CNM and open relationships separately and found that these groups were similar in how they differed from monogamous relationships across each set of measures. Specifically, comparisons of mean scores for CNM and open relationships revealed no significant differences between these groups (all $ps > .283$) nor significant interactions with other variables (all $ps > .208$). To permit more robust gender difference analyses, participants in CNM and open relationships were collapsed into a single group, hereafter collectively referred to as CNM participants. Prior work (e.g., Sagarin et al., 2012) documents small to medium effect sizes for group comparisons of similar jealousy measures. Power analyses conducted using G*Power indicated that our sample size was sufficient to detect these effect sizes at the standard significance level within psychological research ($\alpha = .05$ and power $[1 - \beta] = .80$; Cohen, 1988).

Extra-pair Scenarios: Distress

To test $H1$ and $H2$, participants' forced-choice distress reactions to a partner's consensual and non-consensual sexual and emotional extradyadic involvement were compared across (1) men and women and (2) monogamous and CNM relationships using six chi-square tests of independence (see Table 2). Overall, there were significant gender differences in distress toward consensual emotional and sexual involvement for monogamous, $\chi^2(1, N=528)=18.16, p < .001$, but not CNM respondents for both primary, $\chi^2(1, N=152)=3.37, p = .185$, and secondary, $\chi^2(1, N=151)=2.59, p = .273$, partners. This was also true for non-consensual scenarios (monogamous: $\chi^2(1, N=528)=6.43, p = .011$; primary: $\chi^2(1, N=154)=0.95, p = .621$; secondary: $\chi^2(1, N=154)=0.77, p = .681$). Post hoc chi-square goodness-of-fit analyses revealed that men in monogamous relationships were more likely to report distress toward sexual than emotional involvement in both consensual, $\chi^2(1, N=124)=8.26, p = .004$, and non-consensual, $\chi^2(1, N=124)=8.85, p = .003$, contexts. By contrast, women in monogamous relationships were more likely to report distress toward emotional than sexual involvement in consensual, $\chi^2(1, N=404)=12.83, p < .001$, but not non-consensual, $\chi^2(1, N=404)=0.02, p = .881$, contexts.

Continuous Measures

To assess $H3$, participants' responses to each of the continuous extradyadic involvement measures (Confidence: "How

Table 2 Count frequencies (and overall percentages) with which men and women in monogamous and CNM relationships selected that their partner's sexual versus emotional extra-pair involvement would be more distressful across consensual and non-consensual scenarios

Distress	Consensual		Non-consensual	
	Emotional	Sexual	Emotional	Sexual
Monogamous				
Male	46 (37.1%)	78 (62.9%)	45 (36.6%)	78 (63.4%)
Female	238 (58.9%)	166 (41.1%)	199 (49.6%)	202 (50.4%)
CNM primary				
Male	21 (51.2%)	20 (48.8%)	23 (53.5%)	20 (46.5%)
Female	67 (66.3%)	34 (33.7%)	64 (61.2%)	40 (38.8%)
CNM secondary				
Male	21 (51.2%)	20 (48.8%)	22 (50%)	22 (50%)
Female	66 (64.7%)	36 (35.3%)	58 (56.9%)	44 (43.1%)

confident you are that your partner will never cheat [i.e., violate your consent]”; Importance: “How important it is that your partner never cheats”; Distress: “How distressed would you be if your partner ever cheated”) were compared across men and women in monogamous and CNM relationships using six 2 (involvement type [sexual, emotional]) X 2 (sex [male, female]) X 2 (relationship type [monogamous, CNM]) mixed-model ANOVAs. Three ANOVAs compared responses among monogamous and primary partners (hereafter referred to as “monogamous-primary”), and three among monogamous and secondary partners (“monogamous-secondary”). To test *H4*, an additional three 2 (involvement type [sexual, emotional]) X 2 (sex [male, female]) X 2 (partner type [primary, secondary]) mixed-model ANOVAs compared CNM participants’ responses for their primary and secondary partners (“primary-secondary”). See Table 4 for means and standard deviations for monogamous, primary, and secondary partner scores.

Confidence

In comparing monogamous participants’ reports on their partners versus CNM participants’ reports on their primary partners, there were main effects for involvement type, $F(1, 685) = 11.80, p = .001, \eta^2 = 0.02$, and relationship type, $F(1, 685) = 9.74, p = .002, \eta^2 = 0.01$ which was moderated by a significant interaction, $F(1, 685) = 5.88, p = .016, \eta^2 = 0.002$. Monogamous individuals reported the greater confidence that their partner would never emotionally cheat on them ($M = 9.17, SD = 2.15$) compared to CNM participants ($M = 8.02, SD = 2.37$), $t(685) = 4.75, p < .001$. There was a marginally significant difference for confidence that their partner would never sexually cheat (mono: $M = 9.47, SD = 2.26$; CNM: $M = 8.96, SD = 2.40$), $t(685) = 1.93, p = .056$. There were no other significant main effects or interactions (all $ps > .117$). Similarly, in comparing monogamous participants’ reports on their partners versus CNM participants’ reports on their secondary partners, there was a main effect for involvement type, $F(1, 685) = 4.37, p = .037, \eta^2 = .006$, which was moderated by a three-way interaction, $F(1, 685) = 4.62, p = .032, \eta^2 = 0.007$. Women in CNM relationships ($M = 8.65, SD = 3.10$) were more confident than men ($M = 8.31, SD = 3.28$) that their secondary partner would never sexually cheat on them, though this post hoc test failed to reach significance, $t(82) = 1.36, p = .178$. There were no other significant main effects or interactions (all $ps > .212$). Finally, there was a main effect for involvement type when comparing CNM participants’ reports on their primary versus their secondary partners, $F(1, 91) = 5.78, p = .018, \eta^2 = .05$. CNM participants were more confident that their partners would never sexually cheat ($M = 8.92, SD = 2.40$) than emotionally cheat ($M = 8.28, SD = 2.37$), $t(93) = 4.46, p < .001$. There was also a main effect for partner type, $F(1,$

$91) = 10.60, p = .002, \eta^2 = .10$. Specifically, CNM participants were more confident that their primary ($M = 8.96, SD = 2.15$) compared to their secondary partner ($M = 8.02, SD = 2.93$), $t(93) = 3.27, p = .002$, would never cheat on them. There were no other significant main effects or interactions (all $ps > .080$).

Importance

For monogamous-primary comparisons, there were main effects of sex, $F(1, 683) = 16.00, p < .001, \eta^2 = .05$, and relationship type, $F(1, 683) = 350.26, p < .001, \eta^2 = .34$, and a significant interaction between sex and relationship type, $F(1, 683) = 5.03, p = .025, \eta^2 = .01$. Women in monogamous relationships ($M = 8.51, SD = 1.28$) rated the importance that their partner never cheats as more important than men did ($M = 7.79, SD = 2.08$), $t(591) = 4.96, p < .001$, whereas there was no significant difference within CNM relationships (men: $M = 5.20, SD = 2.46$; women: $M = 5.54, SD = 2.34$), $t(82) = 0.60, p = .548$. There was also a significant three-way interaction, $F(1, 683) = 7.17, p = .008, \eta^2 = .01$. Within CNM relationships, women reported that it was more important that their primary partner never sexually cheated ($M = 6.24, SD = 2.77$) compared to emotionally cheated ($M = 4.85, SD = 2.66$), $t(58) = 3.90, p < .001$. For men, this was not the case (sexual: $M = 5.04, SD = 3.12$; emotional: $M = 5.36, SD = 2.55$), $t(24) = 0.56, p = .582$. Likewise, for monogamous-secondary comparisons, there were main effects of sex, $F(1, 683) = 16.35, p < .001, \eta^2 = .05$, and relationship type, $F(1, 683) = 534.92, p < .001, \eta^2 = .44$, and a significant interaction between sex and relationship type, $F(1, 683) = 10.34, p = .001, \eta^2 = .02$, each of which mirrored the findings for monogamous-primary ratings. However, there was no three-way interaction and no other significant main effects or interactions (all $ps > .154$).

For primary-secondary comparisons, there was a main effect for partner type, $F(1, 91) = 12.64, p = .001, \eta^2 = .122$. CNM participants reported that it was more important that their primary partner ($M = 5.37, SD = 2.45$) never cheats on them than their secondary partner ($M = 3.83, SD = 2.75$). There were no other significant main effects or interactions (all $ps > .131$).

Distress

Monogamous-primary comparisons revealed main effects for sex, $F(1, 684) = 19.70, p < .001, \eta^2 = .05$, and relationship type, $F(1, 684) = 256.90, p < .001, \eta^2 = .27$, and a two-way interaction between them, $F(1, 684) = 11.15, p = .001, \eta^2 = .02$. Women in monogamous relationships ($M = 8.31, SD = 1.51$) reported the greater distress than men ($M = 7.58, SD = 2.07$), $t(593) = 4.55, p < .001$, when imagining their partner violating consent. Monogamous-secondary comparisons

revealed similar main effects of sex, $F(1, 685) = 18.89$, $p < .001$, $\eta^2 = .05$, and relationship type, $F(1, 685) = 399.48$, $p < .001$, $\eta^2 = .37$, and a significant interaction between sex and relationship type, $F(1, 685) = 13.80$, $p < .001$, $\eta^2 = .02$. Lastly, primary-secondary comparisons yielded a main effect of partner type, $F(1, 90) = 10.18$, $p = .002$, $\eta^2 = .10$. CNM participants reported greater distress imagining their primary partner ($M = 5.48$, $SD = 2.42$) violating consent than their secondary partner ($M = 4.04$, $SD = 2.75$). There were no other significant main effects or interactions for monogamous-primary (all $ps > .378$), monogamous-secondary (all $ps > .057$), or primary-secondary (all $ps > .202$) comparisons.

Multidimensional Jealousy Scale

Following Pfeiffer and Wong (1989), responses were summed into three jealousy facets: cognitive, behavioral, and emotional jealousy. To further test $H3$, two 3 (jealousy type [cognitive, behavioral, emotional]) \times 2 (sex [male, female]) \times 2 (relationship type [monogamous, CNM]) mixed-model ANOVAs compared scores on each facet between men and women within monogamous and CNM relationships (see Table 4). For both monogamous-primary and monogamous-secondary comparisons, there were main effects for jealousy type, $F(2, 1208) = 429.75$, $p < .001$, $\eta^2 = .416$. Scores for emotional jealousy ($M = 36.71$, $SD = 10.78$) were significantly higher than both behavioral ($M = 12.47$, $SD = 5.70$, $p < .001$) and cognitive jealousy ($M = 9.60$, $SD = 5.61$, $p < .001$). Likewise, behavioral jealousy was significantly greater than cognitive jealousy ($p < .001$). There were also main effects for sex, $F(1, 604) = 13.22$, $p < .001$, $\eta^2 = .04$, and relationship type, $F(1, 604) = 88.36$, $p < .001$, $\eta^2 = .128$, which were moderated by significant two-way interactions with jealousy type (relationship type: $F(2, 1208) = 5.47$, $p < .001$, $\eta^2 = .02$; sex: $F(2, 1208) = 328.91$, $p < .001$, $\eta^2 = .35$). Monogamous participants reported greater emotional jealousy toward their partner ($M = 40.88$, $SD = 6.49$) than CNM participants reported toward their primary ($M = 23.59$, $SD = 11.24$; $t(662) = 24.01$, $p < .001$) and secondary ($M = 23.56$, $SD = 11.16$; $t(660) = 24.05$, $p < .001$) partners. However, CNM participants reported greater cognitive jealousy toward both primary ($M = 12.24$, $SD = 5.45$, $t(667) = -7.12$, $p < .001$) and secondary ($M = 12.83$, $SD = 6.26$; $t(666) = -8.01$, $p < .001$) partners compared to monogamous participants toward their partners ($M = 8.76$, $SD = 5.37$). There were no differences between monogamous and CNM participants in behavioral jealousy (monogamous vs. primary: $t(648) = -0.52$, $p = .603$; monogamous vs. secondary: $t(648) = 0.82$, $p = .413$). To assess $H4$, we compared primary with secondary partner ratings, using a 3 (jealousy type [cognitive, behavioral, emotional]) \times 2 (sex [male, female]) \times 2 (partner type [primary, secondary]) mixed-model ANOVA. This revealed no

significant differences in cognitive, behavioral, or emotional jealousy (all $ps > .111$).

Extra-pair Scenarios: Compersion

Participants' forced-choice enjoyment/pleasure reactions to a partner's consensual and non-consensual sexual and emotional extradyadic involvement were compared across (1) men and women, and (2) monogamous and CNM relationships using six chi-square tests of independence (see Table 3). Overall, there were significant gender differences in enjoyment of a partner's consensual emotional and sexual involvement for monogamous, $\chi^2(1, N = 522) = 16.40$, $p < .001$, and primary, $\chi^2(1, N = 157) = 9.31$, $p = .010$, but not secondary, $\chi^2(1, N = 155) = 1.81$, $p = .405$, partners. By contrast, for non-consensual scenarios there were significant gender differences for monogamous, $\chi^2(1, N = 516) = 6.49$, $p = .011$, but not primary, $\chi^2(1, N = 152) = 0.52$, $p = .771$, or secondary, $\chi^2(1, N = 154) = 0.30$, $p = .861$, partners. Post hoc chi-square goodness-of-fit analyses revealed that monogamous men were more likely to report enjoying their partner's emotional versus sexual involvement for both consensual, $\chi^2(1, N = 143) = 9.57$, $p = .002$, and non-consensual, $\chi^2(1, N = 138) = 8.85$, $p = .006$, scenarios. By contrast, monogamous women were more likely to report enjoying their partner's sexual versus emotional involvement for consensual, $\chi^2(1, N = 404) = 10.70$, $p < .001$, but not non-consensual, $\chi^2(1, N = 404) = 0.91$, $p = .341$, scenarios. Despite the significant omnibus test, these analyses yielded no significant differences among CNM primary partners for

Table 3 Percent and count frequencies with which men and women in monogamous and CNM relationships selected that their partner's sexual versus emotional extra-pair involvement would be more enjoyable/pleasurable across consensual and non-consensual scenarios

Enjoyment/pleasure	Consensual		Non-consensual	
	Emotional	Sexual	Emotional	Sexual
Monogamous				
Male	79 (64.2%)	44 (35.8%)	75 (62.5%)	45 (37.5%)
Female	173 (43.4%)	226 (56.6%)	195 (49.2%)	201 (50.8%)
CNM primary				
Male	24 (54.5%)	20 (45.5%)	20 (44.2%)	24 (55.8%)
Female	38 (36.9%)	65 (63.1%)	39 (39.0%)	61 (61%)
CNM secondary				
Male	20 (43.2%)	25 (56.8%)	20 (44.2%)	24 (55.8%)
Female	40 (38.8%)	63 (61.2%)	40 (39.6%)	61 (60.4%)

Table 4 Mean scores on the MJS, jealousy measures, and MRI-SF for monogamous and CNM partners

	Monogamous				CNM primary				CNM secondary			
	Men		Women		Men		Women		Men		Women	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
MJS scores												
Cognitive	8.87	5.37	8.73	5.38	11.89	4.94	12.52	5.85	12.64	6.37	12.82	6.40
Behavioral	10.88	5.41	12.80	5.92	11.43	4.55	13.28	5.05	11.77	6.83	12.14	5.15
Emotional	38.62	7.76	41.57	5.89	20.80	10.14	25.46	11.55	21.05	10.3	25.33	11.41
Jealousy measures												
Sexual involvement												
Confidence	9.54	2.14	9.58	2.16	9.16	2.39	9.09	2.69	8.31	3.28	8.65	3.10
Importance	8.43	1.68	8.79	0.78	5.00	3.09	6.49	2.81	3.78	2.98	5.45	3.25
Distress	8.17	1.75	8.53	1.31	4.77	2.76	6.31	2.66	3.76	2.57	5.56	3.09
Emotional involvement												
Confidence	9.12	2.03	9.34	2.05	8.64	2.40	8.08	2.72	8.07	3.24	7.75	2.97
Importance	8.15	1.58	8.61	1.04	4.98	2.69	5.73	2.86	3.73	2.67	5.10	3.24
Distress	7.90	1.69	8.42	1.35	4.73	2.80	6.28	2.73	3.60	2.68	5.41	3.19
MRI-SF scores												
Total	39.57	16.41	41.79	14.87	31.56	18.61	32.36	11.02	22.24	11.92	28.07	13.10

consensual (men: $\chi^2(1, N=23)=2.13, p=.144$; women: $\chi^2(1, N=68)=0.24, p=.628$) nor non-consensual (men: $\chi^2(1, N=23)=2.13, p=.144$; women: $\chi^2(1, N=65)=1.86, p=.172$) scenarios.

Mate Retention

To replicate previously documented findings (Mogilski et al., 2017), we compared scores on the MRI-SF between monogamous and primary partners, between monogamous and secondary partners, and between primary and secondary partners using two independent *t*-tests and one repeated-measure *t* test, respectively. See Table 4 for means and standard deviations for monogamous, primary, and secondary partner scores. Consistent with previous findings and supporting *H6*, monogamous participants reported engaging in more mate retention behaviors with their partner ($M=40.04, SD=15.30$) than CNM participants reported for their primary ($M=32.76, SD=14.51$; $t(678)=4.29, p<.001, d=0.49$) and secondary ($M=22.85, SD=12.64$; $t(678)=10.30, p<.001, d=1.22$) partners. Likewise, CNM participants reported performing more mate retention behaviors with their primary partner ($M=32.76, SD=14.51$) than with their secondary partner ($M=22.85, SD=12.64$; $t(93)=7.04, p<.001, d=0.73$).

Discussion

Jealousy

On the MJS, monogamous individuals reported experiencing greater emotional jealousy than CNM participants reported about either their primary or secondary partners. This supports *H3* and is consistent with accounts of CNM individuals experiencing fewer feelings of jealousy or otherwise taking precautions to attenuate the distress caused by a partner's extradyadic involvement (Jackson & Scott, 2004; McLean, 2004; Visser & McDonald, 2007; Wosick-Correa, 2010). However, contrary to *H3*, CNM participants reported greater cognitive jealousy than monogamous individuals toward both primary and secondary partners, suggesting that they spend more time thinking jealous thoughts and perhaps rationalizing their feelings of jealousy. Compared to emotional jealousy, which measures affective reactions to imagined partner extra-pair involvement, cognitive jealousy measures how often an individual processes and appraises their partner's actions (e.g., "I suspect that X is secretly [without my consent] being physically intimate with someone they find attractive"), interest in extra-pair partners (e.g., "I suspect that X may be attracted to someone else"), and

desirability to third-parties (e.g., “I think that some members of the opposite sex may be romantically interested in X”). Frequent and open communication about extradyadic experiences and expectations are reportedly common within CNM relationships (Deri, 2015; Sheff, 2013; Wosick-Correa, 2010). Thus, it is likely that the MJS recorded the consequences of this habit; CNM individuals may spend more time processing a partner’s extra-pair relationships (i.e., higher cognitive jealousy), but experience less distress about these thoughts (i.e., lower emotional jealousy) as a result.

Although this interpretation is somewhat speculative, it is consistent with research showing that individuals who non-retributively communicate with their partner about their jealousy report greater relationship satisfaction (Andersen, Eloy, Guerrero, & Spitzberg, 1995). Moreover, rumination over a partner’s extradyadic involvement appears to contribute to cognitive jealousy’s deleterious effect on relationship satisfaction (Elphinston, Feeney, Noller, Connor, & Fitzgerald, 2013), and mindful awareness of jealous rumination and its antecedents is effective in treating clinical jealousy (Kellett & Totterdell, 2013; see also Leahy & Tirch, 2008). Other evidence indicates that cognitive reframing is successful in altering behavioral responses to a partner’s extra-pair involvement. For example, Maldonado, DiLillo, and Hoffman (2015) had college students listen to audio recordings of two individuals flirting and asked them to imagine that their partner was one of them. They were then instructed to either reappraise the scene less negatively, suppress their emotions, or were given no instructions. Individuals asked to reappraise the scenarios less negatively engaged in fewer aggressive verbalizations (e.g., insulting or demeaning their partner) after each scene compared to those asked to do nothing or to suppress their feelings. This suggests that reinterpreting a partner’s emotional or sexual involvement with another person more positively may help mitigate certain outcomes of jealousy. Whether this is prudent is debatable, as jealousy is integral to avoiding the undesirable consequences of a partner’s extradyadic interactions (e.g., cuckoldry, partner divestment; Buss & Abrams, 2017). However, as Buss and Abrams note, it is important to distinguish personal well-being from reproductive well-being. Although jealousy, from an evolutionary perspective, would have ancestrally deterred men from raising unrelated offspring or motivated women to protect their partner’s in-pair investment, these reactions may be maladaptive for achieving personal or relationship satisfaction if the adaptive problems they recurrently solved are unimportant or irrelevant to an individual’s current life goals or mating aspirations. Conscientious attention to the concerns that prompt jealousy (e.g., a partner’s sexual contact or emotional attachment with another person), and inter-partner communication about these concerns, may inhibit romantic jealousy.

Cognitive reappraisal of jealousy may also explain why, contrary to *H1*, there were no gender differences in CNM participants’ reactions to the forced-choice extradyadic involvement scenarios. Gender differences in responses to sexual and emotional extra-pair involvement are stronger among those who experience chronic jealousy (Miller & Maner, 2009). For individuals who generally feel less upset or distressed by their partner’s extradyadic behavior (i.e., those in CNM relationships), the distinction between sexual and emotional involvement may be less salient compared to those who are more vigilant and restrictive of their partner’s behavior. Future research should assess this possibility further. However, it is worth noting that not all research finds a gender difference in jealousy (Dijkstra et al., 2001; Frederick & Fales, 2016; Howard & Perilloux, 2017; Hughes et al., 2004). Many of these studies examined gender differences among sexual minorities (e.g., lesbians), and so it is possible that gender differences in jealousy only apply to certain groups (but see Bailey et al., 1994; de Souza et al., 2006; Sagarin et al., 2003).

Consent

Contrary to our prediction (*H2*), specifying consent did not attenuate gender-typical jealousy reactions to imagining a partner’s sexual and emotional extradyadic involvement. Unexpectedly, women in monogamous relationships more frequently reported greater distress imagining their partner’s emotional involvement for consensual, but not non-consensual, scenarios. One possible explanation is that under circumstances in which partners have explicitly agreed to remain exclusive (i.e., monogamy), both a partner’s sexual and emotional involvement with another person indicate the same problem: partner dishonesty. In men, dishonesty predicts lower self-control in the presence of attractive women (Chiou, Wu, & Cheng, 2017), and both men and women rate a partner’s warmth/trustworthiness more highly than other important traits (e.g., intelligence, status/resources, physical attractiveness), particularly if they are currently in a romantic relationship (Katsena & Dimdins, 2015). Indeed, a long-term partner’s history of sexual fidelity is prioritized over other valuable mate characteristics (Mogilski, Wade, & Welling, 2014), and married couples mate assortatively by their cooperativeness and generosity with others (Tognetti, Berticat, Raymond, & Faurie, 2014). If a partner violates their relationship agreement via extradyadic sexual or emotional involvement, their willingness to deceive a romantic partner or otherwise renege on a promise may be unattractive and thereby render the type of extra-pair relationship irrelevant. By contrast, monogamous women may be relatively more upset by a consensual emotional relationship insofar as it indicates that a partner was forthright (i.e., he sought to communicate and get permission first), yet expressed a

genuine romantic attraction to another woman. Consent may relieve the threat of partner dishonesty, though his attraction to someone else may still indicate a desire to share resources (e.g., time, money, support) with another person.

Consent may alter the parameters by which individuals evaluate emotional or sexual extra-pair behavior as a cue of partner dishonesty or a partner's propensity to allocate resources toward an extradyadic relationship. It is possible that communicating about a partner's desire for sexual contact with another person and establishing agreements about permissible behaviors reduces the perceived likelihood that one's partner will entirely defect from the relationship. In other words, if extradyadic sexual contact is not discussed (i.e., is non-consensual), it is unclear whether one's partner intends to only have sex with someone else or additionally invest personal time and resources, or if their intention is to leave the relationship entirely. By comparison, consent may imply that a partner explicitly expressed a desire for sexual contact, but not emotional involvement (or vice versa). Women may thereby be more upset by emotional extra-pair involvement under conditions of consent because it is clearer that their partner desires either a sexual or emotional relationship, whereas a partner's motivation for non-consensual extradyadic involvement is relatively more ambiguous. Men, on the other hand, may be more upset by sexual extra-pair involvement regardless of consent insofar as a partner's extradyadic sexual behavior is a reliable indicator of potential cuckoldry and does not necessarily entail relationship divestment. Future research should examine whether precautions that help prevent cuckoldry (e.g., condom use) attenuate the jealousy caused by a partner's extradyadic sexual contact, particularly for men.

Continuous measures of participants' attitudes toward a partner's violation of consent (i.e., their confidence that it will not occur, the importance of whether it does occur, and the distress that it would cause) revealed complementary patterns. Monogamous individuals reported more confidence that their partner would not become emotionally involved in an extra-pair relationship without their consent, and marginally greater confidence that they would not form a sexual relationship without consent, compared to CNM participants. In interpreting these findings, it is important to emphasize that these items measured responses to non-consent (e.g., "Your partner has sexual intercourse or falls in love with someone you would not want or approve of them falling in love with"). Therefore, our data suggest that monogamous individuals report more confidence that a mate will never form an extradyadic relationship in a manner which circumvents their ability to regulate a partner's behavior (i.e., partner vetoing). Partner vetoing is frequently mentioned within CNM literature (e.g., van Tol, 2017; Weitzman, 2006; Wosick-Correa, 2010) and refers to a partner's authority to limit another's interactions with extra-pair partners. Monogamous

individuals may report more confidence that their partner will not become emotionally or sexually involved without consent insofar as monogamous relationships do not negotiate the ability to veto a partner's extradyadic behavior. By comparison, CNM individuals may be more likely to compromise exclusivity and negotiate extradyadic partners, thereby permitting their partner's extradyadic behavior despite some reservations (i.e., lower confidence).

Interestingly, men in CNM relationships were less confident than women that their secondary partner would never become sexually involved without their consent. This may reflect men's sensitivity to the relative effort they invest into primary and secondary partners. Women who are afforded fewer social or material resources relative to another partner may be more likely to mate switch if the opportunity arises (Buss et al., 2017), and may signal this intent to their current partner (see Schützwohl, 2005). However, this interpretation requires more evidential support and should be the focus of further study.

Importantly, we replicated prior research documenting differences among monogamous and CNM individuals' mate guarding behaviors (Mogilski et al., 2017; see also Pashler & Wagenmakers, 2012). In support of *H6*, monogamous participants reported more frequent use of mate guarding behavior than CNM participants. Furthermore, CNM individuals mate guard their primary versus secondary partner more frequently. Supporting *H5*, primary-secondary comparisons were also consistent with prior research (Balzarini et al., 2017; Mogilski et al., 2017): CNM participants reported greater distress imagining their primary compared to secondary partner's extra-pair involvement. However, for fidelity importance ratings, women in CNM relationships reported that it was more important that their primary partners never became sexually involved without their consent compared to emotionally involved, whereas men did not. It is uncertain why this pattern emerged, though it may be an artifact of the sample demographics. All men within this sample reported that their primary and secondary partners were both women. It is possible that the characteristics that predict whether a man is capable of attracting more than one female partner (i.e., his mate value; e.g., social status, income, generosity, etc.) indicate ease in replacing either of his partners with a mate of comparable value. Indeed, CNM men's ratings of consent violation importance and distress were lower than monogamous participants' and CNM women's ratings. Future research should compare CNM groups that vary by their sex ratio (e.g., male-male-female vs. female-female-male triads). This may reveal strategic shifts in intrasexual competitiveness and affiliation among men and women within different CNM relationships. This research may also assist therapists in resolving interpersonal conflict within CNM relationships that arise from the unique

differences between men's and women's intrasexual competitive styles (Campbell, 2013; Fisher, Garcia, & Sokol Chang, 2013).

Compersion

For monogamous participants, we found that men were more likely than women to select that they would find pleasure in their partner falling in love with another person, whereas women were more likely than men to select that their partner's extradyadic sexual behavior would be more enjoyable. This is complementary to prior research on sexual and emotional extra-pair involvement (Buss et al., 1992; Sagarin et al., 2012) and is the first account of sex differences in men's and women's self-reported enjoyment of their partner's extradyadic behavior (i.e., compersion). Although enjoying a partner's flirtation, emotional investment, or sexual contact with another person may seem ineffective in preventing partner defection or cuckoldry, it is possible that compersion is experienced when a partner's extradyadic behavior generates in-pair benefits. For example, consenting to a sexual or romantic relationship with another person may satisfy a partner's desire for sexual novelty or an expansive interpersonal network, thereby enhancing their relationship satisfaction. Likewise, a partner's extra-pair relationships may afford sexual or romantic opportunities to both partners, particularly among non-heterosexuals. In this sense, compersion may not be the opposite of jealousy, but rather the satisfaction of provisioning a desirable resource to a valuable mate. Furthermore, if a partner's extradyadic involvement is mutually rewarding to both in-pair partners, compersion may be easier to experience.

Gender differences in emotional and sexual jealousy were isolated to monogamous responses (i.e., women were more concerned with emotional extra-pair involvement and men with sexual extra-pair involvement) and non-consensual scenarios. By comparison, gender differences in consensual sexual and emotional compersion were found for both monogamous and primary, but not secondary, partner ratings. These men were more likely to enjoy their monogamous or primary partner's emotional compared to sexual involvement for both consensual and non-consensual scenarios. Women, on the other hand, were more likely to enjoy their monogamous or primary partner's sexual compared to emotional involvement, but only if she had consented. This suggests that even when extra-pair mating is approved by the participant, men may find their partner's extradyadic sexual encounters more aversive than their emotional attachments (at least for monogamous and primary partnerships). Likewise, women may be relatively more likely to acquiesce to their partner's sexual non-exclusivity. Importantly, these effects were stronger among monogamous individuals' ratings than CNM individuals' ratings of their primary partner.

Limitations and Future Directions

The current research opens considerable avenues for future work on CNM relationships. Accumulating evidence suggests that individuals within CNM relationships tend to report being non-heterosexual more often than those in monogamous relationships (Balzarini et al., 2017; Hauptert et al., 2017; McLean, 2004; Mogilski et al., 2017; van Anders, Hamilton, & Watson, 2007). It may be revealing to distinguish between differences that are due to aspects of being in a non-heterosexual relationship from the unique qualities of CNM relationships (i.e., having multiple concurrent sexual or emotional partners, regardless of sexual orientation). Indeed, reactions to sexual and emotional jealousy are more similar among non-heterosexual men and women compared to their heterosexual counterparts (Bailey et al., 1994; Howard & Perilloux, 2017). Drawing a distinction between these two sources of variation may reveal which features of sexual orientation or CNM relationships contribute to non-normative experiences of jealousy. For example, sexual orientation may moderate which types of interpersonal problems men and women typically experience within a polyamorous relationship (i.e., which categories of conflict or compromise cause the most distress or are relatively easy to overcome [e.g., sexual vs. emotional extradyadic involvement]; see also Sagarin et al., 2003). Under conditions in which there is little demand for cross-sex compromise (e.g., all-lesbian or gay triads), one should expect fewer relationship compromises about topics that are more often initiated by the unrepresented sex. For instance, extradyadic emotional investment (typically a more salient cue for women; Buss et al., 1992) may be more distressing and/or have greater importance within all-lesbian compared to mixed-sex and gay relationships, whereas sexual contact may be less salient. By contrast, rules and agreements that regulate sexual involvement may feature more prominently in gay compared to mixed-sex or all-lesbian relationships.

Future research should also separate scenarios into extradyadic involvement with men or women. Insofar as shared romantic interest in an extra-pair partner facilitates sexual contact, men may enjoy the thought of their female partner becoming emotionally intimate with another female partner (see Apostolou, 2016). By contrast, her emotional or sexual involvement with another man may be relatively less enjoyable. Likewise, women may find their partner's sexual involvement more enjoyable insofar as provisioning extradyadic sexual contact elicits resources or commitment from a partner, and where deep emotional connection risks in-pair investment. Although this is speculative, future research should address how men and women respond to the thought of their partner consenting to sexual or emotional involvement with an extra-pair and vary who has this permission (i.e., one, the other, or both) and the sex of the extra-pair mate. Research may also benefit

from examining how sexual double standards about sexual promiscuity (Crawford & Popp, 2003; Vrangalova, Bukberg, & Rieger, 2014) influence men's and women's perceptions of their partner's extradyadic behavior within monogamous and CNM relationship. Women may be relatively more distressed by their partner's (or their own) extra-pair relationships insofar as predominant social norms stigmatize women who share their partner or establish multiple concurrent romantic relationships. Indeed, Sexual Script Theory posits that sexual encounters are learned interactions that follow a predictable progression (i.e., "scripts"; e.g., Frith & Kitzinger, 2001). It is possible that our participants are responding according to learned social rules, whereby women are taught to be more focused on emotional aspects of relationships and men on more sexual aspects. However, there were no gender differences with respect to jealousy among CNM participants, suggesting that such scripts may differ between CNM and monogamous individuals (as opposed to differing by gender). Future research should investigate how learned sexual behaviors influence the variables investigated here among CNM and monogamous participants.

Researchers may also consider underlying hormonal mediators of jealousy and mate guarding behavior. Individuals within CNM relationships tend to have higher salivary testosterone than monogamous individuals and single women (van Anders et al., 2007), which may reflect greater romantic competitiveness (van Anders & Watson, 2006). Examining oxytocin within these relationships may similarly reveal how individuals regulate jealousy and cope with perceived relationship threats. Recent work (Grebe et al., 2017) finds that oxytocin increases with greater perceived discrepancy between self and partner relationship involvement, suggesting that oxytocin upregulates investment into valuable, at-risk relationships. Understanding how individuals within CNM relationships experience hormonal shifts in response to a partner's consensual and non-consensual extradyadic behavior may further distinguish how monogamous and CNM individuals process and respond to jealousy.

The current work was somewhat limited in that no inventory currently exists to measure individual differences in compersion. Certainly, a psychometrically validated scale for measuring compersion would be valuable for understanding its underlying factor structure and association with well-established psychological measures of personality, jealousy, and emotion regulation. It is also possible that participants rated these scenarios according to whichever behavior would cause less suffering (i.e., they chose whichever scenario would be less aversive). However, our data still provide some insight into how compersion may initially be formed. For example, people may have an easier time enjoying their partner's sexual or emotional involvement with someone else if

they have less aversion to it. Future research should attempt to distinguish lesser aversion from greater enjoyment and may benefit from the use of continuous measures of compersion. Research should also investigate the role of mutual consent in attenuating or otherwise altering feelings of jealousy and relationship dissatisfaction, or in enhancing experiences of compersion. This work could likely extend to other sexual minority groups such as members of the bondage-discipline-sadomasochism community, among whom explicit consent between sexual partners appears to be integral in generating positive experiences from interactions that may otherwise cause distress (e.g., consensual rape, public humiliation; Pitagora, 2013).

Furthermore, there are various CNM relationship configurations (Barker & Langdrige, 2010) for which the relational priority of each partner is either emphasized (i.e., primary-secondary) or deemphasized (e.g., poly triads, quads, and families; relationship anarchy). The primary/secondary model is commonly practiced, with estimates from a large representative sample showing that just over half of CNM individuals currently with two or more partners report this relationship structure (Balzarini et al., 2017). However, further work should examine jealousy within non-hierarchical CNM relationships (e.g., relationship anarchy; Nordgren, 2006) or within individuals who otherwise do not (or cannot) explicitly draw distinctions between their partners. An individual who perceives their partners to be equally valuable may afford relatively equal relational effort toward each—though, each may still fulfill different relationship needs (Mitchell et al., 2014).

Finally, a more nuanced investigation of which individual characteristics vary between CNM and monogamous individuals may help elaborate current theoretical models of CNM involvement. Life history theory (reviewed in Figueredo et al., 2006; see also Del Giudice, Gangestad, & Kaplan, 2016) provides an integrated framework for understanding individual variation in sexual, reproductive, parental, familial, and social behaviors across the life-span. Insofar as CNM is an alternative reproductive strategy (Mogilski et al., 2017) characterized by greater extradyadic partner involvement, individuals who practice CNM may pursue a relatively faster life history strategy wherein promiscuous mating hedges the costs of living within a relatively harsher or less predictable mating environment. Similarly, it is possible that the strategy an individual pursues (e.g., monogamy vs. CNM) is mediated by parenthood or intended parenthood status. Individuals attempting to become parents may, at least initially, prefer a single pair-bond characterized by a deep emotional bond with another person. Desiring this level of interpersonal investment from a partner may have facilitated a more equitable division of parental care for women (i.e., assisted in solving women's disproportionate minimum

investment in offspring; Trivers, 1972) or enhanced paternity certainty for men. By contrast, non-parents or individuals who do not plan to have children may not prioritize this level of commitment. Empirically documenting patterns of reproductive and parental behavior within the complex array of CNM parenting and childcare practices (see Goldfeder & Sheff, 2013; Sheff, 2011) from a life history perspective may yield novel insights into a relatively unexplored niche of human reproductive strategies. Such research may improve stigma management strategies (Conley, Matsick, Moors, & Ziegler, 2017) and reduce wrongful discrimination against individuals within CNM relationships (e.g., Rodrigues, Fasoli, Huic, & Lopes, 2018).

Conclusion

This study contributes to a growing body of work on CNM relationships (Balzarini et al., 2017; Brandon, 2016; Jonason, & Balzarini, 2016; Mogilski et al., 2017), and underscores how the synthesis of evolutionary theory with relationship research (e.g., Durante, Eastwick, Finkel, Gangestad, & Simpson, 2016) may reveal novel variation in the strategies that humans employ to fulfill their mating motivations. Recent work (Conley et al., 2017) outlines the value of shifting CNM research from studies of its viability, to studies of the relationship processes that permit individuals to pursue happy and healthy relationships. We echo this view and add that research studying the evolved psychological processes underlying humans' strategically pluralistic mating psychology (see Gangestad & Simpson, 2000) would benefit from a careful examination of how sexual minorities organize their romantic relationships. Dialogue that focuses on the superiority of CNM versus monogamy (or vice versa) is unproductive; rather, researchers should continually compare predictive models for monogamous and CNM romances to identify which relationship features provide their respective advantages to satisfaction, trust, communication, paternity certainty, and interpersonal investment within the array of circumstances and adaptive problems that characterize human mating, and given individual differences across participants. Similar research on low-frequency sexual behaviors has provided evidentiary support for policies favoring social inclusion and equitable treatment of sexual minorities (Bailey et al., 2016). A theory-driven and empirically rigorous program of research on CNM relationships has the potential to reveal novel patterns of human mating behavior, provide informational support to relationship advisors and clinicians, and inform social policies that regulate sexual behavior.

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