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## Examining Jealousy in Mixed-Orientation Relationships: An Experimental Vignette Study

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Examining Jealousy in Mixed-Orientation Relationships:

An Experimental Vignette Study

Madison M. Glende

A Thesis Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Arts

In

Clinical Psychology

Minnesota State University, Mankato

Mankato, Minnesota

May 2022

May 5<sup>th</sup>, 2022

Examining Jealousy in Mixed-Orientation Relationships: An Experimental Vignette Study

Madison M. Glende

This thesis has been examined and approved by the following members of the student's committee.

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Advisor

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Committee Member

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Abstract

Experiences of romantic jealousy, measured by ratings of emotional and sexual jealousy, in same-orientation and mixed-orientation hypothetical relationships were examined among 83 heterosexual cisgender women, 18 years of age or older, who are students at Minnesota State University, Mankato. Surveys were distributed through SONA systems and were available to students enrolled in at least one psychology course at the time of participation. Participants were randomly assigned to one of four possible vignettes, of which followed a 2 (partner's sexual orientation) x 2 (gender of partner's friend) factorial design, and were instructed to read and imagine themselves in the presented hypothetical relationship. Then, they were asked to read five brief sub-scenarios regarding interactions between their hypothetical partner and his friend, and were instructed to rate how emotionally and sexually jealous they would feel in response to each sub-scenario on a Likert-type scale. In a vignette, the partner's sexual orientation was either unspecified / presumed heterosexual or specified as bisexual, and their friend was either described as a man or a woman. The results indicate that heterosexual women experienced significantly higher emotional and sexual jealousy in vignettes where their partner's friend was a woman, regardless of their partner's sexual orientation, and experienced significantly higher emotional jealousy in vignettes in which their partner was bisexual, regardless of the gender of their partner's friend. Overall, these findings allude to a potential causal mechanism behind heterosexual women's negative attitudes toward dating and being intimate with bisexual men, as established by past research.

*Keywords:* bisexuality, binegativity, romantic jealousy, emotional jealousy, sexual jealousy, mixed-orientation relationships.

Examining Jealousy in Mixed-Orientation Relationships:  
An Experimental Vignette Study

Bisexual individuals, as a minority group, experience unique challenges in their day-to-day lives. In particular, individuals who identify as bisexual experience what has been termed binegativity. Binegativity is a form of discrimination that involves biphobia, or an aversion to or fear of bisexuality and bisexual individuals, and biersure, which is the dismissal of bisexuality as a valid and existent sexual identity (Armstrong & Reissing, 2014; Crofford, 2018; Ochs, 1996). Additionally, bisexual individuals experience double discrimination, in which binegativity is directed at them from the broader heterosexual and heteronormative culture, as well as from non-bisexual individuals in the LGBTQ+ community itself (Hayfield et al., 2018; Ochs, 1996; Turrell et al., 2017; Welzer-Lang, 2008).

Some common binegative beliefs are that bisexual individuals are confused about their actual sexual orientation and are only temporarily identifying as bisexual, that they are hypersexual and more likely to contract and spread sexually transmitted infections (STIs), and that they are incapable of committing to a monogamous relationship (Anderson et al., 2015; Armstrong & Reissing, 2014; Hayfield et al., 2018; Klesse, 2011). Relationships and dating tend to be common themes among many of these binegative beliefs (Hayfield et al., 2018). Due largely in part to these binegative beliefs, bisexual individuals report difficulties finding and maintaining relationships (Anderson et al., 2015; Armstrong & Reissing, 2014; Hayfield et al., 2018). Additionally, according to the National Center for Injury Prevention and Control (NCIPC; 2010), bisexual individuals are more likely than individuals of other sexual orientations to experience various forms of intimate partner violence, such as stalking, physical violence, and rape. In particular, about 61% of bisexual women and 37% of bisexual men surveyed reported

these experiences, more than individuals surveyed of any other sexual orientation (NCIPC, 2010; Turell et al., 2017).

### **The Minority Stress Model**

The minority stress model, as detailed by Meyer (2003), theorizes that individuals with marginalized sexual orientations (i.e., any non-heterosexual orientation) endure a plethora of unique stressors tied to their identities. One such stressor that is hypothesized to contribute significantly to bisexual individuals' experience of minority stress is the double discrimination that they face throughout their lives, which results in feelings of what is referred to as bisexual invisibility (Meyer, 2003; Turell et al., 2017). Additionally, minority stress can result from internalized binegativity, feelings of having to constantly conceal or be cautious about revealing one's identity to others, and even anticipation of discrimination or rejection from others who are aware of their identity (Li et al., 2013; Meyer, 2003; Turell et al., 2017).

Over time this minority stress will compound, leading to adverse outcomes regarding bisexual individuals' physical and mental health (Li et al., 2013; Lim & Hewitt, 2018; Meyer, 2003; Turell et al., 2017). Individuals with marginalized sexual orientations, particularly bisexuals, in this case, are at an increased risk for developing mood disorders like depression and anxiety (Li et al.; Meyer, 2003; Mustanski et al., 2010; Turell et al., 2017). To counteract the negative effects minority stress can have on an individual's well-being, many LGBTQ+ individuals develop personal coping strategies and receive support from their communities, romantic partners, families, and friends. These can serve as protective factors, allowing individuals with marginalized sexual orientations to lead healthy lives despite the numerous stressors they face on a daily basis (Crofford, 2018; Li et al., 2013; Meyer, 2015). For bisexual individuals, however, their experience of double discrimination and binegativity from

prospective or current romantic partners can serve as a barrier to resilience and receiving adequate social connection and support.

### **Relationships and Dating**

Monogamous relationships can either be same-orientation, in which both partners share the same sexual orientation, or mixed-orientation, in which the partners do not share the same sexual orientation (Crofford, 2018; Vencill et al., 2018; Vencill & Wiljamaa, 2016). We typically see same-orientation relationships as either two gay, lesbian, or straight partners. It is less common, however, to see bisexual individuals in same-orientation relationships. Rather, what is more likely is a mixed-orientation relationship, in which the bisexual partner is dating an individual with some other non-bisexual orientation, such as common monosexual identities like gay, lesbian, or straight.

Research suggests that individuals in mixed-orientation relationships encounter a variety of challenges that are rarely, if ever, experienced by individuals in same-orientation relationships (Buxton, 2001, 2004; Dobinson et al., 2005; Li et al., 2013). Fear of disclosure is a unique experience, in which the mere possibility of their partner reacting negatively to the disclosure of their sexual orientation can cause a bisexual individual considerable distress (Buxton, 2001, 2004; Dobinson et al., 2005). Additionally, disclosure periods themselves can also present challenges within mixed-orientation relationships. If the bisexual partner chooses to disclose their sexual orientation to their partner, there is a possibility that relational discord will develop if their partner holds strong feelings of betrayal or binegative beliefs, which could ultimately lead to the dissolution of the relationship (Buxton, 2001, 2004; Dobinson et al., 2005). These challenges are particularly relevant in cases where sexual orientation was not discussed prior to establishing the relationship. Lastly, bisexual partners in mixed-orientation relationships can

experience binegativity from individuals outside of their relationships, such as from family and friends who are aware of, disapproving of, or confused by their bisexual orientation (Buxton, 2001, 2004).

A handful of past studies have examined binegativity in dating and relationships through various surveys and experimental designs (Armstrong & Reissing, 2014; Breno & Galupo, 2008; Dyar et al., 2017; Gleason et al., 2018; Spalding & Peplau, 1997; Zivony & Lobel, 2014; Zivony & Saguy, 2018). Utilizing between-participant experimental designs, Spalding and Peplau (1997), Zivony and Lobel (2014), and Zivony and Saguy (2018) found that participants exhibited negative attitudes toward bisexual individuals, believing that they are more promiscuous and untrustworthy than individuals of other sexual orientations. Additionally, participants expressed beliefs that bisexual individuals are confused, in that they are only identifying as bisexual as a result of being in denial about being gay or lesbian due to internalized homophobia.

Dyar et al. (2017) discovered comparable evidence of bierasure. Participants predominantly believed bisexual individuals were likely to change their sexual orientation in the future. Additionally, they found that participants viewed bisexual individuals as less likely to be in committed monogamous relationships compared to heterosexual, gay, and lesbian individuals. Similarly, Breno and Galupo (2008) conducted a study in which participants were given a collection of curated profiles, including information on sexual orientation, and asked to act as marriage matchmakers. Results indicated that participants were significantly more likely to match bisexual profiles with other bisexual profiles, as opposed to matching bisexual profiles with other, non-bisexual profiles. These studies indirectly show a prominent aversion toward monogamous mixed-orientation relationships involving bisexual individuals. However, they did



not directly assess participants' attitudes toward being in relationships with bisexual individuals themselves.

Armstrong and Reissing (2014) examined participant interest in forming various types of relationships (e.g., casual sex, dating, and committed) with bisexual individuals of a different gender. Although male participants generally reported worrying their partner may "become lesbian" in dating and committed relationships, this was not as significant as it was for females. Female participants reported significantly negative attitudes toward forming relationships with bisexual men, which increased in negativity as the subjective "commitment level" of the relationship type increased. Additionally, both male and female participants reported that they would feel significantly more jealous or suspicious of their partner's male friends.

Gleason, Vencill, & Sprankle (2018) similarly examined attitudes toward being sexual with and dating bisexual individuals using a mock-dating site design. The results of their study supported the notion that heterosexual women held significantly more negative attitudes toward bisexual men than (1) heterosexual men held toward bisexual women and (2) gay men held toward bisexual men. The results indicated that heterosexual women may find bisexual men less masculine, as well as less sexually and romantically attractive or desirable, compared to heterosexual men.

### **Romantic Jealousy**

Common binegative beliefs, as discussed previously, are often rooted in assumptions of promiscuity, hypersexuality, identity instability, and untrustworthiness. These assumptions, at their core, may lead a person to believe that bisexual individuals will be less likely to maintain fidelity in a committed monogamous relationship, and thus a less desirable prospective partner. Romantic jealousy is a complex emotion resulting from the fear of infidelity in a valued

relationship, or a perceived or real threat of the relationship being lost to another individual (Holtzworth-Munroe et al. 1997; Puente and Cohen 2003; Ritchie & van Anders, 2015).

Romantic jealousy can be conceptualized as being composed of two more specific forms of jealousy: sexual jealousy and emotional jealousy (Guerrero et al., 2004). Sexual jealousy will often result from real or perceived threats of infidelity, or occurrences in which one or both partners in a dyad engage in sexual acts with an individual or individuals outside of a monogamous relationship or the boundaries set within the relationship (Guerrero et al., 2004, Ritchie & van Anders, 2015). Depending on what is agreed upon by both partners in the dyad, sexual acts that may be examples of infidelity can range anywhere from kissing to engaging in sexual intercourse with an individual outside of the relationship.

Emotional jealousy, on the other hand, will often result from real or perceived threats to the unique bond and emotional connection shared by partners in a dyad, particularly when one or both individuals fear that their partner is forming a meaningful connection with someone else, and that their partner will break off their relationship to pursue this new connection instead (Guerrero et al., 2004, Ritchie & van Anders, 2015). This form of jealousy is more difficult to conceptualize than that of sexual jealousy, as it is harder to define antecedents that may lead an individual to experience this emotion. Thus, actions, behaviors, or situations that elicit emotional jealousy will likely vary greatly from person to person. No study, to our knowledge, has conducted an experiment directly assessing romantic jealousy as a potential causal factor behind the negative attitudes many heterosexual women have toward forming committed relationships with bisexual men.

## **The Current Study**

The current study utilized a 2 (sexual orientation of male partner) x 2 (gender of male partner's high school friend) experimental design in order to assess heterosexual women's experiences of romantic jealousy with bisexual partners in a hypothetical mixed-orientation relationship structure. This study builds upon past research (Armstrong & Reissing, 2014; Gleason et al., 2018) examining binegativity and heterosexual women's willingness to date or engage in sexual behaviors with individuals who identify as bisexual. For the purposes of this study, however, romantic jealousy was assessed as a potential causal factor. The current study aimed to establish whether feelings of distrust, inferred through the degree of romantic jealousy experienced, are different in intensity between mixed-orientation and same-orientation relationships.

Participants were asked to complete a survey in which they had to imagine themselves in a hypothetical relationship with a man who was either of an unstated sexual orientation (which would likely be assumed heterosexual due to the influence of our broader heteronormative society) or bisexual. Additionally, participants were presented with five sub-scenarios in which their hypothetical boyfriend was engaged in various activities or circumstances with a friend of his friend from high school, who was randomly depicted as either a man or woman. They were then asked to rate how romantically jealous, further broken down into sexually jealous and emotionally jealous, they would feel in response to each sub-scenario. Accordingly, we expect that jealousy may differ depending on the perceived outcome of the situation and the individual's perception of the event. Our hypotheses were as follows:

*Hypothesis I:* Heterosexual women experience significantly higher emotional and sexual jealousy with a heterosexual partner and his friend who identifies as a woman than with a heterosexual partner and his friend who identifies as a man.

*Hypothesis II:* Heterosexual women experience significantly higher emotional and sexual jealousy with a (1) bisexual partner and his friend who identifies as a man than with a heterosexual partner, and a (2) bisexual partner and his friend who identifies as a woman than with a heterosexual partner.

*Hypothesis III:* Heterosexual women experience significantly higher romantic jealousy overall with a bisexual partner than with a heterosexual partner.

### **Method**

In order to expand upon the findings of Gleason et al. (2018), individuals were eligible to participate in the current study if they identified as heterosexual, cisgender women of at least 18 years or older. Of the 112 individuals that began the online survey, 29 participants (25.9%) were excluded from analyses due to failing to complete the entire survey, failing to meet all the eligibility requirements, or failing to pass the comprehension checks at the end of the survey. This resulted in a total sample size of 83 participants. Most participants identified as White ( $n = 60$ ; 72.3%), while 11 participants (13.3%) identified as Black or African American, 7 participants (8.4%) identified as Asian, 3 participants (3.6%) identified as Hispanic, and 2 participants (2.4%) identified as Other, specifying a mix of two or more racial and/or ethnic identities. Participants ranged in age from 18 to 42 years old ( $M = 20.42$ ). Lastly, of the 83 total participants, 39 participants (47%) were in a committed monogamous or non-monogamous relationship, 34 participants (41%) were single and not dating, and 10 participants (12%) were in a casual or non-committed relationship at the time of completing this study.

## **Design & Procedure**

After approval by the Institutional Review Board (IRB), the current study was made available to students at Minnesota State University, Mankato, through SONA systems, a platform used by the university's psychology department to recruit students for participation in research. Through SONA, participants were provided with a link to an online Qualtrics survey and awarded extra credit for a college course upon completion of the survey.

The online survey began by informing participants about the voluntary and anonymous nature of this study. They were asked to indicate their consent by selecting a box before being able to proceed with the study (see Appendix A). Basic demographic questions about age, sexual orientation, race and ethnicity, gender identity, and relationship status were asked. Participants that met the eligibility requirements of the study (i.e., 18 years or older, cisgender woman, heterosexual) were then randomly assigned to one of four experimental conditions.

In each of the four possible conditions, participants were asked to read about and imagine themselves in a hypothetical committed relationship. The participant's hypothetical partner, Chris, tells them that a friend of his from high school is coming to visit this upcoming weekend and that he wants to spend time with this friend. Since the current study follows a 2 x 2 between-subjects factorial design, the vignettes varied based on Chris's sexual orientation and his friend's gender. Chris's sexual orientation is either unspecified or bisexual. Unspecified is used, rather than heterosexual, to avoid any unintended effects from specifying sexual orientation that may influence participant interpretation and responding. However, participants were likely to assume their hypothetical partner is heterosexual, unless otherwise specified, due to heteronormativity. Additionally, Chris's friend's gender is implied as either a man or a woman using culturally gendered names (i.e., Michael or Sara) paired with specified pronouns (i.e., he or she). Each of

the four vignettes use parallel language, keeping the situations constant across all conditions aside from the intentional experimental manipulations. Overall, 22 participants were in the unspecified sexual orientation and female friend condition, 20 participants were in the unspecified sexual orientation and male friend condition, 18 participants were in the specified bisexual orientation and female friend condition, and 23 participants were in the specified bisexual orientation and male friend condition. See Appendix B for full texts of each vignette.

After reading their assigned vignette, participants were presented with an additional five sub-scenarios to read and react to. Each sub-scenario was one sentence in length, and the content of the sub-scenarios was the same for each of the four vignette conditions, except for the name and pronouns used to address Chris's high school friend. Additionally, the focus of each of the five sub-scenarios was varied to assess jealousy across a wide range of circumstances.

Participants were given definitions of sexual jealousy and emotional jealousy and were instructed on how to rate their feelings of sexual and emotional jealousy in response to each of the five sub-scenarios. See Appendix C for the definitions, instructions, and sub-scenarios. At the end of the survey, participants were asked questions to assess their comprehension of the vignette presented to them, their understanding of bisexuality, and their relationship history (if any) with a bisexual man or bisexual men (see Appendix D).

## **Measures**

### ***Jealousy Ratings***

For each of the five sub-scenarios, participants were asked to rate their feelings of romantic jealousy. In accordance with Guerrero et al. (2004) and Ritchie & van Anders (2015), romantic jealousy was further broken down into two sub-constructs, sexual and emotional jealousy. Sexual jealousy was operationally defined as feeling threatened by the possibility that

your partner may engage in sexual activities (e.g., making out, receiving or giving oral sex, or engaging in sexual intercourse) with another individual, and emotional jealousy was operationally defined as feeling threatened by the possibility that your partner may develop a stronger emotional connection with someone else. After reading the operational definitions of sexual and emotional jealousy, participants were asked to rate their feelings of sexual and emotional jealousy for each of the five sub-scenarios. Sexual jealousy and emotional jealousy were both rated on a 5-point Likert-type scale (0 = *Not At All Jealous*, 5 = *Extremely Jealous*). The romantic jealousy scale consisted of a total of ten items ( $\alpha = 0.91$ ). Five of these items comprised the sexual jealousy subscale ( $\alpha = 0.86$ ), and the remaining five items comprised the emotional jealousy subscale ( $\alpha = 0.85$ ). See Appendix C for the complete measure.

### ***Comprehension Checks***

At the end of the survey, participants were asked to report the presumed or specified sexual orientation of Chris, as well as the presumed or specified gender of Chris's high school friend. These items served to assess whether participants were correctly comprehending the content of the vignette they were randomly assigned to. This was done to control for random responding and to ensure participants are responding accurately. Additionally, participants were asked about their understanding of bisexuality and any history of dating bisexual men. This was done to assess any possible extraneous variables that may influence participants' responses. See Appendix D for the comprehension check items.

## **Results**

### **Hypothesis I**

In order to test the first hypothesis, the data file was split according to Chris's sexual orientation to examine only those vignette conditions in which Chris's sexual orientation was

unspecified and presumed heterosexual. A one-way between-subjects MANOVA was conducted to examine the effects of Chris's high school friend's gender (i.e., woman or man) on emotional jealousy subscale (EJSS) composite scores and sexual jealousy subscale composite (SJSS) scores. Preliminary analyses were performed to check for univariate and multivariate outliers, and to investigate any violations of the assumptions of univariate normality, multivariate normality, linearity, multicollinearity, and homogeneity of variance-covariance matrices.

A normality plot was generated to determine the presence of any univariate outliers. Two outliers were found in the SJSS composite scores. Since MANOVAs are sensitive to outliers, these scores were excluded from further analyses. Then, a Kolmogorov-Smirnov test was conducted to examine univariate normality. The EJSS composite scores,  $D(40) = 0.15$ ,  $p = 0.034$ , and the SJSS composite scores,  $D(40) = 0.21$ ,  $p < 0.001$ , both violated the assumption of univariate normality, indicating that the data is not normally distributed. To attempt to correct this violation, a logarithmic (log) transformation was performed on both the EJSS and SJSS composite scores. A second Kolmogorov-Smirnov test was performed on the transformed variables. The log transformation of the EJSS composite scores was no longer significant,  $D(40) = 0.11$ ,  $p = 0.20$ , indicating that it no longer violates the assumption of univariate normality. However, the log transformation of the SJSS composite scores was still significant,  $D(40) = 0.21$ ,  $p < 0.001$ , indicating that the data still violates the assumption of univariate normality. Since MANOVAs are considered robust to violations of normality, examinations continued using the log transformations of the dependent variables.

To assess for multivariate outliers and normality, a linear regression analysis was conducted to generate Mahalanobis distance scores. Since there are two degrees of freedom, a critical Chi-square value of 13.82 was used to determine the presence of any multivariate



outliers. The test revealed one case with a distance score of 15.45, exceeding this critical value. Further examination revealed that the response pattern was not sufficiently abnormal to indicate that it was an illegitimate response or that it was unrepresentative of the population from which participants were drawn. Therefore, the case was retained for further analysis.

A matrix of scatter plots was generated to examine the linearity of the relationship between the EJSS and SJSS composite scores. Upon examining the matrix of scatter plots, it appears that the data exhibits a linear relationship and therefore does not violate the assumption of linearity. Then, to determine whether the data meets the assumption of multicollinearity, a two-tailed Pearson's product-moment correlation was performed using the log transformations of the EJSS and SJSS composite scores. There was a strong positive correlation between the two variables,  $r = 0.76$ ,  $n = 40$ ,  $p < 0.001$ . This is below the  $> 0.9$  cut-off, indicating that the variables are not too strongly correlated that they will be cause for concern.

Lastly, the one-way between-subjects MANOVA was conducted using the log transformations of the EJSS and SJSS composite scores. The Box's M value of 5.08 was non-significant ( $p = 0.19$ ). Therefore, the covariance matrices between the groups were assumed to be equal for the purposes of the MANOVA. Of the participants randomly assigned to a vignette condition where Chris's sexual orientation is unspecified and presumed heterosexual, there was a statistically significant difference between those with a vignette where Chris's high school friend is a woman (Het/woman;  $n = 21$ ) and those where his friend is a man (Het/man;  $n = 19$ ) on the combined dependent variables,  $F(2, 37) = 15.0$ ,  $p < 0.001$ , Wilk's  $\Lambda = 0.55$ ,  $\eta^2 = 0.45$ . When the results for the dependent variables were considered separately, differences in EJSS composite scores,  $F(1, 38) = 30.6$ ,  $p < 0.001$ ,  $\eta^2 = 0.45$ , and SJSS composite scores,  $F(1, 38) = 14.7$ ,  $p < 0.001$ ,  $\eta^2 = 0.28$ , both reached statistical significance using a Bonferroni adjusted alpha level of

0.025. For ease of interpretation, mean scores and standard deviations for the original EJSS and SJSS composite scores, rather than the log transformations, are presented. An inspection of the mean scores indicated that participants in the Het/woman condition reported higher ratings of emotional jealousy ( $M = 13.6$ ,  $SD = 4.88$ ) and sexual jealousy ( $M = 10.2$ ,  $SD = 4.39$ ) than Het/man participants' ratings of emotional jealousy ( $M = 7.11$ ,  $SD = 2.08$ ) and sexual jealousy ( $M = 6.26$ ,  $SD = 2.26$ ).

## **Hypothesis II**

In order to test the second hypothesis, a two-way between-subjects MANOVA was conducted to examine the effects of Chris's sexual orientation (i.e., unspecified/heterosexual or bisexual) and the gender of Chris's high school friend (i.e., woman or man) on EJSS and SJSS composite scores. Preliminary analyses were performed to check for univariate and multivariate outliers, and to investigate any violations of the assumptions of univariate normality, multivariate normality, linearity, multicollinearity, and homogeneity of variance-covariance matrices.

A normality plot was generated to determine the presence of any univariate outliers. Two outliers were found in the SJSS composite scores. Since MANOVAs are sensitive to outliers, these scores were excluded from further analyses. Then, a Kolmogorov-Smirnov test was conducted to examine univariate normality. The EJSS composite scores,  $D(81) = 0.11$ ,  $p = 0.021$ , and the SJSS composite scores,  $D(81) = 0.22$ ,  $p < 0.001$ , both violated the assumption of univariate normality, indicating that the data is not normally distributed. To attempt to correct for this violation, a log transformation was performed on both the EJSS and SJSS composite scores. A second Kolmogorov-Smirnov test was performed on the transformed variables. The log transformation of the EJSS composite scores was no longer significant,  $D(81) = 0.087$ ,  $p = 0.20$ , indicating that it no longer violates the assumption of univariate normality. However, the log

transformation of the SJSS composite scores was still significant,  $D(81) = 0.17, p < 0.001$ , indicating that the data still violates the assumption of univariate normality. Since MANOVAs are considered robust to violations of normality, examinations continued using the log transformations of the dependent variables.

To assess for multivariate outliers and normality, a linear regression analysis was conducted to generate Mahalanobis distance scores. Since there are two degrees of freedom, a critical Chi-square value of 13.82 was used to determine the presence of any multivariate outliers. The test revealed one case with a distance score of 15.45, exceeding this critical value. Further examination revealed that the response pattern was not sufficiently abnormal to indicate that it was an illegitimate response or that it was unrepresentative of the population from which participants were drawn. Therefore, the case was retained for further analysis.

A matrix of scatter plots was generated to examine the linearity of the relationship between the EJSS and SJSS composite scores. Upon examining the matrix of scatter plots, it appears that the data exhibits a linear relationship. Therefore, the data does not appear to violate the assumption of linearity. Then, to determine whether the data meets the assumption of multicollinearity, a two-tailed Pearson's product-moment correlation was performed using the log transformations of the EJSS and SJSS composite scores. There was a strong positive correlation between the two variables,  $r = 0.76, n = 81, p < 0.001$ . This is below the  $> 0.9$  cut-off, indicating that the variables are not too strongly correlated that they will be cause for concern.

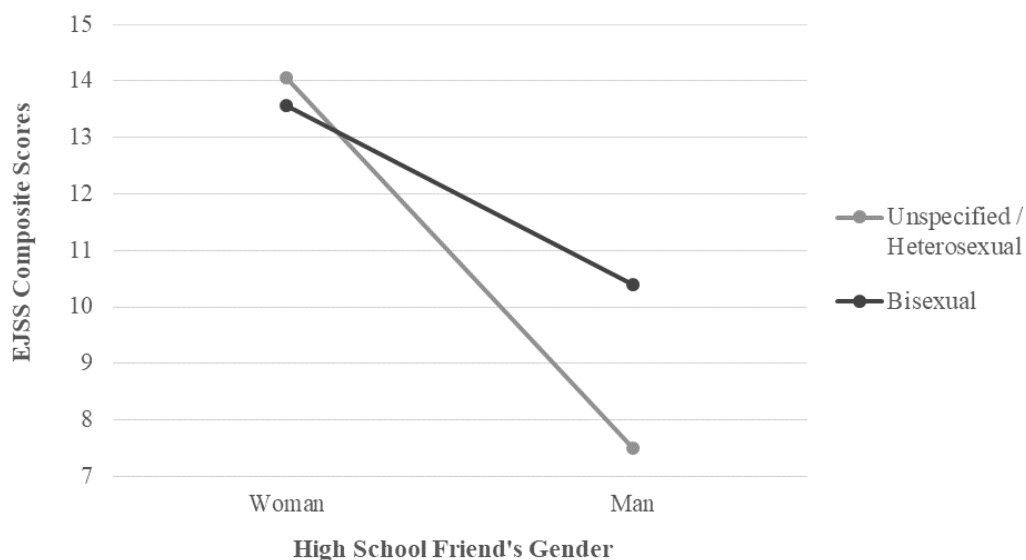
Lastly, the two-way between-subjects MANOVA was conducted using the log transformations of the EJSS and SJSS composite scores. The Box's M value of 8.19 was non-significant ( $p = 0.55$ ). Therefore, the covariance matrices between the groups were assumed to be equal for the purposes of the MANOVA. According to the MANOVA, there is a statistically

significant main effect of Chris's sexual orientation on the dependent variables combined,  $F(2, 76) = 3.24, p = 0.044$ , Pillai's trace = 0.079,  $\eta^2 = 0.079$ . Additionally, there is a statistically significant main effect of Chris's high school friend's gender on the combined dependent variables as well,  $F(2, 76) = 16.3, p < 0.001$ , Pillai's trace = 0.30,  $\eta^2 = 0.30$ . These results indicate that Chris's sexual orientation and his high school friend's gender both have a significant effect, in general, on the dependent variables. However, the interaction effect between Chris's sexual orientation and the gender of his high school friend on the combined dependent variables approached but did not reach statistical significance,  $F(2, 76) = 2.94, p = 0.059$ , Pillai's trace = 0.072,  $\eta^2 = 0.072$ . The interactions of these variables on the EJSS and SJSS composite scores are presented in Figures 1 and 2, respectively.

**Figure 1**

*Interaction Between Chris's Sexual Orientation & High School Friend's Gender on EJSS*

*Composite Scores*

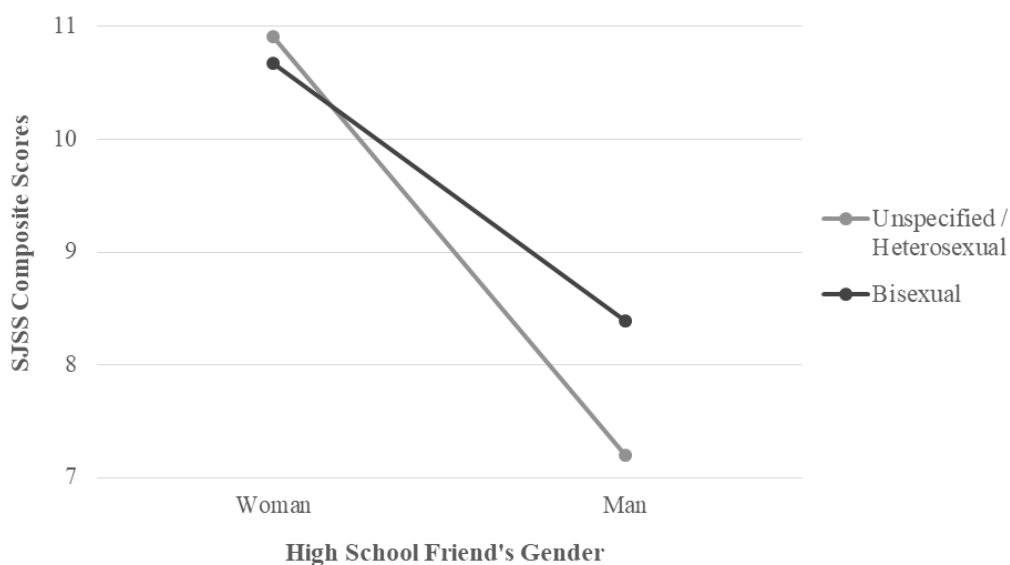


*Note.* EJSS composite scores can range from a minimum of 5 to a maximum of 25, with lower scores indicating less emotional jealousy.

**Figure 2**

*Interaction between Chris's Sexual Orientation & High School Friend's Gender on SJSS*

*Composite Scores*



*Note.* SJSS composite scores can range from a minimum of 5 to a maximum of 25, with lower scores indicating less sexual jealousy.

When examining the main effects of Chris's sexual orientation and his high school friend's gender on EJSS and SJSS composite scores, Chris's sexual orientation had a significant main effect on EJSS composite scores,  $F(1, 77) = 6.56, p = 0.012, \eta^2 = 0.078$ . However, it did not have a significant main effect on SJSS composite scores,  $F(1, 77) = 2.76, p = 0.10, \eta^2 = 0.035$ . This indicates that participants presented with a vignette that described Chris as bisexual reported significantly higher ratings of emotional jealousy, but not sexual jealousy, compared to participants who were presented with a vignette that did not state Chris's sexual orientation (but presumed he was heterosexual).

Additionally, Chris's high school friend's gender had a significant main effect on both the EJSS composite scores,  $F(1, 77) = 33.0, p < 0.001, \eta^2 = 0.30$ , and the SJSS composite scores,

$F(1, 77) = 14.6, p < 0.001, \eta^2 = 0.16$ . This indicates that participants presented with a vignette that described Chris's friend from high school as a woman, regardless of Chris's sexual orientation, reported significantly higher ratings of emotional and sexual jealousy compared to participants who were presented with a vignette that described his friend as a man. For ease of interpretation, mean scores and standard deviations for the original EJSS and SJSS composite scores, rather than the log transformations, are presented in Table 1.

**Table 1**

*Descriptive Statistics for EJSS and SJSS Composite Scores by Partner Sexual Orientation & High School Friend's Gender*

Item	Sexual Orientation	Gender	<i>M</i>	<i>SD</i>	<i>N</i>
EJSS	Heterosexual / Unspecified	Woman	13.62	4.88	21
		Man	7.11	2.08	19
		Total	10.53	5.01	40
	Bisexual	Woman	13.56	4.34	18
		Man	10.39	2.97	23
		Total	11.78	3.92	41
	Total	Woman	13.59	4.58	39
		Man	8.90	3.06	42
		Total	11.16	4.51	81
SJSS	Heterosexual / Unspecified	Woman	10.24	4.39	21
		Man	6.26	2.26	19
		Total	8.35	4.04	40
	Bisexual	Woman	10.67	4.73	18
		Man	8.39	3.65	23
		Total	9.39	4.26	41
	Total	Woman	10.44	4.49	39
		Man	7.43	3.25	42
		Total	8.88	4.16	81

*Note.* The Emotional Jealousy Subscale composite scores are represented by EJSS and the Sexual Jealousy Subscale composite scores are represented by SJSS.

### Hypothesis III

In order to test the final hypothesis, an independent-samples t-test was conducted to examine differences in romantic jealousy scale (RJS) composite scores, which are a sum of each participant's EJSS and SJSS scores, based on Chris's sexual orientation (i.e., unspecified / presumed heterosexual or specified bisexual) in their vignette condition. Preliminary analyses were performed to check for univariate outliers and to investigate any violations of the assumptions of univariate normality and homogeneity of variance.

A normality plot was generated to determine the presence of any univariate outliers. One outlier was found in the RJS composite scores and was subsequently excluded from further analyses. Then, a Kolmogorov-Smirnov test was conducted to examine the univariate normality of the data. The RJS composite scores violated the assumption of univariate normality,  $D(82) = 0.13$ ,  $p = 0.002$ , indicating that the data is not normally distributed. To attempt to correct this violation, a log transformation was performed on the RJS composite scores. A second Kolmogorov-Smirnov test was performed on the transformed variable. The log transformation of the RJS composite scores was no longer significant,  $D(82) = 0.075$ ,  $p = 0.20$ , indicating that it no longer violates the assumption of univariate normality. Lastly, Levene's Test for Equality of Variances was not significant ( $p = 0.073$ ), indicating that the data does not violate the assumption of homogeneity of variance.

Once all assumptions were assessed, the independent samples t-test was conducted using the log transformation of the RJS composite scores. However, for ease of interpretation, mean scores and standard deviations for the original RJS composite scores, rather than the log transformations, are presented. According to the independent samples t-test, there was no statistically significant difference in RJS composite scores for participants assigned to a vignette

condition in which Chris's sexual orientation was unspecified but presumed to be heterosexual ( $M = 19.4$ ,  $SD = 8.96$ ) and those assigned to a vignette condition in which Chris's sexual orientation was specified as bisexual ( $M = 21.2$ ,  $SD = 7.68$ ),  $t(80) = -1.37$ ,  $p = 0.18$ , two-tailed. Thus, we fail to reject the null hypothesis.

### Discussion

A variety of unique challenges are commonly experienced by bisexual individuals throughout their lives. Along with experiencing binegativity (Armstrong & Reissing, 2014; Crofford, 2018; Ochs, 1996) and double discrimination (Hayfield et al., 2018; Ochs, 1996; Turrell et al., 2017; Welzer-Lang, 2008), bisexual individuals often report difficulties establishing and maintaining romantic relationships (Anderson et al., 2015; Armstrong & Reissing, 2014; Hayfield et al., 2018). These experiences compound upon each other and cause considerable minority stress, which can have profound negative effects on bisexual individuals' health and wellbeing (Li et al., 2013; Lim & Hewitt, 2018; Meyer, 2003; Turrell et al., 2017).

Building upon past research examining binegativity and bisexual individuals' experiences with dating and romantic relationships (Armstrong & Reissing, 2014; Breno & Galupo, 2008; Dyar et al., 2017; Gleason et al., 2018; Spalding & Peplau, 1997; Zivony & Lobel, 2014; Zivony & Saguy, 2018), this study utilized a 2 (sexual orientation of hypothetical partner) x 2 (gender of hypothetical partner's friend from high school) experimental design to compare heterosexual women's ratings of emotional and sexual jealousy, two components of romantic jealousy (Guerrero et al., 2004, Ritchie & van Anders, 2015) in same-orientation relationships and mixed-orientation relationships with bisexual men. We hypothesized that differences in heterosexual women's ratings of emotional and sexual jealousy would be evident based on the vignette condition they were randomly assigned to. Hypothesis I was fully supported. As predicted,



heterosexual women with a partner of an unspecified sexual orientation (i.e., presumed heterosexual) reported significantly higher ratings of both emotional and sexual jealousy if their partner was spending time with a friend from high school that identified as a woman than a friend from high school that identified as a man.

Hypothesis II was only partially supported. Heterosexual women who were in a relationship with a bisexual partner reported significantly higher ratings of emotional jealousy, but not sexual jealousy, than those with a partner whose sexual orientation was not specified (i.e., presumed heterosexual). Additionally, heterosexual women whose partner was spending time with a high school friend who identified as a woman reported significantly higher ratings of both emotional and sexual jealousy than those whose partner was spending time with a high school friend who identified as a man, regardless of their partner's sexual orientation. Unlike what was hypothesized, though, their partner's sexual orientation and his high school friend's gender did not significantly interact to uniquely influence heterosexual women's ratings of emotional and sexual jealousy.

However, it is important to note that, although it did not reach statistical significance, it closely approached significance,  $F(2, 76) = 2.94, p = 0.059$ , Pillai's trace = 0.072,  $\eta^2 = 0.072$ . Further, if the interaction between these two variables on emotional and sexual jealousy combined had reached statistical significance, this would have allowed us to explore the specifics of the relationship further. In fact, further examination would have highlighted a significant interaction between the sexual orientation of a heterosexual woman's partner and his friend's gender on emotional jealousy,  $F(1,77) = 5.69, p = 0.020, \eta^2 = 0.069$ . Since the multivariate interaction on both emotional jealousy and sexual jealousy combined was not statistically

significant at the 0.05 level, though, this was not able to be reported and interpreted in the results of this study.

Hypothesis III was not supported, as heterosexual women with a bisexual partner did not report significantly higher ratings of total romantic jealousy than those with a partner of unspecified sexual orientation (i.e., presumed heterosexual). These results should be interpreted in context, however, given the age ( $M = 20.42$ ) and convenience sampling of the participants from a Midwestern university. Since many of the participants were young heterosexual women enrolled in college, it is possible that they are more accepting of LGBTQ+ identities than that of the general public. Thus, the heterosexual women recruited for this study may not be representative of the broader population of heterosexual women residing in the United States.

### **Limitations**

There are several limitations of the current study that should be taken into consideration. First, a large portion of participants ( $n = 29$ ; 25.9%) in the initial sample ( $n = 112$ ) were excluded from analyses for various reasons, including failing the comprehension checks presented at the end of the survey. Prior to data collection, a sample of 120 participants was established as the goal sample size for this study. However, due to time and resource constraints, as well as having to exclude 29 participants from the analyses, the final sample size was considerably smaller than our initial goal ( $n = 83$ ). Had we collected data from a sample of 120 participants, an interaction between their partner's sexual orientation and his friend's gender may have shown significant effects on heterosexual women's ratings of emotional and sexual jealousy.

Additionally, further limitations are introduced as a result of using a convenience sample. Due to the nature of the platform used to recruit participants (i.e., SONA systems), all participants in the sample were university students enrolled in at least one psychology course at

Minnesota State University, Mankato, and were subsequently, on average, around 20 years old ( $M = 20.42$ ). It is possible that younger generations, especially college-educated students, may be more accepting and understanding of bisexuality than previous generations. Therefore, this sample is likely not representative of the broader population, and future research using participants from a larger and more representative population may strengthen the findings of this study.

Lastly, it is possible that a participant's ratings of emotional and sexual jealousy were inadvertently influenced by extraneous confounding variables. For example, a participant may report higher levels of jealousy, regardless of their partner's sexual orientation, because of past relationship traumas (e.g., cheated on by a previous partner). This would, in turn, affect the validity of a participant's responses, as it would become increasingly difficult to isolate the effects of a partner's sexual orientation and the gender of someone posing a threat to one's relationship. Similarly, variation in the sub-scenarios presented to participants could also exert undue influence on their ratings of emotional and sexual jealousy. For example, sub-scenarios in which the participant's hypothetical partner is in a public setting (i.e., café, bar) may still elicit jealousy, not necessarily due to perceived infidelity with the partner's high school friend, but perhaps related to the possibility of them finding someone else to cheat within this setting or situation.

### **Implications and Future Directions**

Taken together, these results allude to a potential connection between increased romantic jealousy and lower interest in dating and being intimate with bisexual men. More specifically, heterosexual women may anticipate experiencing higher levels of emotional and sexual jealousy in mixed-orientation relationships with bisexual men, largely due to holding certain binegative

beliefs such as viewing bisexual individuals as confused, hypersexual, and incapable of remaining committed to a single partner (Anderson et al., 2015; Armstrong & Reissing, 2014; Hayfield et al., 2018; Klesse, 2011). Subsequently, these binegative beliefs may lead heterosexual women to express negative attitudes toward forming romantic relationships with bisexual men to avoid potential aversive experiences, such as infidelity, the dissolution of the relationship, and significant negative emotional outcomes. Further research is needed to establish this relationship, however. While previous studies have indicated women's negative attitudes toward dating and being intimate with bisexual men (Armstrong & Reissing, 2014; Gleason et al., 2018), none to our knowledge prior to this study have explored possible mechanisms behind these negative attitudes using an experimental design. Thus, the results of this study provide novel findings to the existing literature on bisexuality and mixed-orientation relationships, in that heterosexual women report significantly more emotional jealousy with a bisexual partner rather than a partner who is presumed to be heterosexual.

Future research should continue to explore the possible relationship between romantic jealousy and heterosexual women's negative attitudes toward dating and being intimate with bisexual men, as well as any other potential mechanisms behind said attitudes. Given the limitations of the present study, future research might attempt to replicate the findings with a larger sample that is more representative of the general population of heterosexual women. To control for the inadvertent influence of certain confounding variables, future studies may collect more detailed information on participants' relationship history, such as any history of being cheated on in an intimate relationship or of dating bisexual men.

Additionally, future studies should continue to investigate other potential mechanisms behind heterosexual women's negative attitudes toward dating bisexual men. Insight into this

could provide valuable information regarding how to address said attitudes with individuals who hold binegative beliefs, particularly regarding bisexual individuals' romantic relationship needs and behaviors. Further, it could provide greater depth to our understanding of bisexual individuals' difficulties forming and maintaining intimate relationships (Anderson et al., 2015; Armstrong & Reissing, 2014; Hayfield et al., 2018), and it could allow us to better support bisexual individuals' pursuits of social support and their navigation of conversations disputing binegative beliefs with others. This would be particularly useful for mental healthcare providers working with a bisexual client or seeing a mixed-orientation dyad in the context of marriage and family therapy.

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## Appendix A

You are about to participate in research conducted by Madison Glende under the guidance of Dr. Eric Sprankle from the Department of Psychology at Minnesota State University, Mankato. This research is being conducted to examine how feelings of emotional and sexual jealousy vary across different situations. It will take about 10-15 minutes to complete this survey in its entirety. You will be asked to read about and imagine yourself in the presented hypothetical relationship. Then, you will read five short scenarios and report how emotionally and sexually jealous you would feel in each of those situations. If you have any questions about the research, please contact Dr. Sprankle at (507) 389-5825 or [eric.sprankle@mnsu.edu](mailto:eric.sprankle@mnsu.edu), or Madison Glende at [madison.glende@mnsu.edu](mailto:madison.glende@mnsu.edu).

Participation in this study is voluntary. You may stop taking the survey at any time by closing your web browser. The decision whether or not to participate will not affect your relationship with Minnesota State University, Mankato, and refusal to participate will involve no penalty or loss of benefits. If you have any questions about participants' rights and for research-related injuries, please contact the Administrator of the Institutional Review Board, at (507) 389-1242.

Responses will be anonymous. However, whenever one works with online technology there is always the risk of compromising privacy, confidentiality, and/or anonymity. If you would like more information about the specific privacy and anonymity risks posed by online surveys, please contact the Minnesota State University, Mankato IT Solutions Center (507-389-6654) and ask to speak to the Information Security Manager.

The risks of participating are no more than are experienced in daily life. One SONA credit will be awarded for participating.

Submitting the completed survey will indicate your informed consent to participate and indicate your assurance that you are at least 18 years of age. Please print a copy of this page for your future reference. If you cannot print the consent form, take a screen shot, paste it to a word document, and print the document.

Minnesota State University, Mankato IRBNet ID # 1751232

Date of Minnesota State University, Mankato IRB approval: April 28th, 2021

If you would like to continue with the survey, please select "Yes." If you no longer wish to participate in this study, please select "No."

- Yes
- No

## Appendix B

Please read and imagine yourself in the following scenario:

### **Vignette 1:**

You have been in a committed and exclusive relationship with a man named Chris for about 6 months. You and Chris do not live together, but you both go to the same university. Yesterday Chris told you that his friend from high school, Sara, will be in town next weekend and she wants to see him.

### **Vignette 2:**

You have been in a committed and exclusive relationship with a man named Chris for about 6 months. You and Chris do not live together, but you both go to the same university. Yesterday Chris told you that his friend from high school, Michael, will be in town next weekend and he wants to see him.

### **Vignette 3:**

You have been in a committed and exclusive relationship with Chris, who identifies as a bisexual man, for about 6 months. You and Chris do not live together, but you both go to the same university. Yesterday Chris told you that his friend from high school, Sara, will be in town next weekend and she wants to see him.

**Vignette 4:**

You have been in a committed and exclusive relationship with Chris, who identifies as a bisexual man, for about 6 months. You and Chris do not live together, but you both go to the same university. Yesterday Chris told you that his friend from high school, Michael, will be in town next weekend and he wants to see him.

## Appendix C

For each of the following scenarios, you will be asked to report your feelings of romantic jealousy on a scale ranging from "Not At All Jealous" to "Extremely Jealous."

Romantic jealousy will be composed of emotional jealousy and sexual jealousy. **Emotional jealousy** refers to feeling threatened by the possibility that your partner may develop a stronger emotional connection with someone else. **Sexual jealousy** refers to feeling threatened by the possibility that your partner may engage in sexual activities (e.g., making out, receiving or giving oral sex, or engaging in sexual intercourse) with another individual.

Q6. Sara/Michael is sleeping over at Chris's apartment Friday and Saturday night.

	Not At All Jealous (1)	Slightly Jealous (2)	Moderately Jealous (3)	Very Jealous (4)	Extremely Jealous (5)
How <b>emotionally jealous</b> would you feel?	o	o	o	o	o
How <b>sexually jealous</b> would you feel?	o	o	o	o	o

Q7. Chris is picking Sara/Michael up from the airport Friday afternoon.

	Not At All Jealous (1)	Slightly Jealous (2)	Moderately Jealous (3)	Very Jealous (4)	Extremely Jealous (5)
How <b>emotionally jealous</b> would you feel?	o	o	o	o	o
How <b>sexually jealous</b> would you feel?	o	o	o	o	o

Q8. Chris and Sara/Michael are going out to a local bar for drinks on Saturday night.

	Not At All Jealous (1)	Slightly Jealous (2)	Moderately Jealous (3)	Very Jealous (4)	Extremely Jealous (5)
How <b>emotionally jealous</b> would you feel?	o	o	o	o	o
How <b>sexually jealous</b> would you feel?	o	o	o	o	o

Q9. Chris and Sara/Michael are eating breakfast at a local café on Sunday morning.

	Not At All Jealous (1)	Slightly Jealous (2)	Moderately Jealous (3)	Very Jealous (4)	Extremely Jealous (5)
How <b>emotionally jealous</b> would you feel?	o	o	o	o	o
How <b>sexually jealous</b> would you feel?	o	o	o	o	o

Q10. On Friday night, Chris stops answering your texts for a few hours.

	Not At All Jealous (1)	Slightly Jealous (2)	Moderately Jealous (3)	Very Jealous (4)	Extremely Jealous (5)
How <b>emotionally jealous</b> would you feel?	o	o	o	o	o
How <b>sexually jealous</b> would you feel?	o	o	o	o	o



## Appendix D

What was Chris's sexual orientation?

- Stated or presumed straight / heterosexual
- Stated or presumed bisexual
- Other (please specify)

What was the gender of Chris's friend from high school?

- Stated or presumed to be a man
- Stated or presumed to be a woman

Which of the following is the closest to how you would define bisexuality? There's no right or wrong answer.

- Sexual or romantic attraction to both men and women
- Sexual or romantic attraction to more than one gender

Have you ever been in a casual or committed relationship with a bisexual man?

- Yes
- No
- Prefer not to say