

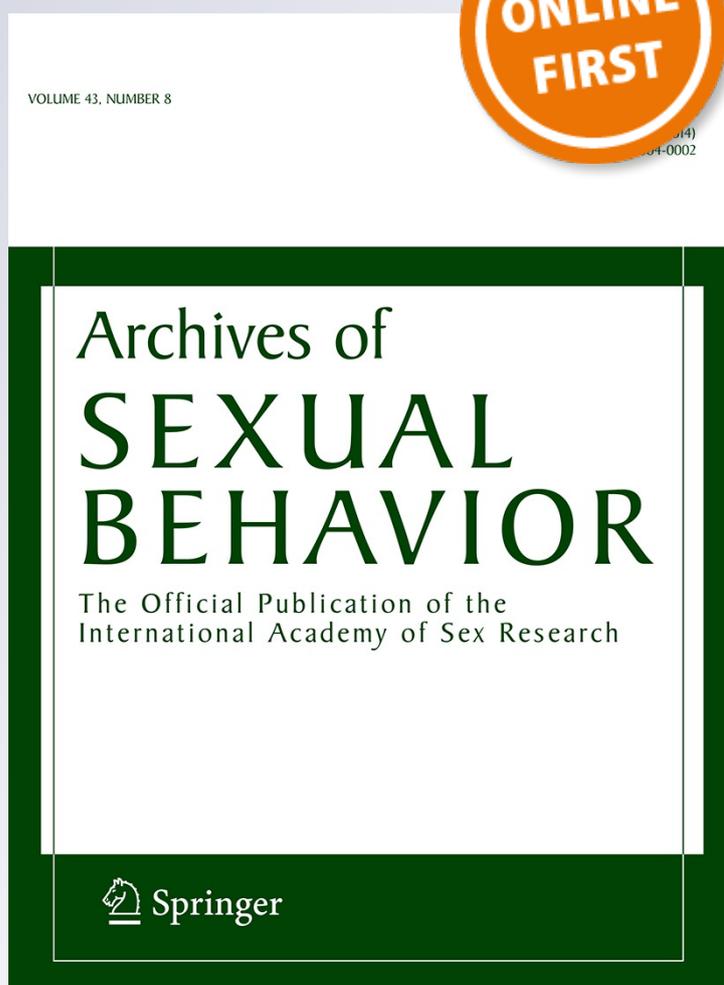
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Abstract The present study assessed the gender-specificity of sexual interest of bisexually-identified men and women, compared to gay men and lesbian women. Utilizing viewing time as a measure of sexual interest, self-identified bisexual men ($N = 50$) and women ($N = 54$) rated the sexual appeal of sexually provocative pictures while the amount of time spent viewing each picture was inconspicuously measured. As hypothesized, bisexual men and women demonstrated a pattern of sexual interest that was significantly less gender-specific than that of a gay/lesbian sample. That is, bisexual men and women (1) viewed other-sex pictures significantly longer than gay men/lesbian women viewed other-sex pictures and (2) rated other sex pictures significantly more sexually appealing than gay men/lesbians rated other-sex pictures. Additionally, the difference in viewing times and appeal ratings between male and female sexual stimuli for bisexuals was significantly less than the difference evidenced by gay men and lesbians. These findings suggest that self-identified bisexual men and women demonstrate a truly bisexual pattern of sexual interest, characterized by greater other-sex attraction and less gender-specificity than is true for gay men and lesbians.

Keywords Gender-specificity · Category-specificity · Bisexuality · Sexual interest · Sexual orientation

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Introduction

Bisexuality is arguably the most controversial and least understood of sexual orientations. Perhaps the most important reason for this is because bisexuality “has so many different manifestations” (Diamond, 2008, p. 95). A review of the literature yields at least 34 different conceptualizations/operationalizations of bisexuality (Rullo, 2010)! However, one generally agreed upon feature of bisexuality is that bisexual individuals demonstrate sexual interest/arousal to *both* men and women (Diamond, 2008; Rust, 2002). Specifically, the assumption here is that someone who is truly bisexual should experience and demonstrate sexual arousal and/or sexual interest that is substantial (i.e., more than incidental or fleeting) to *both* men and women (e.g., Blumstein & Schwartz, 1976; MacDonald, 1981; McConaghy & Blaszczynski, 1991; Rieger, Chivers, & Bailey, 2005; Tollison, Adams, & Tollison, 1979). This is known as gender non-specificity (i.e., sexual arousal and interest that is no stronger to one gender [e.g., women] than to another [e.g., men]). It is also assumed that bisexuals’ sexual arousal and interest pattern should be significantly *less gender-specific* than that shown by their heterosexual and gay/lesbian counterparts, who robustly demonstrate gender-specific sexual arousal/interest (i.e., significantly greater sexual arousal and interest to their preferred sex than their non-preferred sex [e.g., Rieger et al., 2005; Rosenthal, Sylva, Safron, & Bailey, 2011; Rosenthal, Sylva, Safron, & Bailey, 2012; Rullo, Strassberg, & Israel, 2010]).¹ However, the empirically assessed patterns of sexual arousal and interest among bisexuals, as compared to their heterosexual and

¹ Heterosexual women are an exception to these gender-specificity findings. They demonstrate a relatively non-specific pattern of sexual arousal and interest that is much like the pattern expected of bisexual women (Chivers & Bailey, 2005; Chivers, Rieger, Latty, & Bailey, 2004; Chivers, Seto, & Blanchard, 2007; Israel & Strassberg, 2009; Ponseti & Bosinski, 2010).

gay/lesbian counterparts, have been inconsistent in the literature.

In some studies, bisexual men have demonstrated a pattern of sexual arousal or interest that is significantly less gender-specific than that of heterosexual and gay men (Cerny & Janssen, 2011; Ebsworth & Lalumiere, 2012; Lippa, 2013; McConaghy & Blaszczynski, 1991; Rosenthal et al., 2011, 2012). However, in other studies, bisexual men have demonstrated either a relatively gay sexual arousal/interest pattern (i.e., significantly greater sexual arousal to men than women) or a relatively heterosexual sexual arousal/interest pattern (Ebsworth & Lalumiere, 2012; Lee-Evans, Graham, Harbison, McAllister, & Quinn, 1975; Rieger et al., 2005; Tollison et al., 1979).

Research on bisexual women's sexual arousal and interest is quite limited, with only three published studies on this subject (compared to 10 published studies of bisexual men's sexual arousal). In two of these studies, bisexual women demonstrated a pattern of sexual interest measured by viewing time and pupil dilation that was significantly less gender-specific than that of lesbians (Lippa, 2013; Rieger & Savin-Williams, 2012) although, in one other study, their absolute viewing time pattern was no less gender-specific than that of lesbians (with a non-significant preference toward women) (Ebsworth & Lalumiere, 2012).

What accounts for these inconsistent findings of bisexual men and women's sexual arousal and interest? We believe that they may result, in no small part, from variations across studies in: (1) definitions/operationalizations of bisexuality, (2) measurement of sexual arousal and interest, and (3) stimuli used to induce arousal and interest. These potentially important methodological variations are detailed below.

First, while there is far from complete agreement about how any sexual orientation should be operationally defined (Chung & Katayama, 1996; Sell, 1997), there appears to be the least agreement regarding bisexuality (Cerny & Janssen, 2011; Rieger et al., 2005; Rosenthal et al., 2011, 2012; Rullo, 2010). Bisexuality has been operationally defined in sexual arousal/interest research in at least three different ways.

First, bisexuality has sometimes been operationally defined as an *average* of scores on various lifetime sexual dimensions (e.g., sexual attractions, sexual fantasies, infatuations) on seven-point (Kinsey) scales (e.g., Rieger et al., 2005; Rieger & Savin-Williams, 2012), with an average score of 2–4 indicating bisexuality. Using average ratings to classify bisexual and non-bisexual individuals likely produces different classifications than systems that use other criteria. Second, bisexuality has also been defined simply as one's self-identification as bisexual (Cerny & Janssen, 2011; Ebsworth & Lalumiere, 2012; Lippa, 2013). However, this definition may also produce different classifications because some individuals who identify as bisexual may do so for reasons other than the targets of their sexual interest (Rust, 2000, 2001). Third, bisexuality has also been operationally defined as a combination of self-identification as bisexual in addition to the report of having had multiple sexual and romantic

partners of each sex (Rosenthal et al., 2011, 2012). This operationalization may produce an entirely different classification given its restrictiveness, as many individuals who identify as bisexual would not meet the relationship requirement (Ekstrand et al., 1994; Norman & Perry, 1996; Rust, 1992; Rullo, Strassberg, & Kinnish, 2006).

The second major variation in previous studies on bisexuality has been the use of genital plethysmography to assess sexual arousal or interest. Although genital plethysmography is a well-established measure of sexual arousal in men (e.g., Freund, 1963; Freund, Watson, & Rienzo, 1989; Janssen, Vorst, Finn, & Bancroft, 2002), it has limitations. Specifically, those who volunteer for such studies are unlike non-volunteers in their sexual attitudes and experiences (Morokoff, 1985; Strassberg & Lowe, 1995; Wolchick, Braver, & Jensen, 1985; Wolchik, Spencer, & Iris, 1983). Further, penile plethysmography is susceptible to nonresponding (e.g., Rieger et al., 2005). As a measurement for women, there is some debate and uncertainty regarding just what the process assessed via vaginal plethysmography is actually measuring (e.g., Hatch, 1979; Laan & Everaerd, 1998; Prause & Janssen, 2006). Additionally, because the plethysmographic assessment techniques for men and women substantially differ, there is no *truly equivalent* way to compare sexual plethysmographically-assessed arousal patterns for men and women.

The third potentially significant variation in previous studies has been their choice of stimuli. Erotic videos of dyads (e.g., a man and a woman, two men) have predominantly been utilized in previous studies of bisexuality (Cerny & Janssen, 2011; Rieger et al., 2005; Rosenthal et al., 2011, 2012; Tollison et al., 1979). These stimuli are potentially problematic for at least two reasons. First, stimuli that present more than one person at a time mask whether the participant is sexually interested in/attracted to the behavior presented (i.e., sex between two people) versus the gender of those engaging in the behavior. Second, with multiple genders in a given stimulus, it is (without eye tracking methodology) unclear to whom (i.e., the man, the woman, or both) the participant is visually attending.

The inconsistency of findings across studies of men and women's bisexuality is likely, at least in part, the result of these several important differences in the research methodologies among them. The potentially limiting nature of some of these methodological elements further complicates the picture. In the present study, we attempted to obtain a clearer picture of the degree of gender specificity characterizing self-identified male and female bisexuals through addressing these methodological elements.

The Present Study

In the present investigation, we chose to operationalize bisexuality in a more parsimonious and, perhaps, more face valid manner than have many of the previous studies. Specifically, we first required that participants self-identify as bisexual *and* answer in

the affirmative to both of the following questions: (1) *Currently, do you believe you have the capacity to be sexually attracted to and sexually responsive to a man?* and (2) *Currently, do you believe you have the capacity to be sexually attracted to and sexually responsive to a woman?*

We believe this definition of bisexuality to have several advantages over previous operationalizations: (1) it decreases (mis)classification of one as bisexual who does not consider himself bisexual, (2) it requires more than simple self-identification, and (3) it allows for those who are bisexual to have sexual and relationship histories that are more consistent with what is known from the bisexual literature (e.g., a romantic relationship and sex with both men and women is not a requirement to be bisexual). Second, we utilized erotic pictures of individuals, not images of couples or threesomes, to elicit sexual interest. This removes the question of to whom (male or female) the participant is attending. This also removes the question of to what (the sexual behavior being presented or the gender of the actors) the participant is attending. Third, we chose to utilize viewing time, an alternative to plethysmography, as an objective measure of sexual interest. Viewing time, in the present context, refers to a measure of continuous visual attention to an erotic stimulus. It is based on the simple premise that participants will look longer at pictures that they find sexually interesting, than those that they do not (Fischer, 2000). Heterosexual men, gay men, and lesbian women consistently demonstrate longer viewing times to images compatible (than those incompatible) with their self-identified sexual orientation (e.g., Israel & Strassberg, 2009; Quinsey, Ketsetzis, Earls, & Karamanoukian, 1996; Rullo et al., 2010; Wright & Adams, 1994, 1999). Further, consistent with plethysmographic findings (e.g., Chivers et al., 2004, 2007; Chivers & Bailey, 2005), heterosexual women demonstrate relatively non-specific viewing times compared to their non-heterosexual counterparts (e.g., Israel & Strassberg, 2009; Quinsey et al., 1996; Wright & Adams, 1999). There is also support that viewing time is comparable to plethysmography in distinguishing male sex offenders from non-offender controls (Letourneau, 2002; Tong, 2007). Most importantly, unlike plethysmography, viewing time allows for direct comparison between men and women (Abel, Huffman, Warberg, & Holland, 1998; Israel & Strassberg, 2009; Rullo et al., 2010).

The present study tested the general hypothesis that bisexual men and women would demonstrate a relatively non-specific pattern of sexual interest (i.e., substantial sexual interest in *both* men and women). It is often argued that most men who identify as bisexual may actually be gay and are either trying to fool themselves and/or others regarding their true orientation (e.g., Bailey, 2009). Therefore, a particularly appropriate comparison group against which to compare our bisexual men would be a sample of same-sex oriented men. Regarding women, given that heterosexual women have been shown to have very little gender-specificity in their sexual arousal (e.g., Chivers et al., 2004, 2007; Chivers & Bailey, 2005; Israel & Strassberg, 2009), while

lesbians are quite gender-specific in their sexual arousal (e.g., Chivers et al., 2004, 2007, Rullo et al., 2010; Wright & Adams, 1999), the best comparison group for our bisexual women would be (as it is for men) same-sex oriented women. Such comparisons were facilitated by our access to previously collected data from a sample of gay and lesbian individuals using the same methodology (i.e., viewing time), stimuli, and virtually identical recruitment procedures, as the present study (Rullo et al., 2010).

It was predicted that, when presented with sexually provocative (i.e., partially clothed) pictures of adults of the same-sex and other-sex, bisexual men and women would be significantly less gender-specific in their sexual interest than our gay/lesbian samples. Specifically, we hypothesized that: Bisexual men and women would view other-sex pictures significantly longer than had gay men and lesbian women (H1a) and would rate other-sex pictures significantly more sexually appealing than had gay men and lesbians (H1b). Further, we anticipated that, for bisexual men and women, the average *difference score* between the lengths of time they viewed pictures of men versus pictures of women would be significantly less than the same difference scores for gay men and lesbian women (H2a) and that this pattern would be replicated in sexual appeal ratings (H2b).

Method

Participants

A total of 50 self-identified bisexual men (M age = 32, SD = 12.82, range = 18–61 years) and 54 self-identified bisexual women (M age = 25, SD = 6.41, range = 18–48) were recruited. Recruitment was accomplished through advertisement via flyers, newspaper ads, local online classified ads (e.g., Craigslist), online communities (e.g., MySpace), on local (Salt Lake City) college campuses, and through a psychology department participant pool, for an experimental “study of sexual appeal.” Advertisements invited openly bisexual men and women to visit a website describing the study in detail. Interested parties completed a brief online eligibility questionnaire. Individuals were deemed eligible if they: (1) self-identified as bisexual, (2) endorsed that they have the “capacity to be sexually attracted to and sexually responsive to a man,” and (3) endorsed that they have the “capacity to be sexually attracted to and sexually responsive to a woman.” Eligible participants were prompted to provide contact information to schedule an appointment to participate. Eligible participants were then contacted, the procedures were described, confidentiality and privacy were insured via this IRB-approved protocol, and an appointment time to come to the lab was arranged. All participants were compensated (\$10–20) for their time. The measures, stimulus material, and procedures of this study were identical to those of Rullo et al. (2010) and Israel and Strassberg (2009).

The gay and lesbian participants to which our bisexual samples were compared (from Rullo et al., 2010) consisted of 52 self-identified gay men (M age = 24, SD = 4.14, range = 18–33 years) and 47 self-identified lesbian women (M age = 25, SD = 4.40, range = 18–35).

Significant group differences were found for age. As revealed by t -tests, bisexual men (M age = 32, SD = 12.82) were significantly older than the gay men (M age = 24, SD = 4.14), $t(100) = 4.25$, $p < .001$. There was no significant difference between the age of bisexual women (M age = 25, SD = 6.41) and lesbian women (M age = 25, SD = 4.40), $t(99) < 1$. Age was utilized as a covariate in all subsequent analyses.

Measures

Via the computer, all participants completed a brief sexual orientation questionnaire which included items related to current and recent sexual fantasies, behaviors, and romantic attractions (Kinnish, Strassberg, & Turner, 2005). The primary dependent measures were participants' sexual appeal ratings and viewing times for each picture viewed.

Stimulus Material

The visual stimuli consisted of 25 pictures of adult men and 25 pictures of adult women. Pictures were selected from popular, publically available magazines (e.g., Men's Health, Maxim), fashion websites (e.g., Tommy Hilfiger), and clothing catalogues. Every picture presented one person partially clothed (e.g., swimsuit or lingerie). These same 50 pictures have been used in previous studies and have been found to reliably elicit sexual interest from men and women (Israel & Strassberg, 2009; Rullo et al., 2010). Further, 10 neutral (i.e., landscape) images were included among the stimulus pictures.

Procedure

This study was conducted in the Human Sexuality Research Lab in the Department of Psychology at the University of Utah. Male research assistants ran the male participants and female research assistants ran female participants. After obtaining fully informed consent and explaining the use of the laboratory computer, each participant was left alone for the remainder of the study (i.e., 35–45 min). Participants then privately viewed the 60 pictures (25 men, 25 women, 10 neutral), presented in random order, via a computer program that allowed the viewer to forward through the pictures, but not return to previously viewed pictures. Participants were instructed as follows: "We would like you to rate each of the following pictures in terms of how sexually appealing you find the picture to be. Please make your ratings on a scale of 1–7, where 1 is 'not at all sexually appealing' and 7 is 'extremely sexually appealing.' We are interested in your rating of each picture, not how you believe others might rate the

picture." Participants were informed that they would be viewing the pictures more than once. After viewing and rating these 60 pictures, they were presented with a second block of the same 60 pictures, but in a different, random order.

Without their knowledge, participants' viewing times were monitored by a computer program that tracked the time required to make their sexual appeal ratings once a picture appeared on the computer screen.

Data Analysis

The distribution of viewing times and sexual appeal ratings were substantially skewed. A substantially more normalized distribution of these scores was achieved through log transformation. Data were analyzed using both raw and transformed scores; the patterns of significant results were identical. For ease of description and interpretation, the results will be presented utilizing only raw data.

Results

Viewing Times

Bisexual Men versus Gay Men

Viewing times were averaged across Trials 1 and 2, creating a mean viewing time. A Group (Bisexual, Gay) \times Picture Type (Male, Female) repeated measures analysis of variance (ANOVA) comparing mean viewing times was conducted.² The two-way interaction was significant, $F(1, 100) = 28.68$, $p < .001$, $\eta p^2 = .22$. This significant interaction was examined further utilizing a one-way ANOVA comparing viewing times for Group across Picture Type. A one-way between-subjects ANOVA revealed a significant effect for Group for female pictures, $F(1, 100) = 14.50$, $p < .001$, but not for male pictures, $F(1, 100) < 1$. As predicted, bisexual men viewed pictures of women ($M = 3.42$ s, $SE = 1.87$) significantly longer than did gay men ($M = 2.48$ s, $SE = 1.66$) (see Fig. 1).

In order to compare the average difference in viewing times for Picture Type, we created a *difference score* by subtracting the average viewing time for female pictures from the average viewing time for male pictures, for each participant individually. The larger the difference score, the stronger the preference for pictures of one gender over the other. A one-way between-subjects ANOVA comparing average viewing time difference scores for Group was utilized. There was a statistically significant difference, $F(1, 100) = 28.68$, $p < .001$, between gay and bisexual men. As predicted, the difference scores were significantly lower for bisexual men ($M = 1.50$ s, $SE = 1.30$) than for gay men ($M = 11.28$ s, $SE = 1.28$).

² Participant age did not affect the results; therefore, data were analyzed without co-varying age.

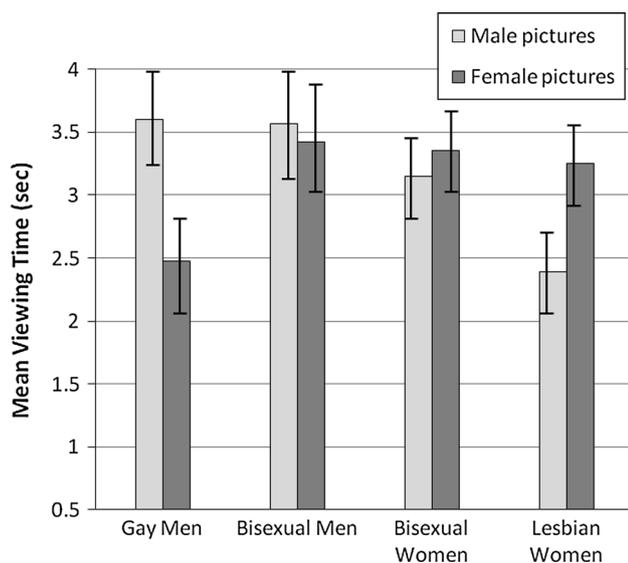


Fig. 1 Mean viewing time (\pm SD) by participant sex and picture type for bisexual and gay/lesbian participants

Bisexual Women Versus Lesbian Women

Viewing times were averaged across Trials 1 and 2, creating a mean viewing time. A Group (Bisexual, Lesbian) \times Picture Type (Male, Female) repeated measures ANOVA comparing mean viewing times was conducted.³ The 2-way interaction was significant, $F(1, 99) = 24.33, p < .001, \eta^2 = .20$. This significant interaction was examined further utilizing a one-way ANOVA comparing viewing times for Group across Picture Type. A one-way between-subjects ANOVA revealed a significant effect for Group for male pictures, $F(1, 99) = 11.90, p = .001$, but not for female pictures, $F(1, 99) < 1$. As predicted, bisexual women viewed pictures of men ($M = 3.15$ s, $SE = 1.55$) significantly longer than did lesbian women ($M = 2.39$ s, $SE = 1.54$) (see Fig. 1).

In order to compare the average difference in viewing times for Picture Type, we created a *difference score* by subtracting the average viewing time for female pictures from the average viewing time for male pictures, for each participant individually. The larger the difference score, the stronger the preference for pictures of one gender over the other. A one-way between-subjects ANOVA comparing average viewing time difference scores for Group was utilized. There was a statistically significant difference, $F(1, 99) = 24.33, p < .001$, between lesbian and bisexual women. As predicted, the difference scores were significantly lower for bisexual women ($M = -2.03$ s, $SE = 0.91$) than for lesbian women ($M = -8.59$ s, $SE = 0.97$).

³ Age did not affect the results; therefore, data were analyzed without co-varying age.

Bisexual Men Versus Bisexual Women⁴

The difference between the viewing time difference scores of bisexual men versus bisexual women was examined using a one-way between-subjects ANOVA comparing average viewing time difference scores. There was a statistically significant average difference, $F(1, 102) = 9.28, p < .01$, between bisexual men and women. The difference scores were significantly lower for bisexual men ($M = 1.49$ s, $SE = 0.86$) than for bisexual women ($M = -2.02$ s, $SE = 0.78$). Thus, bisexual women were significantly more gender-specific in their viewing times than bisexual men.

Sexual Appeal Ratings

Bisexual Men Versus Gay Men

Sexual appeal ratings were averaged across Trials 1 and 2, creating a mean sexual appeal rating. A Group (Bisexual, Gay) \times Picture Type (Male, Female) repeated measures analysis of covariance (ANCOVA), with participant Age as a covariate, comparing mean sexual appeal ratings was conducted. There was a significant Picture Type \times Participant Age effect, $F(1, 99) = 5.15, p < .05, \eta^2 = .05$: Participant age was significantly positively associated with sexual appeal ratings for pictures of women, but not of men ($r = .22, n = 102, p < .01$). There was a significant Group \times Picture Type interaction, $F(1, 99) = 198.85, p < .001, \eta^2 = .67$. This significant interaction was examined further utilizing a one-way ANCOVA comparing sexual appeal ratings for Group across Picture Type with participant Age as a covariate. There was a significant main effect for Group for both male pictures, $F(1, 99) = 11.86, p = .001$, and female pictures, $F(1, 99) = 300.44, p < .001$. As predicted, bisexual men rated pictures of women ($M = 4.85, SE = .13$) significantly more sexually appealing than did gay men ($M = 1.64, SE = .12$). Additionally, gay men rated pictures of men modestly, but significantly ($M = 5.31, SE = .13$) more sexually appealing than did bisexual men ($M = 4.66, SE = .13$) (see Fig. 2).

In order to compare the average difference in appeal ratings for Picture Type, we subtracted the average appeal rating for female pictures from the average appeal rating for male pictures, for each participant individually, to create difference scores. The larger the difference score, the stronger the preference for one gender over the other. A one-way between-subjects ANCOVA comparing average sexual appeal rating difference scores for Group, with Participant Age as a covariate, was utilized. There was a statistically significant difference between the average difference in sexual appeal ratings of Picture Type, $F(1, 99) = 198.85, p < .001$. As predicted, the difference scores were significantly lower in bisexual men ($M = -0.186, SE = 0.19$) than gay men ($M = 3.67, SE = 0.18$).

⁴ We thank a reviewer for suggesting that these analyses be conducted.

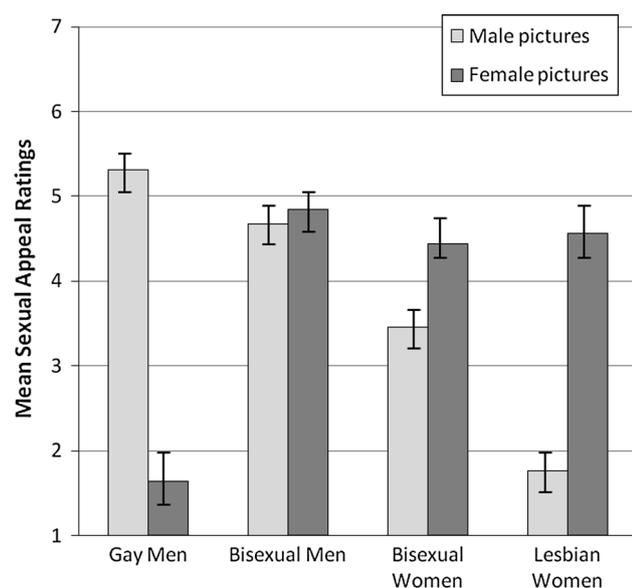


Fig. 2 Mean sexual appeal rating (\pm SD) by participant sex and picture type for bisexual and gay/lesbian participants

Bisexual Women Versus Lesbian Women

Sexual appeal ratings were averaged across Trials 1 and 2, creating a mean sexual appeal rating. A Group (Bisexual, Lesbian) \times Picture Type (Male, Female) repeated measures ANCOVA, with participant Age as a covariate, comparing mean sexual appeal ratings, was conducted. There was a significant Picture Type \times participant age effect, $F(1, 98) = 5.52, p < .05, \eta^2 = .05$: Although not significant ($ps > .10$), post hoc analyses of this interaction revealed a positive correlation for male pictures ($r = .14$) and a negative correlation for female pictures ($r = -.14$). There was a significant Group \times Picture Type interaction, $F(1, 98) = 53.65, p < .001, \eta^2 = .35$. This significant interaction was examined further utilizing a one-way ANCOVA comparing sexual appeal ratings for Group across Picture Type with participant age as a covariate. There was a significant main effect for Group for male pictures, $F(1, 98) = 116.44, p < .001$, but not for female pictures, $F(1, 98) < 1$. As predicted, bisexual women rated pictures of men ($M = 3.45, SE = .11$) significantly more sexually appealing than lesbian women ($M = 1.77, SE = .11$) (see Fig. 2).

In order to compare the average difference in appeal ratings for Picture Type we subtracted the average appeal rating for female pictures from the average appeal rating for male pictures, for each participant individually, to create difference scores. The larger the difference score, the stronger the preference for one gender over the other. A one-way between-subjects ANCOVA comparing average sexual appeal rating difference scores for Group, with participant age as a covariate, was utilized. There was also a statistically significant difference between the average difference in sexual appeal ratings of Pictures Type, $F(1, 98) = 53.65, p < .001$. As predicted, the difference scores were

significantly lower in bisexual women ($M = -0.99, SE = 0.17$) and lesbian women ($M = -2.80, SE = 0.18$).

Bisexual Men Versus Bisexual Women

The difference between the sexual appeal rating difference scores of bisexual men versus bisexual women were examined using a one-way between-subjects ANCOVA comparing average sexual appeal ratings, with Participant Age as a covariate. There was a statistically significant average difference, $F(1, 101) = 8.58, p < .01$, between bisexual men and women. The difference scores were significantly lower for bisexual men ($M = -0.16, SE = 0.18$) than for bisexual women ($M = -0.89, SE = 0.17$). Thus, bisexual women were significantly more gender-specific in their sexual appeal ratings than bisexual men.

Discussion

In the present study, we attempted to address several potentially significant methodological limitations of the previous research on bisexual sexual arousal/interest in the following ways: (1) we operationalized bisexuality in a more parsimonious manner than have most previous studies, (2) we utilized erotic pictures of individuals, not images of couples or threesomes, to elicit sexual interest, and (3) we employed viewing time as a measure of sexual interest. Having addressed these methodological limitations, we found that bisexual men and women demonstrated and reported sexual interest patterns that were distinct (i.e., significantly less gender-specific) from those of self-identified gay men and lesbian women. In other words, the bisexual men and women in our study were not merely closeted, confused, or in denial of their homosexuality. For these men and women, bisexuality appears to constitute a unique sexual orientation, different from those with a strongly same-sex orientation.

Our findings for bisexual men were consistent with those of six previous studies (Cerny & Janssen, 2011; Ebsworth & Lalumiere, 2012; Lippa, 2013; McConaghy & Blaszczynski, 1991; Rieger & Savin-Williams 2012; Rosenthal et al., 2011, 2012), despite the variety of research methodologies utilized across these studies. However, our findings for men were inconsistent with those of four previous studies (Ebsworth & Lalumiere, 2012; Lee-Evans et al., 1975; Rieger et al., 2005; Tollison et al., 1979). Why might this be the case? How do these four studies differ from the present project as well as those referenced above? First, although Ebsworth and Lalumiere (2012) found that bisexual men demonstrated a viewing time pattern that was not significantly different than that of gay men, the patterns neared, but failed to reach, statistical significance ($p = .064$). Given their sample size was small (16 bisexual men and 16 gay men), perhaps a larger sample would have provided sufficient power to detect a significant difference, one consistent with that of the present study. The other three studies shared two features.

First, they all utilized penile plethysmography as the sole index of sexual arousal/interest. The potential limits of this approach were described in the Introduction and may account for the findings (e.g., those who volunteer for plethysmographic studies differ in meaningful ways from those who do not and numerous plethysmographic participants are non-responders). Second, their operational definitions of bisexuality and/or recruitment methods may be at issue. That is, two of these studies ignored participants' self-identification and defined participants as bisexual based on other criteria (Lee-Evans et al., 1975; Rieger et al., 2005). Also, all three of the studies (Lee-Evans et al., 1975; Rieger et al., 2005; Tollison et al., 1979) recruited bisexual participants from gay-identified organizations. This may be problematic as these individuals might identify as bisexual for reasons other than the targets of their sexual interest (e.g., they identify as bisexual to feel less stigmatized by friends and family; however, their experiences may be more aligned with the gay community).

It has been argued that women are, on average, less gender-specific than men in their sexual arousal and interests (Bailey, 2009; Chivers et al., 2004; Chivers & Bailey, 2005). The viewing time findings of Ebsworth and Lalumiere (2012) were consistent with this theory. However, the findings of the present study, and those of two others (Lippa, 2013; Rieger & Savin-Williams, 2012), were in opposition to this. As in the present study, Lippa (2013), also using viewing time, found that, for women of all sexual orientations, only bisexuals demonstrated gender non-specificity in their sexual interest. Rieger and Savin-Williams (2012), utilizing pupil dilation as the measure of sexual interest, found that bisexual women's sexual interest was less gender-specific than lesbians' sexual interest.

Finally, in the present study, the examination of sex differences between bisexual men and women revealed that bisexual women were more gender-specific in both their viewing time and sexual appeal ratings as compared to bisexual men. Although no hypotheses were offered, this is certainly not what we would have hypothesized, as this finding is inconsistent with what is known about sex differences in the gender-specificity of non-bisexuals (Chivers et al., 2004, 2007; Chivers & Bailey, 2005; Israel & Strassberg, 2009; Rullo et al., 2010). This sex difference is worth further investigation and suggests that there may be other within-group sex differences that are also in need of exploration.

Clinical Implications

Bisexuality, as a sexual orientation distinct from heterosexuality and homosexuality, has continually struggled for recognition. Self-identified bisexuals have been regarded as socially mal-adjusted, experiencing identity conflict, and/or living in a transitional stage before proclaiming their "true" homosexual orientation (e.g., Fox, 2000; Zinik, 2000). These "invalidating beliefs" (Rust, 1995) maintain the struggle for bisexuals to

develop a stable sexual identity. As stated by Rust (2002), "It is difficult to assert and to live in accordance with an identity that is continually denied or misperceived by others" (p. 202). The findings from the present study, consistent with those of other recent reports (Cerny & Janssen, 2011; Ebsworth & Lalumiere, 2012; Lippa, 2013; McConaghy & Blaszczyński, 1991; Rieger & Savin-Williams, 2012; Rosenthal et al., 2011, 2012), provide strong support for the conclusion that bisexual men and women are a unique group, distinct from their gay/lesbian counterparts. Acceptance of these conclusions could have a significant impact on the messages that bisexuals receive from the media, educators, and clinicians (e.g., Alpert, 2013; Carey, 2005; Garnet & Kimmel, 2003; Nelson, 2012) about the reality of their experiences and identity. Ultimately, the findings from the present study may help in the recognition and validation of a sexual orientation that has been perpetually invalidated (Rust, 2000).

Limitations

Some may argue that not having a heterosexual comparison group was a major limitation of the present study. Given that we needed to compare our bisexual individuals with groups known to be gender-specific (i.e., heterosexual men, gay men, lesbian women), we believe that a gay/lesbian comparison group was most appropriate. Further, as with any study that utilizes erotic stimuli, our findings may be limited by the specific pictures of men and women that were used. It is possible that utilizing more gender-variant pictures of men and women, such as masculine or "butch" women, androgynous men and women, and feminine men, or even much less (or even more) attractive men or women, could have impacted viewing times or appeal ratings. However, research suggests that the gender of stimulus material (i.e., male vs. female) is far more important than exemplars of a gender in impacting viewing time and appeal ratings (Israel & Strassberg, 2009; Rullo et al., 2010). Further, viewing time as a measure of sexual interest has limitations. That is, participants' viewing times may reflect more than, or something other than, sexual interest. For example, viewing times may reflect social comparison processes or physical attractiveness toward stimuli (not necessarily sexual attractiveness). However, in men, viewing time responses have been found to be as reliable and valid in assessing sexual interest/arousal patterns as penile plethysmography (Abel et al., 1998; Letourneau, 2002). These findings suggest that, at least in men, viewing time does reflect sexual appeal or interest.

While, for women, it is unclear to what degree viewing time and vaginal photoplethysmography correlate. The consistent pattern of responding between viewing time and sexual appeal in the present study, for both men and women, suggests that viewing time is an indicator of sexual interest. Finally, given that the participants recruited in this study were all bisexually-identified and self-reported sexual attraction to men and women, our findings are limited to bisexual individuals who meet the same

criteria. Bisexuality, as with any other sexual orientation, is much more complex than identity and attractions measured at one specific moment in time, in one context. To truly understand bisexuality as a sexual orientation, longitudinal studies like that of Diamond (2008) are needed. Bisexuality needs to be assessed by multiple dimensions (behaviors, fantasies, attractions, identity), using a continuum of interest within each dimension (e.g., Kinsey scale), over time, within different contexts. The present study was a first step in this direction.

Conclusion

Compared to the number of studies on homosexuality, bisexuality has produced an almost incidental amount of empirical research. The studies that have been done have produced less than consistent findings and conclusions regarding the nature, or even existence, of bisexuality. Some of the inconsistencies among these studies may be attributed to methodological differences, particularly regarding how sexual interest and arousal are assessed (e.g., genital plethysmography, viewing time, pupil dilation, self-report) and how bisexuality is operationally defined (e.g., using the Kinsey scale; sexual behavior, sexual fantasy, and/or romantic attractions). Each definition and each assessment approach has its strengths and weaknesses, as well as its proponents and detractors. Future research should certainly include studies that systematically examine how these various definitions and assessment methods impact the gender-specificity of men and women of all sexual orientations. Pending answers to such questions, we can expect at least some inconsistencies in the outcomes of research on this topic, particularly regarding bisexuality, perhaps the most interesting of sexual orientations. Until then, the most recent of these studies (including ours) support the conclusion that, among both men and women, bisexually identified individuals demonstrate a distinct sexual interest pattern, demonstrably different from homosexuality, consisting of significantly more than a label by which someone chooses to be known.

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