

BISEXUALITY: BEYOND THE PREVAILING ASSUMPTIONS ABOUT
MALE AND FEMALE SEXUAL ORIENTATION

by

Jordan E. Rullo

A dissertation submitted to the faculty of
The University of Utah
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Department of Psychology

The University of Utah

December 2011

Copyright © Jordan E. Rullo 2011

All Rights Reserved

The University of Utah Graduate School

STATEMENT OF DISSERTATION APPROVAL

The dissertation of Jordan E. Rullo
has been approved by the following supervisory committee members:

Donald Strassberg, Chair 5/12/2011
Date Approved

Lisa Diamond, Member 5/12/2011
Date Approved

David Huebner, Member 5/12/2011
Date Approved

Lee Beckstead, Member 5/12/2011
Date Approved

Clifford Rosky, Member 5/12/2011
Date Approved

and by Carol Sansone, Chair of
the Department of Psychology

and by Charles A. Wight, Dean of The Graduate School.

ABSTRACT

Based on assumptions derived from research on heterosexuals, it has been argued that male bisexuality does not exist and nearly all women are bisexual. In the present study, bisexual men and women were investigated to determine to what degree their sexual interest and sexual expressions are consistent with the heterosexual assumptions about sexual orientation. Bisexual men and women's ($n = 104$) sexual expressions were assessed objectively (i.e., utilizing viewing time) and subjectively (i.e., self-reported sexual interest, sexual behavior, romantic attraction, and sexual fantasies; qualitative questions of sexual preference) and were compared to those of heterosexual ($n = 106$) and gay/lesbian men and women ($n = 99$). It was predicted that, in contrast to the predominant assumptions about sexual orientation, compared to heterosexual and gay/lesbian men and women, bisexual men and women would show a nonspecific pattern of objectively measured sexual interest and a nonspecific pattern of subjectively measured sexual expressions of sexual orientation. These hypotheses were confirmed. Further, it was predicted that bisexual men and women would report a basis for their attractions toward men and women that is less associated with sexual interest and more associated with emotional factors. These hypotheses were supported for men but not for women. Thus, findings from the present study suggest that (a) bisexual men and women represent a sexual orientation distinct from heterosexual and gay/lesbian men and women

and (b) the heterosexual assumptions about sexual orientation are inaccurate in describing bisexual individuals.

TABLE OF CONTENTS

ABSTRACT.....	iii
LIST OF TABLES.....	vii
LIST OF FIGURES	viii
Chapters	
1 INTRODUCTION	1
Literature Review.....	2
Bisexual Sexual Orientation	2
Measurement of Sexual Orientation	4
The Assumptions About Men’s Sexual Orientation	8
Do Bisexual Men Respond in Ways Consistent With These Assumptions?	10
The Assumptions About Women’s Sexual Orientation.....	15
Do Bisexual Women Respond in Ways Consistent With These Assumptions?...	17
The Present Study	20
Hypotheses.....	24
2 METHODS	27
Participants.....	27
Stimulus Material.....	28
Measures	29
Qualitative Measure.....	29
Data Analysis.....	30
Procedure	31
3 RESULTS	33
Demographics	33
Data Transformation	33
Viewing Time	34
Kinsey Ratings.....	39
Sexual Appeal Ratings.....	48

4	DISCUSSION	54
	Bisexual Men	54
	Bisexual Women	57
	Research Implications	59
	Clinical Implications	60
	Limitations	61
	Future Directions	64
	Summary	65
Appendices		
A	CODING DEFINITIONS AND OPEN CODING GUIDELINES	67
B	ADDITIONAL SELF-REPORT MEASURES, ANALYSES, AND DISCUSSION	73
	REFERENCES	88

LIST OF TABLES

Table		Page
1	Frequency of Bisexual and Heterosexual Men’s Exclusive and Nonexclusive Heterosexual Sexual Expressions	40
2	Summary of Logistic Regression Analysis for Bisexual and Heterosexual Men’s Romantic Attractions	40
3	Summary of Logistic Regression Analysis for Bisexual and Gay Men’s Sexual Fantasies	42
4	Frequency of Bisexual and Gay Men’s Specific and Nonspecific Sexual Expressions	43
5	Frequency of Bisexual and Heterosexual Women’s Exclusive and Nonexclusive Heterosexual Sexual Expressions	44
6	Summary of Logistic Regression Analysis for Bisexual and Lesbian Women’s Sexual Fantasies	45
7	Frequency of Bisexual and Lesbian Women’s Specific and Nonspecific Sexual Expressions	47
8	Frequencies of Bisexual Participants Who Endorsed Nature of Attractions Themes	53
9	Frequencies of Bisexual Women’s Ratings of Current Attraction to Men and Women	80
10	Frequencies of Bisexual Participants’ Open-Coded Responses to Why Do you Identify as Bisexual?	81
11	Frequencies of Importance of Gender Ratings	82

LIST OF FIGURES

Figure		Page
1	Log transformed mean viewing time for men by sexual orientation and picture type.....	36
2	Log transformed mean viewing time for women by sexual orientation and picture type.....	38
3	Log transformed mean sexual appeal ratings for men by participant sexual orientation and picture type.	49
4	Log transformed mean sexual appeal ratings for women by participant sexual orientation and picture type.	51
5	Mean discomfort ratings for men by participant sexual orientation and picture type.....	78
6	Mean discomfort ratings for women by participant sexual orientation and picture type.....	78

CHAPTER 1

INTRODUCTION

Bisexuality is undoubtedly controversial and likely misunderstood. Despite that the majority of nonheterosexuals self-identify as bisexual (Gates, 2011), it has been argued that male bisexuality does not exist. Specifically, some argue that men who claim to be bisexual are either closeted gay men or curious heterosexuals (Bailey, 2009; Freund, 1974; Hirschfeld, 1914/2001; Rieger, Chivers, & Bailey, 2005; Stokes, Damon, & McKirnan, 1997; Tollison, Adams, & Tollison, 1979). It has also been argued that bisexual women are not really different from heterosexual women, that all (or nearly all) women are bisexual (Bailey, 2009). The foundation for these arguments is based on assumptions about sexual orientation derived *primarily* from research on heterosexual men and women (Bailey, 2009; Chivers & Bailey, 2005; Chivers, Rieger, Latty, & Bailey, 2004; Chivers, Seto, & Blanchard, 2007; Lawrence, Latty, Chivers, & Bailey, 2005; Rieger et al., 2005). These assumptions appear to underlie the prevailing (although not the only) perspective on bisexuality (for a review see Bailey, 2009). In the present study, the hypothesis that it is inaccurate, or at least incomplete, to conceptualize bisexual men and women's sexual orientation based on heterosexual assumptions, was tested.

The development of a more accurate understanding, and thus more accurate assumptions, of bisexual sexual orientation is three-fold. Sexuality in general cannot be fully understood unless we understand sexual orientation. We cannot fully understand

sexual orientation until we have a far better understanding of bisexuality than currently exists. Before we can fully understand bisexuality, we need to determine whether it is accurate to continue to conceptualize bisexual men and women within the predominant assumptions about sexual orientation. The present study proposes to investigate the relationship between these assumptions and bisexual men and women. If bisexual men and women's sexual thoughts, feelings, and behaviors are found to be inconsistent with these predominant assumptions, then (a) current theories of bisexuality (i.e., bisexual men do not exist and nearly all women are bisexual) are false, (b) our predominant assumptions about sexual orientation are inadequate, and (c) our understanding of sexuality in general is incomplete.

Literature Review

Below is a review of the theoretical and research literatures regarding the important features of a bisexual sexual orientation, the measurement of a bisexual sexual orientation, the assumptions derived from research on heterosexual sexual orientation, and male and female bisexuality as they relate to these heterosexual assumptions. This review is completed with a description of the present study and hypotheses.

Bisexual Sexual Orientation

Bisexuality has been characterized in the literature with numerous different, yet somewhat overlapping conceptualizations, operationalizations, and definitions (Diamond, 2008; Rust, 2002); therefore, it is difficult (perhaps impossible) to provide an agreed upon definition of bisexuality. For the present study, based on its breadth, basis in research, and recency, the definition of bisexuality offered by Diamond (2008) was used.

A bisexual sexual orientation is a consistent pattern of sexual expression(s) toward both men and women, although not necessarily to the same degree (Diamond, 2008). There are two important features of this definition that require explanation. The first is that of sexual expressions. There are several different types of sexual expressions (i.e., ways in which an individual can express himself/herself sexually). The most common include sexual arousal, sexual interest, sexual attractions, romantic attractions, sexual fantasies, and sexual behaviors (Chung & Katayama, 1996; Kinnish, Strassberg, & Turner, 2005; Pattatucci & Hamer, 1995; Rosario, Schrimshaw, Hunter, & Braun, 2006; Stokes et al., 1997).

The second feature of the definition of bisexuality is the *degree* to which these sexual expressions are experienced toward men and women. Lay definitions of bisexuality purport that for one to be legitimately bisexual, he or she must demonstrate or report an *equal*, or *near equal*, degree of sexual expression(s) (e.g., behaviors, fantasies, attractions) to both men and women (Blumstein & Schwartz, 1976; MacDonald, 1981; McConaghy & Blaszczyński, 1991; Rieger et al., 2005; Tollison et al., 1979). However, this definition is not entirely consistent with the experiences of many bisexual men and women. Many bisexual individuals do not demonstrate or report equal degrees of sexual expression(s) (e.g., behaviors, fantasies, attractions) toward both men and women (Cerny & Janssen, 2001; Cochran & Mays, 1988; Kinnish et al., 2005; Moore & Norris, 2005; Rieger et al., 2005; Rullo, Strassberg, & Kinnish, 2006; Rust, 1992; Storms, 1980; Weinberg et al., 1994). Rather, many bisexual individuals demonstrate or report sexual expression(s) toward men and women to varying degrees, and these degrees are not always consistent *across* forms of sexual expressions (Bailey, Dunne, & Martin, 2002;

Kinnish et al., 2005; Laumann, Gagnon, Michael, Michaels, & Heiman, 1994; Moore & Norris, 2005; Rust, 1992; Storms, 1980; Weinberg et al., 1994). For example, in one study, bisexually attracted men demonstrated a significantly greater degree of *sexual arousal* to one sex¹ over the other, yet reported an equal, or near equal, degree of *sexual attraction* to men and women (Rieger et al., 2005).

Measurement of Sexual Orientation

As described above, a bisexual orientation consists of *sexual expressions* toward men and women that are expressed to *varying degrees* (Diamond, 2008). Thus, in order to measure a bisexual sexual orientation, one must measure both (a) different types of *sexual expressions* (e.g., sexual arousal, sexual interest, sexual attractions, romantic attractions, sexual fantasies) and (b) the *degrees* to which those sexual expressions are expressed toward men and women.

There are two common types of measures that assess sexual expressions (a) subjective or self-report measures and (b) objective measures. There is no single agreed upon subjective or objective measure of sexual orientation, although a combination of both subjective and objective measures is often preferred by researchers over a single subjective or objective measure (Chung & Katayama, 1996; Mustanski, Chivers, & Bailey, 2002).

Subjective measures assess sexual expressions that are presumed to represent one's experienced feelings. For example, subjective measurements predominantly

¹ Although sex refers to biological characteristics (e.g., genitals, chromosomes) and gender refers to masculinity and femininity, they are commonly used interchangeably in the scientific literature (e.g., Parker, Adams, & Phillips, 2007). A deconstruction of sex versus gender is beyond the scope of this paper; therefore, I also use these terms interchangeably.

measure the expressions of sexual attractions (i.e., to whom one feels attracted), romantic attractions (i.e., with whom one falls in love), and sexual fantasies (i.e., of whom one has sexual fantasies). The most common subjective measures are Kinsey scales, open-ended questions, and multiple-choice questions. Each subjective measure can be used to assess multiple types of sexual expressions. For example, a Kinsey scale (to be described below) can be used to assess an individual's sexual fantasies, their sexual attractions, and their sexual behaviors. However, subjective measures *alone* may not provide a completely accurate measurement of sexual orientation because of the effects of self-representation bias (Morokoff, 1985).

In contrast to subjective measures, objective measures assess sexual expressions that are presumed to represent one's physiological or automatic responses to sexual stimuli, regardless of self-reported feelings (Chivers, 2010). Objective measures assess two types of sexual expression, sexual arousal (i.e., to whom one's genitals become sexually aroused) and sexual interest (e.g., to whom one directs his/her gaze). The most common objective measures are plethysmography (which measures sexual arousal) and viewing time and eye-tracking (both of which measure sexual interest). Objective measures have been developed to circumvent the self-representation bias of self-report measures because they rely on automatic responses, which are presumably beyond one's ability to consciously control (Freund, 1963).

Recall that a bisexual sexual orientation consists of the direction of sexual expressions and *the degree* to which sexual expressions are directed toward men and women (Diamond, 2008). Thus, most of the measures outlined above assess the degree to which an individual expresses a particular type of sexual expression toward one sex

versus the other. Degree can be measured both subjectively and objectively.

Subjectively, degree of sexual expressions is most commonly measured with the Kinsey scale (e.g., Chung & Katayama, 1996; Kinnish et al., 2005; Kinsey, Pomeroy, Martin & Gebhard, 1948; Pattatucci & Hamer, 1995; Rosario et al., 2006; Stokes, Vanable, & McKirnan, 1997). This scale is a continuum of same and other sex sexual preference, with exclusive homosexuality (i.e., rated as six) and exclusive heterosexuality (i.e., rated as zero) as the extremes, and varying degrees of nonexclusivity in the middle (i.e., rated one through five). Men and women providing self-reports on the Kinsey scale are often required by researchers to report a near equal degree of sexual preference for both men and women [i.e., to endorse a score of two (predominantly heterosexual, but more than incidentally homosexual) through four (predominantly homosexual, but more than incidentally homosexual)], on at least one type of sexual expression (i.e., attractions, behaviors, or fantasies), to be considered bisexual (e.g., Cerny & Janssen, 2011; Rieger et al., 2005).

Objectively, sexual arousal is the most commonly measured (via penile plethysmography) sexual expression (e.g., Cerny & Janssen, 2011; Chivers et al., 2004, 2007; Chivers & Bailey, 2005; Lawrence et al., 2008; Rieger et al., 2005). In fact, sexual arousal (via genital plethysmography) is the only sexual expression that has been objectively measured in bisexual men. To our knowledge, not a single study investigating bisexual women's objective sexual expressions (whether sexual arousal or sexual interest) has been published.

Men and women are required, by most researchers, to demonstrate equal, or near equal, degrees of plethysmographically assessed sexual arousal to men and women to be

considered bisexual (Cerny & Janssen, 2011; Lee-Evans et al., 1975; McConaghy and Blaszczynski, 1991; Rieger et al., 2005; Tollison et al., 1979).

Plethysmography differs for men and women. Men's sexual arousal is plethysmographically measured by a device called the penile plethysmograph (PPG). The PPG measures changes in the circumference of the penis as a result of sexual arousal (Janssen, Vorst, Finn, & Bancroft, 2002). The PPG is regarded as a highly valid instrument (e.g., Chivers et al., 2004; Freund, 1963; Freund, Watson, & Rienzo, 1989; Janssen et al., 2002) in most situations and is strongly correlated (about .7) with self-report measures of arousal (Chivers, Seto, Lalumière, Laan, & Grimbos, 2010). However, it is subject to limitations. Most notably, the PPG is invasive, which can make research participation uncomfortable for volunteers. As a result, individuals are usually unwilling to volunteer for a study involving the PPG (Strassberg & Lowe, 1995; Wolchik, Braver & Jensen, 1985). Those who do volunteer, compared to those unwilling to do so, tend to have more sexual experience, more exposure to pornographic materials, and a more positive attitude towards sexuality (Strassberg & Lowe, 1995; Wolchik et al., 1985; Wolchik, Spencer, & Iris, 1983). Further, the PPG is susceptible to voluntary misrepresentation (Golde, Strassberg, & Turner, 2000; Mahoney & Strassberg, 1991).

Women's sexual arousal is plethysmographically measured by a device called the vaginal photoplethysmograph (VPG) (Hatch, 1979; Laan & Everaerd, 1995; Meston, 2000). This device is inserted into the vaginal canal and measures vaginal vasocongestion in response to sexual arousal (Laan & Everaerd, 1995). When assessed with the VPG, heterosexual and lesbian women have demonstrated significantly greater sexual arousal to erotic stimuli than neutral stimuli (Geer, Morokoff, & Greenwood, 1974; Hatch, 1979;

Hoon, Wincze, & Hoon, 1976; Laan, Everaerd, & Evers, 1995; Sintchak & Geer, 1975). However, heterosexual women's plethysmographically assessed sexual arousal has not been found to be highly related to their self-reported sexual arousal, usually averaging about a correlation of less than .3 (Chivers et al., 2004; Geer et al., 1974; Laan et al., 1995; Meston, 2000). This lack of concordance raises questions about the validity of the VPG (Janssen et al., 2002). Further, the VPG is vulnerable to the same limitations as the PPG (e.g., invasiveness, volunteer effects).

The Assumptions About Men's Sexual Orientation

There are three predominant assumptions about sexual orientation for men, all of which have been developed from research on heterosexual men. The first assumption is that male sexual arousal and interest are category-specific: sexual arousal and interest that are strongest to one's preferred category (e.g., for heterosexual men their preferred category is women) (Bailey, 2009; Chivers & Bailey, 2005). Heterosexual men robustly demonstrate highly category-specific objectively measured sexual arousal and interest (i.e., they are strongly aroused by women and not at all aroused by men) (Cerny & Janssen, 2011; Chivers et al., 2004, 2007; Chivers & Bailey, 2005; Israel & Strassberg, 2009; Lawrence et al., 2007; McConaghy & Blaszczyński, 1991; Tollison et al., 1979).

The second assumption is that, among men, objectively measured sexual arousal and interest are consistent with subjectively measured sexual expressions (i.e., sexual attractions, sexual behaviors, sexual fantasies, and romantic attractions). Heterosexual men robustly report sexual expressions that, identical to their sexual arousal and interest, are category-specific (i.e., oriented toward women and not at all toward men) (Cerny &

Janssen, 2011; Israel & Strassberg, 2010; Kinnish et al., 2005; Rieger et al., 2005; Rullo et al., 2006).

Finally, the third assumption is that male sexual arousal and interest “is the sexual input that orients a man’s sexual preference” (Bailey, 2009, p. 49). That is, male sexual arousal and interest are the strongest impetus for approach motivation and sexual behavior, provides the most important cues when seeking a romantic relationship, and strongly stimulates sexual fantasies (Bailey, 2009). For example, heterosexual men, compared to heterosexual and lesbian women, report significantly more interest in uncommitted sex, visual sexual stimuli, and partner’s age and attractiveness. Additionally, compared to heterosexual and lesbian women, they place less importance on a partner’s emotional fidelity (Bailey, Gaulin, Agyei, & Gladue, 1994). For a more detailed argument of this theoretical assumption, please see Bailey (2009).

These assumptions about male sexuality, developed from research on heterosexual men, were later tested with gay men, whose responses were consistent with all three assumptions (Cerny & Janssen, 2011; Kinnish et al., 2005; McConaghy & Blaszczynski, 1991; Rieger et al., 2005; Rullo et al., 2006; Rullo, Strassberg, & Israel, 2010; Tollison et al., 1979). Gay men demonstrate highly category-specific objectively measured sexual arousal and interest (i.e., they are strongly aroused by and interested in men and not at all aroused by women) (Cerny & Janssen, 2011; McConaghy & Blaszczynski, 1991; Rieger et al., 2005; Rullo et al., 2010; Tollison et al., 1979). Gay men report sexual expressions (i.e., sexual fantasies, sexual attractions, sexual behaviors) that, identical to their objectively measured sexual arousal and interest, are category-specific (i.e., oriented toward men and not at all toward women) (Cerny & Janssen, 2011;

Kinnish et al., 2005; Rieger et al., 2005; Rullo et al., 2006; 2010). Finally, gay men report that during their sexual identity development, sexual arousal and interest toward men was more important than other sexual input (e.g., emotional attractions) in informing to who they are sexually attracted (Bell, Weinberg, & Hammersmith, 1981; Chivers, 2010; Savin-Williams, 1998; Savin-Williams & Diamond, 2000). For example, in one study, sexual minority male youths ($n = 86$; aged 17-25; operationalized as reporting some degree of same-sex sexual or romantic interest) reported that their first same-sex attractions, sexual contact, and self-identification were significantly more sexually than emotionally motivated (Savin-Williams, 1998).

Do Bisexual Men Respond in Ways Consistent
With These Assumptions?

Assumption 1

It is currently unclear whether bisexual men's sexual arousal and sexual interest are category-specific because research results are mixed. Bisexual men's sexual arousal has been objectively measured in five studies, all utilizing plethysmography (Cerny & Janssen, 2011; Lee-Evans et al., 1975; McConaghy and Blaszczynski, 1991; Rieger et al., 2005; Tollison et al., 1979). The first three (Lee-Evans et al., 1975; McConaghy & Blaszczynski, 1991; Tollison et al., 1979) of these studies had either very small sample sizes (i.e., between 2 and 10 men) or recruited a forensic sample (i.e., sex offenders). Therefore, the present review will focus on the two most recent and influential of the five studies (i.e., Cerny and Janssen, 2011 and Rieger et al., 2005).

In Rieger and colleagues' study (2005), bisexual men's ($n = 33$)² sexual arousal was objectively measured (via penile plethysmography) to videos of either two men having sex with each other or two women having sex with each other. Consistent with the first assumption of male sexual orientation, these men predominantly demonstrated category-specific sexual interest/arousal (i.e., significant sexual interest/arousal to men *or* to women but not to both). However, this study had two main limitations that bring into question its findings.

The first is the authors' operationalization of bisexuality. Utilizing the seven-point Kinsey scale (with 0 meaning exclusively heterosexual and 6 exclusively homosexual), bisexuality was operationalized as reporting current sexual attractions *and* sexual attractions since the age of 18, that, when averaged, resulted in a score within the midrange (i.e., 2 through 4) on this scale. This operationalization may have led to misclassifications of participants' sexual orientation. For example, a man who might have only recently recognized that he was gay (i.e., reported a score of six on the Kinsey scale), after a lifetime of identifying as strictly heterosexual (i.e., reported zero on the Kinsey scale), could have been classified by the researchers as bisexual. This, despite the fact that he may have *never* considered himself bisexual, nor was there ever a period of his life when he was *simultaneously* attracted to men and women.

Second, the bisexual men viewed stimuli that depicted couples (i.e., stimuli with two men or with two women), not individuals. While a bisexual man may find women sexually attractive, that does not imply that he finds two women being sexual with each

² Of note, 11 of these 33 men did not demonstrate sufficient sexual arousal to either video for measurement; therefore, the authors' final sample consisted of only 22 men.

other particularly sexually arousing. The limited arousal that most bisexual men in Rieger et al. (2005) demonstrated to the female-female sexual videos may have been less a reflection of their arousal to women than an indicator of their sexual interest in lesbian sex.

In Cerny and Janssen (2011), 14 *self-identified* bisexual men's sexual arousal was assessed (via penile plethysmography) to videos of male-male, female-male, female-female, female-female-male, or male-male-female sexual contact. Inconsistent with the first assumption of male sexual orientation described above, these men predominantly demonstrated *nonspecific* sexual arousal (i.e., significant sexual arousal to both men *and* women). However, this study had one limitation that may bring into question its findings. Like Rieger and colleagues (2005), this study was also limited by stimuli that depicted couples (and even threesomes), not individuals. Despite this limitation, compared to Rieger et al. (2005), this study had two notable strengths. The first was the authors' operationalization of bisexuality, self-identification. Second, this study yielded only one nonresponder. That is, 13 of the 14 bisexual men in the sample demonstrated sufficient sexual interest/arousal to the sexual videos for measurement.

Given these mixed findings, it is presently unclear whether bisexual men are distinct from heterosexual and gay men in their sexual arousal. However, limited research on bisexual men that also purports to assess processes beyond one's conscious control (i.e., automatic processes) supports Cerny and Janssen's findings (i.e., that bisexual men may be distinct from gay and heterosexual men). Specifically, bisexual men's brain morphology was measured utilizing indirect measures of prenatal sex hormone exposure (i.e., childhood sex atypicality and spatial ability). Bisexual men, compared to

heterosexual and gay men, reported a distinct pattern of childhood sex atypicality and spatial ability. In other words, bisexual men appeared to differ from their male counterparts in the degree in which they were exposed to levels of prenatal sex hormones (Cohen, 2002). It has been proposed that bisexual men may have been exposed to testosterone (i.e., masculinization) during one critical period of their development, but during a later critical period this testosterone was absent (i.e., defeminization) (Goy & McEwen, 1980). Therefore, it might be that bisexual men are distinct from gay and heterosexual men, and by extension, do indeed demonstrate a bisexual pattern of sexual arousal and sexual interest [which is potentially the result of both masculinization (to establish other-sex attractions) and feminization (to establish same-sex attractions)] (Cohen, 2002).

Assumption 2

The second assumption of men's sexual orientation is that objectively measured sexual arousal and interest are consistent with all other subjectively measured sexual expressions (e.g., sexual fantasies, romantic attractions, sexual behaviors, and sexual attractions). As described above, bisexual men's objectively measured sexual arousal pattern remains unclear due to mixed research findings (Cerny & Janssen, 2011; Rieger et al., 2005). However, bisexual men's subjectively measured sexual expressions appear nonspecific in both major plethysmography research studies (i.e., Cerny & Janssen, 2011; Rieger et al., 2005).

Rieger et al. (2005) assessed bisexually attracted men's subjective sexual arousal (measured continuously via a lever). Bisexually attracted men, compared to heterosexual and gay men, reported nonspecific subjectively measured sexual arousal to both men and

women. Recall that the bisexual men in this study also demonstrated category-specific *objectively* measured sexual arousal. Therefore, inconsistent with the second assumption of male sexual orientation, bisexual men in this study demonstrated objective sexual arousal that was *not* consistent with their subjective sexual expression (i.e., self-reported sexual arousal).

Cerny and Janssen (2011) assessed bisexual men's self-reported Kinsey scale ratings of sexual attractions and sexual behaviors, as well as their self-reported sexual arousal (measured continuously via a lever), to men and women. Bisexual men reported nonspecific (i.e., ratings of 2-4 on the Kinsey scale) sexual attractions and sexual behaviors, and (compared to heterosexual and gay men) they reported nonspecific subjectively measured sexual arousal. Recall that the bisexual men in this study also demonstrated nonspecific objectively measured sexual arousal. Therefore, in accordance with the second assumption of sexual orientation in men, bisexual men in this study demonstrated objectively measured sexual arousal that was consistent with their subjective sexual expressions.

Assumption 3

Finally, whether sexual arousal and interest are the most influential sexual factor that orients a bisexual man's sexual preferences has yet to be determined; however, indirect support from the literature suggests that sexual arousal and interest are not the most influential sexual factor. That is, developmentally, bisexual men appear less oriented toward sexual arousal and interest as compared to their heterosexual and gay male counterparts. For example, compared to gay men, bisexual men report fewer childhood same sex sexual feelings and a later age of realization of same sex sexual

preferences (Bell et al., 1981; Saghir and Robins, 1973; Weinberg et al., 1994).

Additionally, bisexual men in adulthood appear to be less influenced by their pre-adulthood sexual expressions, as compared to gay men and heterosexual men (Bell et al., 1981). Further, unlike heterosexual and gay men, bisexual men report fluctuations over time in their relative degree of sexual interest in men and women (Stokes, McKirnan, & Burzette, 1993; Stokes et al., 1997). These fluctuations over time suggest that other factors beyond sexual interest and sexual arousal may influence bisexual men's sexual preferences.

The Assumptions About Women's Sexual Orientation

There are three predominant assumptions about women's sexual orientation, all of which have been developed from research on heterosexual women. The first assumption is that women's sexual arousal and interest are nonspecific, meaning that it is equally (or near equally) strong to one's preferred sex as it is to one's nonpreferred sex (e.g., for heterosexual women their preferred sex is men and their nonpreferred sex is women) (Bailey, 2009; Chivers & Bailey, 2005). Heterosexual women have demonstrated this in several studies when sexual arousal and interest has been assessed objectively (Chivers et al., 2004; 2007; Chivers & Bailey, 2005; Israel & Strassberg, 2009; Ponseti & Bosinski, 2010). However, unlike heterosexual women, lesbian women demonstrate relatively category-specific objectively measured sexual arousal and interest (i.e., they are more strongly aroused by women than men) (Chivers et al., 2004, 2007; Rullo et al., 2010).

The second assumption is that objectively measured sexual arousal and interest are *not* consistent with other types of sexual expression (e.g., sexual attractions, sexual fantasies, and romantic attractions). In fact, heterosexual women generally report sexual

expressions that, inconsistent with their objectively measured sexual arousal and interest, are category-specific (Chivers et al., 2004; 2007; Chivers & Bailey, 2005; Israel & Strassberg, 2009; Ponseti & Bosinski, 2010). Specifically, they report sexual behaviors almost exclusively with men (Kinnish et al., 2005; Laumann et al., 1994; Rullo et al., 2006), greater sexual attractions to men than women (Chivers et al., 2004; Laumann et al., 1994; Rullo et al., 2006), and a greater frequency of sexual fantasies of men than of women (Rullo et al., 2006). In contrast to heterosexual women, lesbian women report sexual expressions that, consistent with their sexual arousal and interest, are category-specific (i.e., oriented toward women and not at all toward men) (Chivers et al., 2004, 2007; Kinnish et al., 2005; Rullo et al., 2006, 2010).

Finally, the third assumption is that (compared to heterosexual and gay men) women's sexual arousal and interest are relatively less influential, among the other sexual expressions, in driving a woman's approach motivation and sexual behavior, providing her with important cues when seeking a romantic relationship, and in stimulating her sexual fantasies (Bailey, 2009; Baumeister, 2000; Diamond, 2008). Consistent with this assumption, unlike heterosexual and gay men, heterosexual women's first same-sex sexual attractions are often the result of intense emotional attachments with other women (Diamond, 2000; Savin-Williams & Diamond, 2000, 2003). For example, heterosexual women in a longitudinal study by Diamond (2008) reported a general orientation toward men (as would be expected); however, a number of these women also reported that the intensity of their emotional attachments with women allowed them to believe they have the potential or capacity for a sexual relationship with a woman (Diamond, 2008; Peplau, Spalding, Conley, & Veniegas, 1999). These women reported

an openness or readiness for same-sex sexual relationships, despite the fact that they had no previous same-sex sexual experiences. Several women even engaged in same-sex sexual contact, and although they deemed it enjoyable, they did not change their self-identified sexual orientation to bisexual (Diamond, 2008). Diamond (2008) categorizes these women as heterosexuals who possess a “flexible” or “fluid” sexuality (Diamond, 2008).

Similar to heterosexual women, lesbian women report a greater emphasis on emotional than sexual factors in driving their sexual preference (Bailey et al., 1994; Blumstein & Schwartz, 1989; Gramick 1984; Peplau & Cochran 1981; Vetere, 1983). For example, lesbian women predominantly engage in same-sex sexual activity as an extension of an already established emotional-romantic attachment (Klinkenberg & Rose, 1994; Schneider, 2001).

Do Bisexual Women Respond in Ways Consistent With These Assumptions?

Assumption 1

It is currently unclear whether bisexual women’s objectively measured sexual arousal or interest is nonspecific because, to date, there has been no published research on these variables. However, bisexual women’s *subjectively* measured sexual interest and arousal have been assessed in one study (Blackford, Doty, & Pollack, 1996). Self-identified bisexual ($n = 20$), lesbian ($n = 20$), and heterosexual ($n = 20$) women viewed erotic videos of female-female oral sex, male-female oral sex, and male-female vaginal intercourse. The women reported their subjective sexual arousal graphically, responded to the Mosher Ratings of Sexual Arousal questionnaire (Mosher & Abramson, 1977) (i.e.,

five seven-point Likert scale questions regarding degree of genital and nongenital sensations), and answered, on a five-point Likert scale, “How aroused are you by the tape you have just seen?” The bisexual women reported being *as aroused* to the male-female videos as were the heterosexual women and significantly *more aroused* by the male-female videos than lesbian women. Additionally, the bisexual women were *as aroused* by the female-female video as were the lesbian women and significantly *more aroused* to the female-female video than were the heterosexual women. Thus, bisexual women reported subjectively measured sexual arousal that was more nonspecific compared to heterosexual and lesbian women. However, this study may have been limited by its reliance on stimuli of couples, not individuals. Additionally, subjective sexual arousal is, at best, an indirect measure of objective sexual arousal (Chivers et al., 2010).

Further, bisexual women’s phenomenological experiences of their sexual preferences suggest nonspecificity in their sexual interest and arousal as well (Diamond, 2008). That is, in a longitudinal study by Diamond (2008), bisexual women reported that they continued to remain sexually responsive to *both* men and women (i.e., nonspecificity) over a period of 10 years. In fact, bisexual women in this study reported sexual preferences that appeared more nonspecific compared to heterosexual women. Heterosexual women in this longitudinal study reported a general orientation toward men, with only “an erotic appreciation for other women that might periodically spill over into desire . . . (Diamond, 2008, p. 157).” In other words, heterosexual women’s nonspecific sexual interest/arousal may be merely an indicator of bisexual *fluidity*, whereas, bisexual women’s nonspecific sexual interest/arousal may be an indicator of a bisexual

orientation. Thus, perhaps bisexual women experience (and, by extension, demonstrate) more strongly nonspecific sexual arousal and interest than heterosexual women.

Assumption 2

There has been no published research on bisexual women's objectively measured sexual interest or sexual arousal; however, regarding subjective sexual expressions, bisexual women predominantly report one or more sexual expressions that are oriented toward *both* men and women (i.e., nonspecific) (Bell, et al., 1981; Kinnish et al., 2005; Rullo et al., 2006; Weinberg et al., 1994). For example, in an online sample of bisexual women from North America, over a period of 1 year, 66% of bisexual women reported romantic attractions toward *both* men and women, 73% reported sexual fantasies of *both* men and women, and 58% reported engaging in sexual behaviors with *both* men and women (Rullo et al., 2006). Additionally, bisexual women appear nonspecific in their sexual expressions over time (Diamond, 2008). As mentioned previously, in a longitudinal study by Diamond (2008), bisexual women reported that they continued to remain attracted to and sexually responsive to both men and women over a period of 10 years. Thus, given that bisexual women's sexual expressions are nonspecific, they would also have to demonstrate nonspecific objectively measured sexual interest/arousal in order to be consistent with assumption 2 of women's sexual orientation.

Assumption 3

For bisexual women, sexual interest and sexual arousal do not appear to be the most influential input that orients their sexual preference. Bisexual women appear to emphasize emotional factors rather than sexual factors in their sexual preference. For

example, sexual minority female *youth* (aged 17-25; operationalized as reporting some degree of same-sex sexual or romantic interest) indicated that their first same-sex sexual experiences and first identification as same-sex attracted were significantly more emotionally than sexually driven. Additionally, sexual minority female youths are significantly more likely to identify as nonheterosexual prior to, or within the context of, engaging in a same-sex sexual relationship, than the other way around (Savin-Williams & Diamond, 2000, 2003). This trajectory suggests a potentially greater emphasis on emotional than sexual factors in determining their sexual preference. However, motivations for sexual preference as a youth may not predict motivations for sexual preference in adulthood. Further, these sexual minority youth were likely a heterogeneous sample consisting of both lesbian and bisexual individuals.

Additionally, bisexual *adult* women investigated in a 10-year longitudinal study reported that their attractions toward women were driven not by sexual factors, but by emotional factors (Diamond, 2008). Specifically, bisexual women reported that they desired other women for characteristics such as empathy, political consciousness, and sensitivity (Diamond, 2008). Further, additional research has indicated that bisexual adult women report that their attractions toward men and women are more about personal characteristics than gender or biological sex (Brooks & Quina, 2009; Rust, 2000). These findings suggest that bisexual adult women may emphasize emotional factors, rather than sexual factors, in determining their sexual preference.

The Present Study

The present study assessed self-identified bisexual men and women's (a) objective sexual interest, utilizing an alternative (to genital plethysmography) measure,

viewing time and (b) self-report of sexual expressions (i.e., sexual fantasies, romantic attractions, sexual attractions, sexual behaviors), utilizing quantitative (Kinsey scales) and qualitative measures. Further, the present study addressed the limitations of the most recent and influential investigations of bisexual men's objective sexual arousal (i.e., Cerny & Janssen, 2011, and Rieger et al., 2005).

First, in contrast to Rieger and colleagues (2005), the present study operationally defined bisexuality in a manner that is more congruent with its conceptualization. That is, as in Cerny and Janssen (2011), bisexuality was operationalized as one's current self-identified categorical sexual orientation (i.e., bisexual). Additionally, the present study's operationalization has gone one step further than Cerny and Janssen (2011) and required that participants must also give affirmative answers to the following questions: (a) *Currently, do you believe you have the capacity to be sexually attracted to and sexually responsive to a man?* and (b) *Currently, do you believe you have the capacity to be sexually attracted to and sexually responsive to a woman?*

Second, unlike previous studies on bisexuality, the present study objectively measured sexual interest rather than sexual arousal. Compared to sexual arousal, sexual interest may be a more ecologically valid measurement of whom one is sexually interested in or whom one sexually desires. For example, it is generally through sexual interest, not genital sexual arousal, that potential partners choose to engage each other in a conversation, accept an offer for a romantic date, or report experiencing "love at first sight." Sexual interest was measured utilizing viewing time. Viewing time is a measure of continuous visual attention to an erotic stimulus (Fischer, 2000). The viewing time methodology involves presenting participants with pictures of seminude males and

females, asking them to rate the sexual appeal of each picture, and then (without the participant's knowledge) recording the time spent viewing and rating each picture. This rating time, or viewing time, has been demonstrated to be a reliable and valid indicator of sexual interest (e.g., Abel, Lawry, Karlstrom, Osborn, & Gillespie, 1994; Israel & Strassberg, 2009; Letourneau, 2002; Rullo et al., 2010; Wright & Adams, 1999). Studies have supported that heterosexual and gay/lesbian individuals will have a longer viewing time to depictions of their preferred sex than their nonpreferred sex (Israel & Strassberg, 2009; Quinsey, Rice, Harris & Reid, 1993; Rullo et al., 2010; Wright & Adams, 1999; Zamansky, 1956).

Although viewing time and plethysmography measure different sexual expressions (i.e., sexual interest and sexual arousal, respectively), viewing time is considered a valid alternative to plethysmography (Abel, Huffman, Warberg, & Holland, 1998; Letourneau, 2002). Viewing time has been directly compared to penile plethysmography in a sample of sex offenders ($n = 57$). Both objective measures were found to have adequate internal consistency and convergent validity (Letourneau, 2002). Finally, when assessing one's sexual preference (in the same sex, other sex, or minors), viewing time patterns are virtually identical to plethysmographic patterns in heterosexual and gay/lesbian men and women (Chivers et al., 2004; Chivers & Bailey, 2005; Israel & Strassberg, 2009; Rieger et al., 2005; Rullo et al., 2010) and sexual offenders of children (Abel et al., 1998; Letourneau, 2002).

Viewing time has several advantages over genital plethysmography as an objective measure of sexual interest or arousal. First, unlike plethysmography, it is not invasive. Participants are not required to undress or insert/attach any genital devices to

participate in a viewing time measure. As a result, more individuals will volunteer for viewing time research than for plethysmographic studies and those who do volunteer will be more like the general population in their sexual attitudes and experiences (Morokoff, 1985; Strassberg & Lowe, 1995; Wolchick et al., 1985, 1983). Second, because it is inconspicuous, viewing time may be less vulnerable than genital plethysmography to participants' conscious misrepresentation of their sexual expression (Fischer, 2000; Gress, 2005; Harris, Rice, Quinsey, & Chaplin, 1996; Quinsey, Ketsetzis, Earls, & Karamanoukian, 1996). Third, unlike plethysmography, viewing time is not susceptible to nonresponding. In Rieger et al. (2005), one-third of the 33 bisexual men in the sample were plethysmographic nonresponders (i.e., did not demonstrate sufficient sexual arousal to either video for measurement). Further, unlike plethysmography, viewing time allows for the direct comparison of sexual interest between men and women.

Finally, in contrast to Rieger et al. (2005) and Cerny and Janssen (2011), the present study utilized erotic pictures of individuals, not erotic videos of couples. This eliminated the question of whether or not the participant is attending to the sex of the individuals depicted in the stimulus or the sexual relationship (e.g., gay/lesbian or heterosexual) depicted in the stimulus. Additionally, this eliminated the question of whether or not the participant is attending to the *sexual activity* depicted in the stimulus, or the *sex of the individuals* depicted. Stimuli depicting sexual activity have been shown to elicit substantial genital sexual arousal from participants (i.e., women) who simultaneously claim that they in no way feel desire or interest for the actors depicted (Chivers et al., 2004, 2007; Chivers & Bailey, 2005).

The present study is the third of a series of three research studies on sexual orientation and sexual interest, conducted by researchers in the Strassberg Human Sexuality Lab at the University of Utah. The first study assessed the sexual interest of heterosexually identified men and women (i.e., Israel & Strassberg, 2009). This study was not conducted by the author, but was completed as another Strassberg Human Sexuality Lab researcher's Master's Thesis project (i.e., Israel, 2006). The second study assessed the sexual interest of gay and lesbian identified men and women (i.e., Rullo et al., 2010). This study was completed as the author's Master's Thesis project (i.e., Rullo, 2008). The third, and present, study assessed the sexual interest of bisexual men and women. Statistical analyses of the present study involved the comparison of bisexual men and women with published data on heterosexual men and women from the first study (i.e., Israel, 2006; Israel & Strassberg, 2009) and data from the gay/lesbian men and women from the second study (i.e., Rullo, 2008; Rullo et al., 2010).

Hypotheses

In contrast to the predominant assumptions about male and female sexual orientation developed from research on heterosexuals, it was predicted that bisexual men and women would show:

1. A less category -specific pattern of objectively measured sexual interest as compared to heterosexual and gay/lesbian men and women.
2. A less category -specific pattern of subjectively measured sexual expressions of sexual orientation as compared to heterosexual and gay/lesbian men and women.

3. A self-reported basis for their attraction to men and women that is less associated with sexual interest than with emotional features.

Specifically, it was hypothesized that:

- 1A. When presented with sexually provocative (i.e., partially clothed) pictures of men and women, bisexual men; (1) will view pictures of men significantly longer than did heterosexual men (i.e., as assessed in Israel & Strassberg, 2009), and (2) will view pictures of women significantly longer than did gay men (i.e., as assessed in Rullo et al., 2010).
- 1B. When presented with sexually provocative pictures of men and women, bisexual women; (1) will view pictures of women significantly longer than did heterosexual women (i.e., as assessed in Israel & Strassberg, 2009), and (2) will view pictures of men significantly longer than did lesbians (i.e., as assessed in Rullo et al., 2010).
- 2A. Bisexual men will be significantly more likely than (1) gay (i.e., as assessed in Rullo et al., 2010) and (2) heterosexual (i.e., as assessed in Israel & Strassberg, 2009) men to report less specific: a) sexual fantasies, b) romantic attractions, c) sexual behaviors and, 1d) to rate pictures of men significantly more appealing than did heterosexual men (i.e., as assessed in Israel & Strassberg, 2009), and 2d) to rate pictures of women significantly more appealing than did gay men (i.e., as assessed in Rullo et al., 2010).
- 2B. Bisexual women will be significantly more likely than (1) lesbian (i.e., as assessed in Rullo et al., 2010) and (2) heterosexual (i.e., as assessed in Israel & Strassberg, 2009) women to report less specific: a) sexual fantasies, b)

romantic attractions, c) sexual behaviors, and 1d) to rate pictures of women significantly more appealing than did heterosexual women (i.e., as assessed in Israel & Strassberg, 2009), and 2d) to rate pictures of men significantly more appealing than did lesbian women (i.e., as assessed in Rullo et al., 2010).

- 3A. Bisexual men will report that emotional factors are more important than sexual factors in their attractions to men and women.
- 3B. Bisexual women will report that emotional factors are more important than sexual factors in their attractions to men and women.

CHAPTER 2

METHODS

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 as well as in the local community, and through the psychology department participant pool, for an experimental study on sexual appeal. Advertisements instructed 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: a) self-identified as bisexual, b) endorsed that they have the capacity to be sexually attracted to and sexually responsive to a man, and c) 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. Participants were assured confidentiality and privacy. Through grant support from both APA Division 44 and the Hiatt Foundation, all participants were compensated (\$10 - \$20) for their time.

The heterosexual and gay/lesbian groups were included in earlier published studies from our lab (Israel, 2006; Israel & Strassberg, 2009; Rullo, 2008; Rullo et al., 2010). These groups were recruited utilizing procedures identical to the present study and were recruited based on self-identification. The sample of gay and lesbian individuals 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). Gay and lesbian individuals were compensated \$10 for their participation. The sample of heterosexual participants consisted of 51 self-identified heterosexual men (M age = 22, SD = 2.8, range = 18-31 years) and 55 self-identified heterosexual women (M age = 21, SD = 4.9, range = 18-40). Of note, all sexual orientation groups were based solely on self-identification; therefore, whenever referenced in this document, self-identified sexual orientation is implied.

Stimulus Material

The visual stimuli consisted of 25 pictures of partially clothed adult men and 25 pictures of partially clothed adult women. These same pictures have been used in previous studies and have been found to reliably elicit sexual interest from men and women (Israel, 2006; Israel & Strassberg, 2009; Rullo, 2008; Rullo et al., 2010). 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). Further, 10 neutral (i.e., landscape) images were included among the stimulus pictures.

Measures³

Kinsey Scales

Participants completed three computer-presented Kinsey scale ratings at the beginning of the study. Participants were instructed to indicate, on a seven-point scale (0= exclusively heterosexual, 3= equally heterosexual and equally homosexual, 6= exclusively homosexual) their romantic attractions, sexual fantasies, and sexual behaviors for the past 2 years (Kinnish et al., 2005). Within this seven-point rating scale, ratings between 2 (predominantly heterosexual, but more than incidentally homosexual) and 4 (predominantly homosexual, but more than incidentally heterosexual) were considered *nonspecific* ratings. That is, these ratings were considered to reflect relatively nonspecific sexual interest in males and females. Ratings on the Kinsey scales of 0 (exclusively heterosexual) and 1 (predominantly heterosexual, only incidentally homosexual) and of 5 (predominantly homosexual, only incidentally heterosexual) and 6 (exclusively homosexual) were considered *category-specific* ratings. That is, these ratings were considered to reflect relatively category-specific sexual interest in males or females.

Qualitative Measure

At the completion of the presentation and rating of stimulus materials, participants responded to one open-ended, computer-presented question pertaining to their self-identified sexual orientation. The question was as follows: *Are the nature of your attractions to men and women different? If yes, please explain.* In preparation to code these qualitative responses, two independent researchers independently utilized open

³ Additional self-report measures, their analysis, and related discussion are located in Appendix B.

coding of an identical unpublished qualitative dataset collected from bisexual individuals at a local Pride festival ($n = 35$). Given the hypotheses of the present study, the qualitative responses were coded based on their sexual or emotional content. Five different themes emerged from this Pride festival data: a) sexual and emotional differences, b) emotional differences only, c) sexual differences only, d) nonsexual differences only, and e) no differences. Categories were mutually exclusive. Once saturation of the themes was achieved, the researchers developed coding guidelines (see Appendix A for descriptions of these themes, example responses, and the coding guidelines). Following these guidelines, the investigators independently coded the qualitative data from the present dataset into the five established themes. The interrater agreement of these independently coded themes was determined utilizing Cohen's kappa coefficient (Carletta, 1996). Kappa equaled 83% agreement on this open-ended question.

Data Analysis

Data available for demographics, viewing times, and sexual appeal ratings of the heterosexual group consisted only of means, standard errors, and sample sizes.⁴ Thus, any statistical analyses involving heterosexual men and women's demographics, viewing times, and sexual appeal ratings, were limited to analyses that could be conducted with only this limited data (e.g., *t*-tests). Additionally, Kinsey scale rating data for the heterosexual group consisted of only ratings of zero (exclusively heterosexual) and not-zero (nonexclusively heterosexual); therefore, any analyses involving heterosexual men and women's Kinsey scale ratings were limited to these binary Kinsey ratings. In

⁴ Frequencies of heterosexual men and women's level of comfort and frequency viewing erotic pictures of men and women were also available. These measures and their data analysis are reported in Appendix B.

contrast, all data were available for the bisexual participants and the gay/lesbian group; therefore, analyses conducted with these two groups were more sophisticated (e.g., logistic regression, Analysis of Variance) and allowed for the use of covariates.

Procedure

A recruitment flyer advised potential participants that the purpose of this study was to learn how sexually appealing people find sexually provocative pictures of men and women. It stated that participants would be asked to view and rate partially clothed pictures of men and women for their sexual appeal. Participants were tested individually in the Strassberg Human Sexuality Research Lab in the University's of Utah's Social and Behavioral Science building. After describing the study and obtaining IRB-approved informed consent, the researcher explained the use of the laboratory computer and then left the participant alone for the remainder of the study. Participants first completed the Kinsey scales. They then viewed the 60 pictures [25 of men, 25 of women, 10 neutral (i.e., pictures of landscapes)], presented in random order via a computer program (DirectRT, www.empirisoft.com) that allowed the viewer to forward through the pictures, but not return to previously viewed pictures. Their task was to rate how *sexually appealing* they found each picture to be. Ratings were made using the computer keyboard's numerical key pad, on a seven-point Likert-type scale, where 1 was "Not At All Sexually Appealing" and 7 was "Extremely Sexually Appealing." Pressing a numeric key to provide a rating automatically advanced the software program to the next picture. Participants were informed that they would be viewing the pictures more than once. The second block of 60 pictures was identical to the first block, but was presented in a different, random order.

A computer program (DirectRT v 2004; www.empirisoft.com) tracked participants' viewing times without their knowledge by recording the time required by the participant to make their sexual appeal rating once the picture appeared on the computer screen. After viewing and rating all 60 pictures twice, the computer presented participants with questions related to their comfort and frequency of viewing erotic pictures and qualitative measures (see Appendix B for a list of these additional measures). On average, it took participants approximately 45 minutes to complete the study. Following completion of the study, participants were debriefed and informed that at the completion of the entire research project, the general results and other details would be posted online, and they were provided with a website address.

CHAPTER 3

RESULTS

Demographics

Before testing the specific hypotheses comparing sexual orientation groups, differences in age across groups were explored. Significant group differences were found for age. *T*-tests revealed that bisexual participants were significantly older (M age = 29, SD = 10.5) than the gay/lesbian group, (M age = 25, SD = 4.29), $t(201) = 3.51, p < .001$, and the heterosexual group, (M age = 22, SD = 3.85), $t(208) = 3.65, p < .001$.

Additionally, the gay/lesbian group was significantly older than the heterosexual group, $t(203) = 5.28, p < .001$. Age was utilized as a covariate in analyses involving the bisexual participants and the gay/lesbian group. As mentioned previously, data available for the heterosexual participants were limited and did not include age; therefore, it was not possible to utilize age as a covariate in analyses involving heterosexual participants.

Data Transformation

The distribution of viewing times for bisexual participants ($M = 3.92; SE = 2.07$) was non-normally distributed, with skewness of 3.27 ($SE = .022$) and kurtosis of 24.9 ($SE = .044$). Therefore, viewing times were log-transformed to yield a more normal distribution. Log transformed data were utilized for all viewing time analyses.

The distribution of sexual appeal ratings for bisexual participants ($M = 3.92; SE = 2.07$) was normally distributed, with skewness of .051 ($SE = .022$) and kurtosis of .115 ($SE =$

.044). However, because the sexual appeal data from heterosexuals and gay/lesbian men and women were log transformed, it was necessary that the sexual appeal data from the bisexual participants were also log transformed in order to conduct statistical analyses between these groups.

Viewing Time

Previous research has concluded that bisexual men demonstrate sexual arousal that is either significantly greater for women than men, or significantly greater for men than women (i.e., a bimodal distribution of sexual arousal patterns) (Rieger et al., 2005). It was important to determine if the bisexual participants in the present study were also bi-modally distributed because, if so, statistical analyses utilizing bisexual participants' *mean* viewing times would mask this bimodal distribution and result in misleading findings. Thus, *t*-tests were conducted to compare each bisexual participant's mean viewing times to pictures of men and women. If bisexual men and women were bi-modally distributed, then some of the participants would demonstrate significantly longer viewing times to men than women, while most or all the others would demonstrate significantly longer viewing times to women than men.

Results from the series of *t*-tests revealed that only three bisexual men and four bisexual women demonstrated significantly longer viewing times to one sex than the other. Specifically, one bisexual man and all four bisexual women viewed women significantly longer than men ($p < .01$) while two bisexual men viewed men significantly longer than women ($p < .01$). A conservative level of alpha was utilized given the large number (104) of *t*-tests conducted. The remainder of bisexual participants ($n = 97$)

demonstrated *no significant difference* in the amount of time they viewed pictures of men vs. women.

Bisexual Men Compared to Heterosexual Men

Consistent with Hypothesis 1A1, a *t*-test revealed that bisexual men viewed pictures of men significantly longer ($M = 8.08$; $SE = .055$) than did heterosexual men ($M = 7.28$; $SE = .070$), $t(99) = 9.27$, $p < .001$. Additionally, a *t*-test revealed that there was no significant difference in the amount of time pictures of women were viewed by bisexual men ($M = 8.05$; $SE = .052$) and heterosexual men ($M = 8.05$; $SE = .050$), $t(99) = .028$, $p = .978$.

Bisexual Men Compared to Gay Men

A repeated measures analysis of covariance (ANCOVA) comparing viewing times of the two sex picture types (Picture Type: Male, Female) by sexual orientation (Sexual Orientation: Bisexual, Gay) with age as a covariate, was conducted. There was a significant main effect for picture type, $F(1, 99) = 7.09$, $p < .01$. The interaction of picture type and sexual orientation was also significant, $F(1, 99) = 30.40$, $p < .001$. The significant interaction was examined further utilizing independent samples *t*-tests.

Consistent with Hypothesis 1A2, a *t*-test revealed that pictures of women were viewed significantly longer by bisexual men ($M = 8.05$; $SE = .05$) than gay men ($M = 7.70$; $SE = .05$) ($t = 4.18$, $df = 100$, $p < .001$). Further, a *t*-test revealed that there was no significant difference in the amount of time pictures of men were viewed by gay men ($M = 8.12$; $SE = .051$) and bisexual men ($M = 8.08$; $SE = .055$) ($t = .53$, $df = 100$, $p = .594$). Figure 1 displays the log transformed viewing times for the bisexual, heterosexual and gay men.

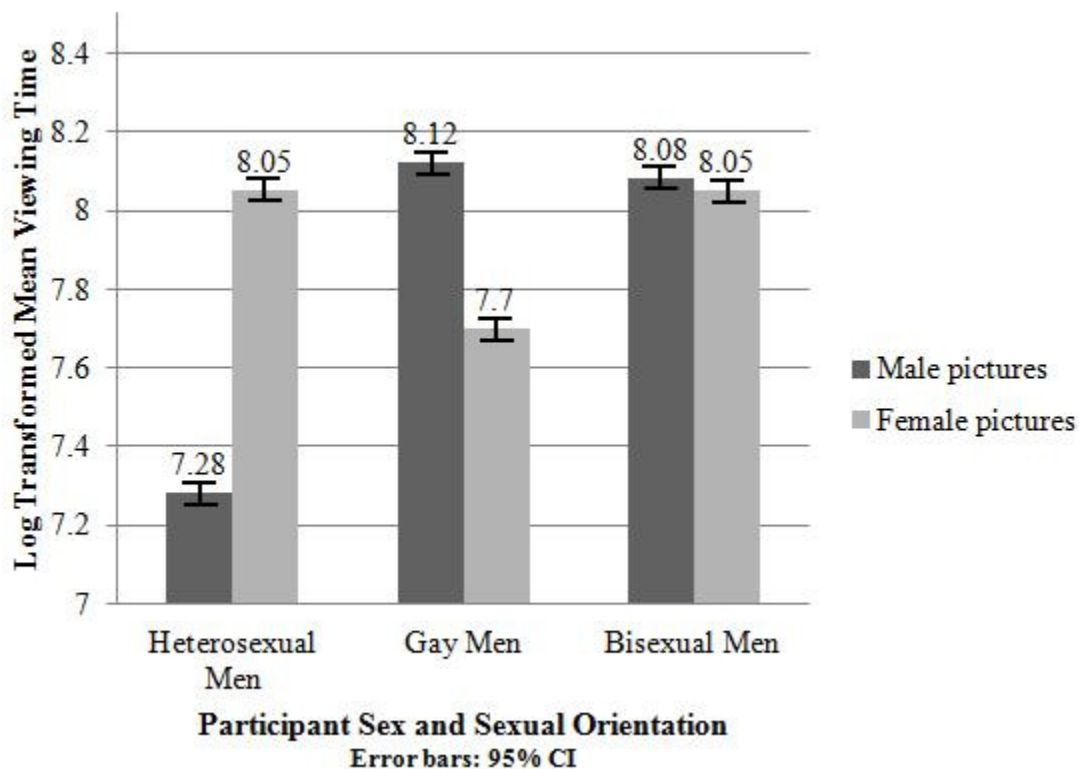


Figure 1. Log transformed mean viewing time for men by sexual orientation and picture type.

Bisexual Women Compared to Heterosexual Women

Consistent with Hypothesis 1B1, a *t*-test revealed that bisexual women viewed pictures of women ($M = 8.03$; $SE = .051$) significantly longer than did heterosexual women ($M = 7.73$; $SE = .060$), $t(107) = 3.80$, $p < .001$. Additionally, a *t*-test revealed that there was no significant difference between the amount of time pictures of men were viewed by bisexual women ($M = 7.97$; $SE = .052$) and heterosexual women ($M = 7.86$; $SE = .04$), $t(107) = 1.62$, $p = .108$.

Bisexual Women Compared to Lesbian Women

A repeated measures analysis of covariance (ANCOVA) comparing viewing times of the two sex picture types (Picture Type: Male, Female) by sexual orientation (Sexual Orientation: Bisexual, Lesbian) with age as a covariate, was conducted. There was a significant main effect for picture type, $F(1, 98) = 10.00, p < .01$. The interaction of picture type and sexual orientation was also significant, $F(1, 98) = 36.93, p < .001$. The significant interaction was examined further utilizing independent samples t -tests. Consistent with Hypothesis 1B2, a t -test revealed that pictures of men were viewed significantly longer by bisexual women ($M = 7.97; SE = .05$) than lesbian women ($M = 7.70; SE = .06$) ($t = 3.46, df = 99, p < .001$). Further, a t -test revealed that there was no significant difference in the amount of time pictures of women were viewed by lesbians ($M = 8.04; SE = .046$) and bisexual women ($M = 8.03; SE = .051$) ($t = .289, df = 99, p = .774$). Figure 2 displays the log transformed mean viewing times for the bisexual, heterosexual, and lesbian women.

Univariate ANOVAs comparing viewing times of the three picture types (Picture Type: Male, Female, Neutral) *separately* by participant sex (Sex: Male, Female) were conducted. For bisexual men, there was a significant effect for picture type, $F(2, 50) = 58.63, p < .001$. Bisexual men's viewing times were longest to the pictures of men ($M = 8.08; SE = .055$), followed by the pictures of women ($M = 8.05; SE = .052$) and the neutral pictures ($M = 7.61; SE = .060$). Post-hoc testing (Bonferroni) revealed that the contrast between viewing times of pictures of women and the neutral pictures, and the contrast between viewing times of pictures of men and the neutral pictures, were

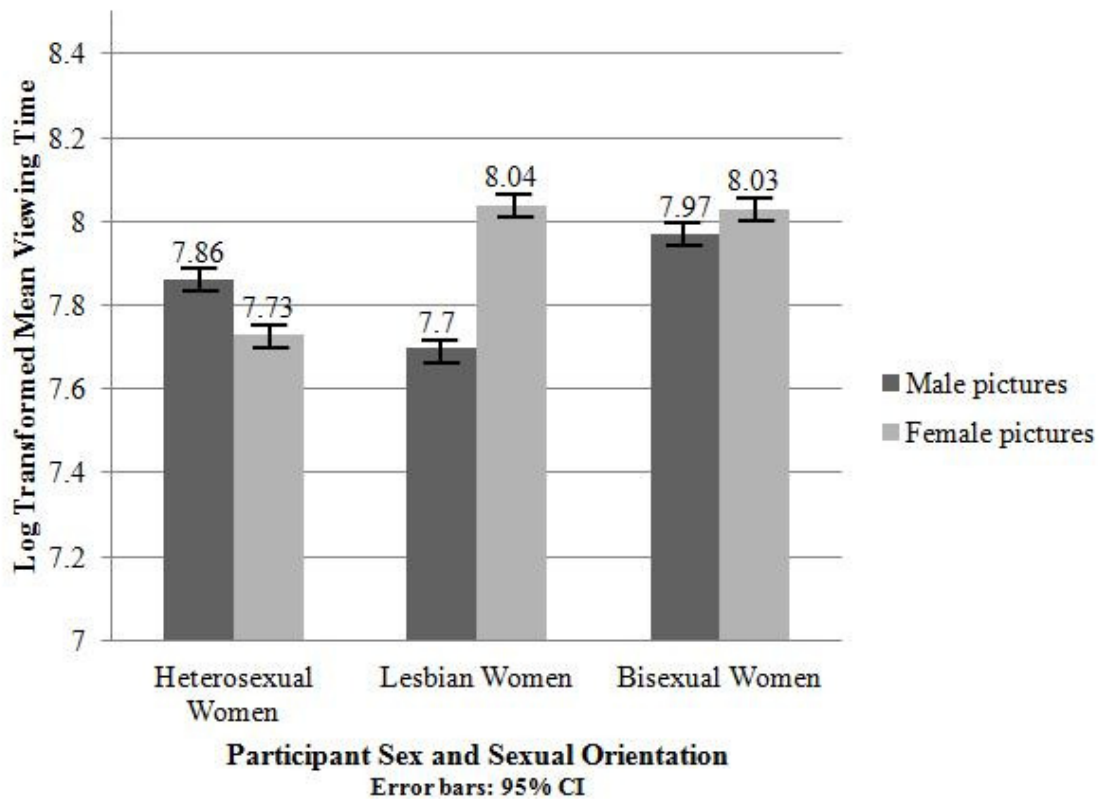


Figure 2. Log transformed mean viewing time for women by sexual orientation and picture type.

Bisexual Men and Bisexual Women: Within-Group Comparisons

significant (both $ps < .001$). The contrast between viewing times of pictures of women and men was not significant ($p = .423$) (see in Figure 1).

For bisexual women, there was a significant effect for picture type, $F(2, 54) = 86.13, p < .001$. Bisexual women's viewing times were highest to the pictures of women ($M = 8.03; SE = .051$), followed by the pictures of men ($M = 7.97; SE = .052$) and the neutral pictures ($M = 7.46; SE = .050$). Post-hoc testing (Bonferroni) revealed that the

contrast between viewing times of pictures of women and the neutral pictures, and the contrast between viewing times of pictures of men and the neutral pictures, were significant (both $ps < .001$). The contrast between viewing times of pictures of women and men was significant at the .05 alpha level ($p = .027$) (see in Figure 2).

Kinsey Ratings

Bisexual Men Compared to Heterosexual Men

Sexual Fantasy

A logistic regression analysis comparing bisexual men to heterosexual men could not be constructed due to zero variability within the bisexual male sample. Consistent with Hypothesis 2A2a, 82% (95% CI [.70-.90]) of heterosexual men reported sexual fantasies that were exclusively heterosexual (i.e., zero on the Kinsey scale; category-specific), and 0% (95% CI [.0005-.071]) of bisexual men reported sexual fantasies that were exclusively heterosexual. Table 1 displays the frequency of bisexual men and heterosexual men who endorsed exclusively heterosexual and nonexclusively heterosexual sexual fantasies, romantic attractions, and sexual behaviors.

Romantic Attraction

Consistent with Hypothesis 2A2b, a logistic regression analysis revealed that, compared to bisexual men, heterosexual men had 2450 times the odds of reporting exclusively heterosexual romantic attractions. Table 2 displays the logistic regression analysis for Kinsey scale ratings of romantic attractions for heterosexual men compared to bisexual men.

Table 1

Frequency of Bisexual and Heterosexual Men's Exclusive and Nonexclusive Heterosexual Sexual Expressions

Sexual expression	Sexual orientation group			
	Bisexual men		Heterosexual men	
	<i>Exclusive heterosexuality</i>	<i>Nonexclusive heterosexuality</i>	<i>Exclusive heterosexuality</i>	<i>Nonexclusive heterosexuality</i>
Sexual fantasy	0 (0)	50 (100)	42 (82)	9 (18)
Romantic attraction	1 (2)	49 (98)	50 (98)	1 (2)
Sexual behavior	0 (0)	50 (100)	36 (100)	0 (0)

Note: Values enclosed within parentheses represent percentages within sexual orientation

Table 2

Summary of Logistic Regression Analysis for Bisexual and Heterosexual Men's Romantic Attractions

Predictor	Category-Specificity		
	<i>B</i>	<i>SE B</i>	<i>OR(CI)</i>
Sexual orientation			
Bisexual	ref	--	--
Heterosexual	7.80***	1.43	2,450 (149.0 - 40,276.0)

Note: *OR*= Odds Ratio. *CI* = Confidence Interval. Outcome: Category-Specificity coded as 1 for *exclusive heterosexuality* and 0 for *nonexclusive heterosexuality*.

*** $p < .001$

Sexual Behavior

A logistic regression analysis comparing bisexual men to heterosexual men could not be constructed due to zero variability within the bisexual male and heterosexual male samples. Consistent with Hypothesis 2A2c, 100% (95% CI [.93-.99]) of heterosexual men reported sexual behaviors that were exclusively heterosexual (i.e., zero on the Kinsey scale; category-specific), and 0% (95% CI [.0005-.071]) of bisexual men reported sexual behaviors that were exclusively heterosexual. Of note, 15 heterosexual men reported having not engaged in sexual behavior over the past 2 years. Their data were treated as missing data.

Bisexual Men Compared to Gay Men

Sexual Fantasy

Consistent with Hypothesis 2A1a, a logistic regression analysis revealed that, compared to bisexual men, gay men had 371 times the odds of reporting category-specific sexual fantasies. Table 3 displays the logistic regression analysis for Kinsey scale ratings of sexual fantasies for gay men compared to bisexual men.

Romantic Attraction

A logistic regression analysis comparing bisexual men to gay men could not be constructed due to zero variability within the gay male sample. Consistent with Hypothesis 2A1b, 40% (95% CI [.28-.54]) of bisexual men reported category-specific romantic attractions, and 100% (95% CI [.93-.99]) of gay men reported category-specific romantic attractions.

Table 3

*Summary of Logistic Regression Analysis for
Bisexual and Gay Men's Sexual Fantasies*

Predictor	Category-specificity		
	<i>B</i>	<i>SE B</i>	<i>OR(CI)</i>
Age	.055*	.026	1.06 (1.003 - 1.11)
Sexual orientation			
Bisexual	ref	--	--
Gay	5.92***	1.13	371.2 (40.2 - 3431.5)

Note: *OR*= Odds Ratio. *CI* = Confidence Interval. Outcome: Category-specificity coded as 1 for *category-specific* and 0 for *nonspecific*.

* $p < .05$ ** $p < .01$ *** $p < .001$

Sexual Behavior

A logistic regression analysis comparing bisexual men to gay men could not be constructed due to zero variability within the gay male sample. Consistent with Hypothesis 2A1c, 0% (95% CI [.0005-.071]) of bisexual men reported category-specific sexual behaviors, and 100% (95% CI [.93-.99]) of gay men reported category-specific sexual behaviors. Of note, 2 gay men reported having not engaged in sexual behavior over the past 2 years. Their data were treated as missing. Table 4 displays the frequency of bisexual and gay men who endorsed category-specific and nonspecific sexual fantasies, romantic attractions, and sexual behaviors.

Table 4

*Frequency of Bisexual and Gay Men's Specific
and Nonspecific Sexual Expressions*

Sexual expression	Sexual orientation group			
	Bisexual men		Gay men	
	<i>Specific</i>	<i>Nonspecific</i>	<i>Specific</i>	<i>Nonspecific</i>
Sexual fantasy	10 (20)	40 (80)	51 (98)	1 (2)
Romantic attraction	20 (40)	30 (60)	52 (100)	0 (0)
Sexual behavior	0 (0)	50 (100)	50 (100)	0 (0)

Note: Values enclosed within parentheses represent percentages within sexual orientation.

Bisexual Women Compared to Heterosexual Women

Sexual Fantasy

A logistic regression analysis comparing bisexual women to heterosexual women could not be constructed due to zero variability within the bisexual female sample. Consistent with Hypothesis 2B2a, 64% (95% CI [.50-.75]) of heterosexual women reported sexual fantasies that were exclusively heterosexual (i.e., zero on the Kinsey scale; category-specific), and 0% (95% CI [.0005-.065]) of bisexual women reported sexual fantasies that were exclusively heterosexual. Table 5 displays the frequency of bisexual women and heterosexual women who endorsed exclusively heterosexual and nonexclusively heterosexual sexual fantasies, romantic attractions, and sexual behaviors.

Table 5

*Frequency of Bisexual and Heterosexual Women's Exclusive
and Nonexclusive Heterosexual Sexual Expressions*

Sexual expression	Sexual orientation group			
	Bisexual women		Heterosexual women	
	<i>Exclusive heterosexuality</i>	<i>Nonexclusive heterosexuality</i>	<i>Exclusive heterosexuality</i>	<i>Nonexclusive heterosexuality</i>
Sexual fantasy	0 (0)	54 (100)	35 (64)	20 (36)
Romantic attraction	0 (0)	54 (100)	45 (82)	10 (18)
Sexual behavior	0 (0)	54 (100)	42 (88)	6 (12)

Note: Values enclosed within parentheses represent percentages within sexual orientation

Romantic Attraction

A logistic regression analysis comparing bisexual women to heterosexual women could not be constructed due to zero variability within the bisexual female sample. Consistent with Hypothesis 2B2b, 82% (95% CI [.70-.90]) of heterosexual women reported romantic attractions that were exclusively heterosexual (i.e., zero on the Kinsey scale; category-specific), and 0% (95% CI [.0005-.065]) of bisexual women reported romantic attractions that were exclusively heterosexual.

Sexual Behavior

A logistic regression analysis comparing bisexual women to heterosexual women could not be constructed due to zero variability within bisexual female sample. Consistent with Hypothesis 2B2c, 100% (95% CI [.93-.99]) of heterosexual women reported sexual behaviors that were exclusively heterosexual (i.e., zero on the Kinsey

scale; category-specific), and 0% (95% CI [.0005-.065]) of bisexual women reported sexual behaviors that were exclusively heterosexual. Of note, 7 heterosexual women reported having not engaged in sexual behavior over the past 2 years. Their data were treated as missing.

Bisexual Women Compared to Lesbian Women

Sexual Fantasy

Consistent with Hypothesis 2B1a, a logistic regression analysis revealed that compared to bisexual women, lesbian women had 25 times the odds of reporting category-specific sexual fantasies. Table 6 displays the logistic regression analysis for Kinsey scale ratings of sexual fantasies for lesbian women compared to bisexual women.

Table 6

Summary of Logistic Regression Analysis for Bisexual and Lesbian Women's Sexual Fantasies

Predictor	Category-specificity		
	<i>B</i>	<i>SE B</i>	<i>OR(CI)</i>
Age	-.025	.050	.975(.884-1.08)
Sexual orientation			
Bisexual	ref	--	--
Lesbian	3.23***	.541	25.3(8.77-73.1)

Note: *OR*= Odds Ratio. *CI* = Confidence Interval. Outcome: Category-specificity coded as 1 for *category-specific* and 0 for *nonspecific*.

*** $p < .001$

Romantic Attraction

A logistic regression analysis comparing bisexual women to lesbian women could not be constructed due to zero variability within the lesbian sample. Consistent with Hypothesis 2B1b, 20% (95% CI [.12-.33]) of bisexual women reported category-specific romantic attractions, and 100% (95% CI [.93-.99]) of lesbian women reported category-specific romantic attractions.

Sexual Behavior

A logistic regression analysis comparing bisexual women to lesbian women could not be constructed due to zero variability within the lesbian sample. Consistent with Hypothesis 2B1c, 0% (95% CI [.0005-.065]) of bisexual women reported category-specific sexual behaviors, and 100% (95% CI [.93-.99]) of lesbian women reported category-specific sexual behaviors. Table 7 displays the frequency of bisexual, and lesbian women who endorsed category-specific and nonspecific sexual fantasies, romantic attractions, and sexual behaviors.

Bisexual Men: Within-Group Comparison

Sexual Fantasy

A chi-square analysis revealed a significant difference in the distribution of frequencies between bisexual men's category-specific (i.e., Kinsey 0-1, 5-6) and category nonspecific (i.e., Kinsey 2-4) sexual fantasies, $\chi^2 18$, $df = 1$, $p < .001$. Bisexual men were significantly more likely to report nonspecific (80%; 95% CI [.67-.89]) than specific (20%; 95% CI [.11-.33]) sexual fantasies.

Table 7

*Frequency of Bisexual and Lesbian Women's Specific
and Nonspecific Sexual Expressions*

Sexual expression	Sexual orientation group			
	Bisexual women		Lesbian women	
	<i>Specific</i>	<i>Nonspecific</i>	<i>Specific</i>	<i>Nonspecific</i>
Sexual fantasy	10 (18)	44 (82)	40 (85)	7 (15)
Romantic attraction	11 (20)	43 (80)	47 (100)	0 (0)
Sexual behavior	0 (0)	54 (100)	47 (100)	0 (0)

Note: Values enclosed within parentheses represent percentages within sexual orientation.

Romantic Attraction

A chi-square analysis revealed no significant difference in the distribution of frequencies between bisexual men's specific (i.e., Kinsey 0-1, 5-6) and nonspecific (i.e., Kinsey 2-4) romantic attractions, $\chi^2 = 2.00$, $df = 1$, $p = .15$. Bisexual men were no more likely to report nonspecific (60%; 95% CI [.46-.72]) than specific (40%; 95% CI [.28-.54]) romantic attractions. Of the 20 men who reported category-specific romantic attractions, 9 (45%) reported heterosexually leaning (i.e., Kinsey ratings 0-1) romantic attractions, and 11 (55%) reported homosexually leaning (i.e., Kinsey ratings 5-6) romantic attractions. Post-hoc power analysis completed for a chi-square test with a moderate effect size and a sample size of 50 estimated the power at .56. Thus, the power for this test might not have been great enough to detect an effect.

Sexual Behavior

One hundred percent of bisexual men reported nonspecific sexual behaviors (95% CI [.93-.99]).

Sexual Appeal Ratings

Bisexual Men Compared to Heterosexual Men

Consistent with Hypothesis 2A1d, a *t*-test revealed that pictures of men were rated as significantly more appealing by bisexual men ($M = 1.53$; $SE = .031$) than by heterosexual men ($M = .260$; $SE = .060$), $t(99) = 18.70$, $p < .001$. Additionally, pictures of women were rated significantly more appealing by heterosexual men ($M = 1.66$; $SE = .03$) than by bisexual men ($M = 1.54$; $SE = .032$), $t(99) = 2.97$, $p < .01$.

Bisexual Men Compared to Gay Men

A repeated measures analysis of covariance (ANCOVA) comparing sexual appeal ratings of the two sex picture types (Picture Type: Male, Female) by sexual orientation (Sexual Orientation: Bisexual, Gay) with age as a covariate, was conducted. There was a significant main effect for picture type, $F(1, 99) = 12.08$, $p = .001$. The interaction of picture type and sexual orientation was also significant, $F(1, 99) = 212.91$, $p < .001$. The significant interaction was examined further utilizing independent samples *t*-tests.

Consistent with Hypothesis 2A2d, a *t*-test revealed that bisexual men rated pictures of women ($M = 1.54$; $SE = .03$) significantly more appealing than gay men rated pictures of women ($M = .45$; $SE = .04$) ($t = 17.23$, $df = 100$, $p < .001$). Further, a *t*-test revealed that gay men rated pictures of men significantly more appealing ($M = 1.64$; $SE = .024$) than bisexual men rated pictures of men ($M = 1.53$; $SE = .031$) ($t = 2.82$, $df = 100$, $p < .01$).

Figure 3 displays the log transformed mean sexual appeal ratings for the bisexual, heterosexual, and gay men.

Bisexual Women Compared to Heterosexual Women

Consistent with Hypothesis 2B1d, a *t*-test revealed that bisexual women rated pictures of women significantly more appealing ($M = 1.47$; $SE = .029$) than heterosexual women rated pictures of women ($M = .980$; $SE = .070$), $t(107) = 6.42$, $p < .001$.

Additionally, a *t*-test revealed that there was no significant difference in how appealing pictures of men were rated by bisexual women ($M = 1.20$; $SE = .039$) and heterosexual women ($M = 1.28$; $SE = .04$), $t(107) = 1.43$, $p = .155$.

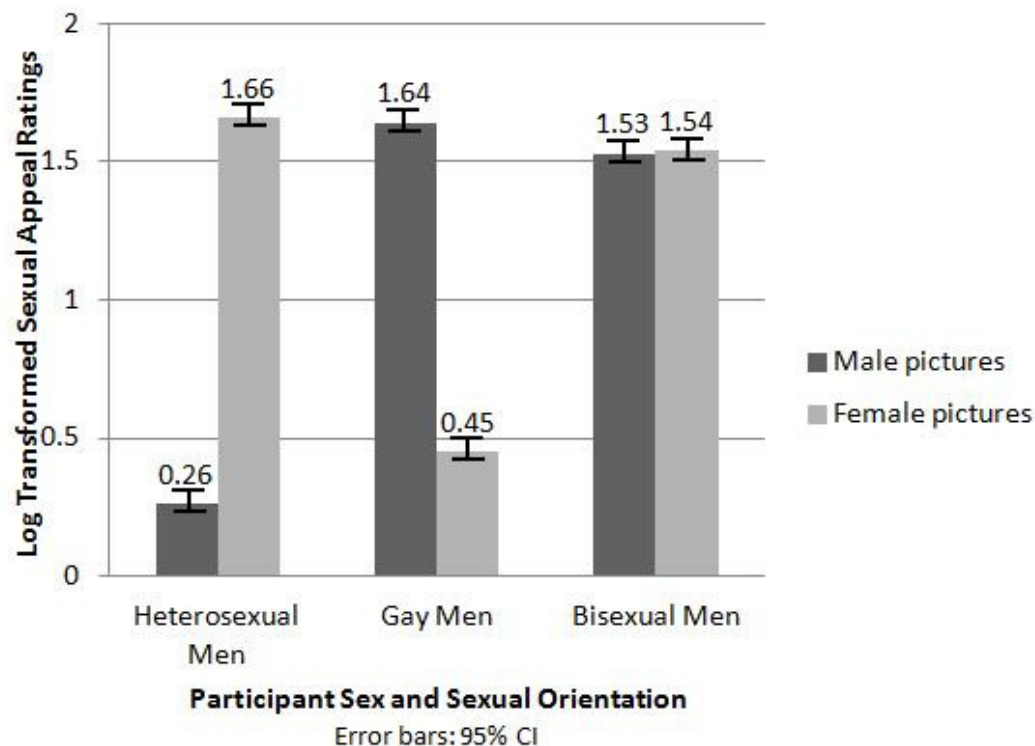


Figure 3. Log transformed mean sexual appeal ratings for men by participant sexual orientation and picture type.

Bisexual Women Compared to Lesbian Women

A repeated measures analysis of covariance (ANCOVA) comparing sexual appeal ratings of the two sex picture types (Picture Type: Male, Female) by sexual orientation (Sexual Orientation: Bisexual, Lesbian) with age as a covariate, was conducted. There was a significant main effect for picture type, $F(1, 98) = 35.64, p < .001$. The interaction of picture type and sexual orientation was also significant, $F(1, 98) = 77.26, p < .001$. The significant interaction was examined further utilizing independent samples *t*-tests. Consistent with Hypothesis 2B2d, a *t*-test revealed that pictures of men were rated significantly more appealing by bisexual women ($M = 1.20; SE = .04$) than lesbian women ($M = .50; SE = .03$) ($t = 10.90, df = 99, p < .001$). Further, a *t*-test revealed that there was no significant difference in how appealing pictures of women were rated by bisexual women ($M = 1.47; SE = .029$) and lesbian women ($M = 1.48; SE = .045$) ($t = .192, df = 99, p = .849$). Figure 4 displays the log transformed sexual appeal ratings for the bisexual, heterosexual, and lesbian women.

Bisexual Men and Bisexual Women: Within-Group Comparisons

Univariate ANOVAs comparing ratings of the three picture types (Picture Type: Male, Female, Neutral) *separately* by participant sex (Sex: Male, Female) were conducted. For bisexual men, there was a significant effect for picture type, $F(2, 50) = 148, p < .001$. Bisexual men's sexual appeal ratings were highest to the pictures of women ($M = 1.54; SE = .032$), followed by the pictures of men ($M = 1.53; SE = .031$) and the neutral pictures ($M = .532; SE = .070$). Post-hoc testing (Bonferroni) revealed that the contrast between ratings of pictures of women and the neutral pictures, and the

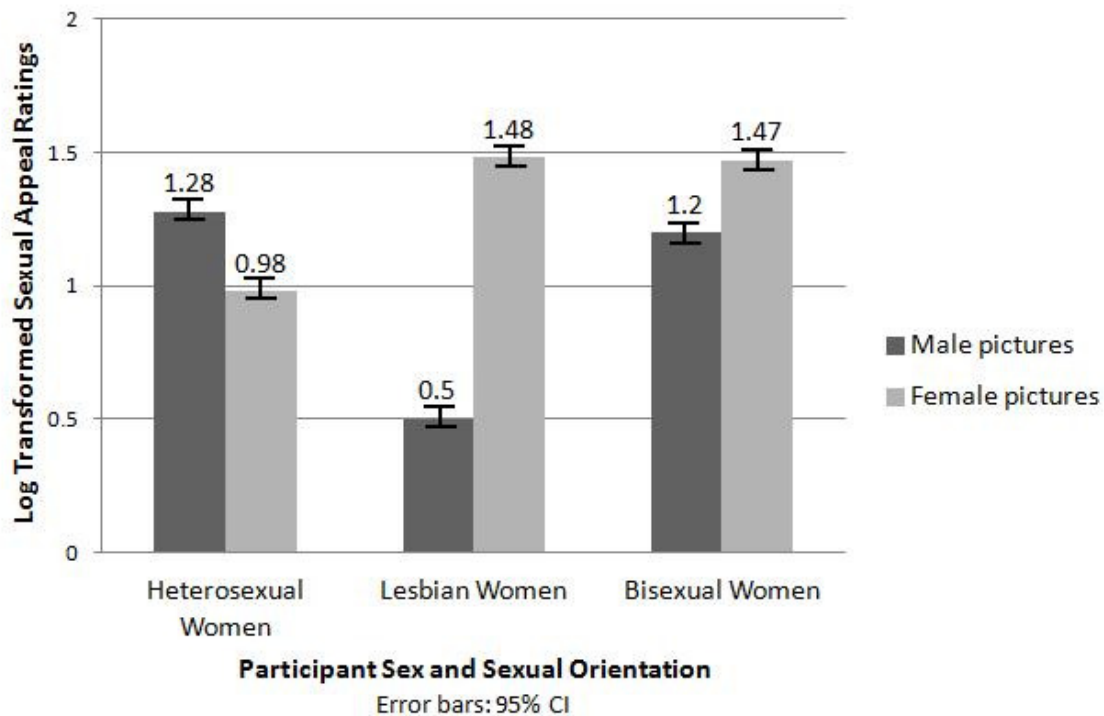


Figure 4. Log transformed mean sexual appeal ratings for women by participant sexual orientation and picture type.

contrast between ratings of pictures of men and the neutral pictures, were significant (both $ps < .001$). The contrast between ratings of pictures of women and men was not significant ($p = 1.00$).

For bisexual women, there was also a significant effect for picture type, $F(2, 54) = 157.6$, $p < .001$. Women's sexual appeal ratings were highest to the pictures of women ($M = 1.47$; $SE = .029$), followed by the pictures of men ($M = 1.20$; $SE = .039$) and the neutral pictures ($M = .373$; $SE = .070$). Post-hoc testing (Bonferroni) revealed sexual appeal ratings to all three groups of pictures to be significantly different from each other (all $ps < .001$).

Nature of Attractions

Bisexual men and women were asked if the nature of their attractions differs for men and women. Six participants did not answer this question; therefore, their data were not included in the analysis. Eighty-eight percent (41 men and 46 women) of participants reported that the nature of their attractions to men and women is different. They provided qualitative responses to explain the differences in their attractions. Their qualitative responses were coded into five categories: a) both emotional and sexual differences, b) only emotional differences, c) only sexual differences, d) nonsexual differences, and e) no differences. Descriptions of each category, response examples, and coding guidelines for these categories are located in Appendix A. Table 8 displays the frequency of bisexual individuals who endorsed each theme. Those who indicated no differences in the nature of their attractions ($n = 12$) to men and women were removed from analyses. Further, participants who endorsed nonsexual differences were too few to constitute a meaningful category; therefore, given their nonsexual commonality, the themes of non-sexual differences and only emotional differences were collapsed into one category, thus leaving a total of three categories utilized for analyses.

Consistent with Hypothesis 3A, a chi-square analysis revealed a distribution of frequencies among these coded responses within bisexual men that approached significance, $\chi^2(2, n = 41) = 5.37, p = .07$. Post-hoc power analysis completed for a chi-square test with a moderate effect size and a sample size of 41 estimated the power at .39. Thus, power for this test might not have been sufficient to detect this effect. Bisexual men were most likely to report emotional *and* sexual reasons for their attractions to men

Table 8

*Frequencies of Bisexual Participants Who
Endorsed Nature of Attractions Themes*

Qualitative response themes	Frequency of men	Frequency of women
Emotional and sexual differences	21 (51.2)	19 (41.3)
Only emotional/nonsexual differences	11 (26.8)	9 (19.6)
Only sexual differences	9 (22.0)	18 (39.1)
Total	41 (100)	46 (100)

Note: Values enclosed in parentheses represent percentages within gender.

vs. women (51%; 95% CI [.36-.66]), followed by only emotional/nonsexual reasons (27%; 95% CI [.16-.42]), and only sexual reasons (22%; 95% CI [.12-.37]).

Inconsistent with Hypothesis 3B, a chi-square analysis revealed no significant difference in the distribution of frequencies between these coded responses within bisexual women, $\chi^2(2, n = 46) = 3.563, p = .17$. Bisexual women were no more likely to report that the nature of their attractions differed due to emotional and sexual reasons (41%; 95% CI [.28-.56]) versus only sexual reasons (39%; 95% CI [.26-.54]) and only emotional/nonsexual reasons (20%; 95% CI [.11-.33]). Post-hoc power analysis completed for a chi-square test with a moderate effect size and a sample size of 46 estimated the power at .43. Thus, power for this test might not have been sufficient to detect an effect.

CHAPTER 4

DISCUSSION

Bisexual men and women, in the present study, demonstrated and reported sexual orientation patterns that were distinct from the self-identified heterosexual and gay/lesbian men and women. This is the strongest evidence to date to suggest that bisexual men and women demonstrate and report a sexual interest and expression pattern distinct from their heterosexual and homosexual counterparts. Additionally, these findings support that the current assumptions about sexual orientation, based largely on heterosexual research, are not accurate in conceptualizing bisexual men and women. Finally, these findings suggest that our current understanding of sexuality is incomplete.

Bisexual Men

Bisexual men's sexual interest pattern in the present study was consistent with only one of three predominant assumptions about men's sexual orientation. Specifically, in contrast to the heterosexual and gay men, the bisexual men demonstrated (via viewing time) nonspecific sexual interest, reported nonspecific subjective sexual expressions (i.e., sexual attractions, sexual fantasies, sexual behaviors, romantic attractions), and indicated that *both* sexual and emotional factors are important in determining their attractions to men and women. Each of these findings will be discussed below.

First, the bisexual men's nonspecific sexual interest and nonspecific subjective sexual expressions were virtually identical to those demonstrated and reported by bisexual men in Cerny and Janssen (2011). Thus, despite having addressed the major limitations of Cerny and Janssen's study, the present study replicated their findings. Specifically, the present study objectively measured an alternative sexual expression (i.e., sexual interest via viewing time), presented pictures of individuals, not videos of couples [eliminating the question of to whom and to what (i.e., sexual activity or actor gender) the participant was attending], and collected data from three times as many participants (50 men versus 13 men) as Cerny and Janssen.

However, the relatively nonspecific sexual arousal and interest pattern demonstrated by bisexuals in both the present study and that of Cerny and Janssen (2011) is inconsistent with the conclusions of Rieger and colleagues (2005). Rieger and colleagues (2005) found that bisexually-attracted men demonstrated a *category-specific* pattern of sexual arousal, despite the fact that their study procedure, design, and methodology were nearly identical to that of Cerny and Janssen (2011). What might account for such different conclusions from similar studies?

The two studies differed substantially in their operationalization of bisexuality. The men in Cerny and Janssen (2011) self-identified as bisexual, whereas the bisexual men in Rieger et al. (2005) reported bisexual sexual attractions (Kinsey scale ratings of 2-4, averaged across their adulthood) but may have identified as gay, heterosexual, or bisexual. Therefore, it is possible that these two studies recruited two distinctly different types of *bisexuals*. Consistent with this speculation, research has indicated that many

individuals report some degree of both same and other-sex attractions, yet maintain an identity that suggests exclusive same- or other-sex attractions (i.e., heterosexual or gay) (reference). Far fewer individuals actually identify as same- *and* other-sex attracted (i.e., bisexual) (e.g., Herek, Norton, Allen, & Sims, 2010; Laumann et al., 1994; Rust, 2000). Thus, individuals who self-identify as bisexual are likely meaningfully different from those who report some degree of same and other-sex attractions, but maintain a heterosexual or gay identity.

Second, unlike in Rieger et al. (2005), bisexual men in the present study did not demonstrate a discrepancy between their patterns of objectively measured sexual interest and their subjective sexual expressions, i.e., whether assessed objectively or subjectively, bisexual men demonstrated nonspecificity. This consistency between objective and subjective sexual expressions was also found by Cerny and Janssen (2011), and stands in contrast to the findings by Rieger and colleagues (2005). Bisexually-attracted men in Rieger et al. (2005) demonstrated category-specific objectively measured sexual arousal that was inconsistent with their nonspecific subjective sexual arousal. Given that most men demonstrate sexual arousal that is highly correlated with their subjective sexual expressions (Janssen, 2011), Rieger and colleagues (2005) speculated that this discrepancy was the result of their bisexual men's (a) exaggerated subjective reports of sexual arousal toward their less preferred sex or, (b) conscious suppression of genital arousal. The findings from the present study suggest that these speculations are inaccurate. This perplexing discrepancy may be the result of Rieger and colleague's (2005) distinct operationalization of their participants as bisexual.

Third, findings that approached significance suggested that our bisexual men emphasize both sexual *and* emotional factors as important in determining their attractions to men versus women. This is in contrast to what we know to be true for most other men. Most other men (gay or heterosexual) report a strong, almost exclusive emphasis on sexual factors in motivating their interest in their preferred gender (Bailey et al., 1994; Bell et al., 1981; Chivers, 2010; Savin-Williams, 1998; Savin-Williams & Diamond, 2000; 2003). Compared with previous research on heterosexual and gay men, this finding suggests that bisexual men may not rely on sexual interest as heavily as heterosexual and gay men in determining their attractions (Bailey et al., 1994; Bell et al., 1981; Chivers, 2010; Savin-Williams, 1998; Savin-Williams & Diamond, 2000; 2003). Future qualitative research is needed to confirm this finding. If confirmed, bisexual men's strong emphasis on sexual *and* emotional factors in their sexual interest toward men and women may be a key characteristic of what orients bisexual men's nonexclusivity.

Bisexual Women

Bisexual women's sexual orientation pattern in the present study was consistent with only one of three assumptions about women's sexual orientation. Specifically, compared to the self-identified heterosexual and lesbian women, bisexual women in the present study demonstrated less category-specific sexual interest, reported nonspecific subjective sexual expressions (i.e., sexual attractions, sexual fantasies, sexual behaviors, and romantic attractions), and reported that their interest in potential partners is motivated equally, or near equally, by sexual and emotional factors. Each of these findings will be discussed below.

First, bisexual women were significantly less category-specific in their sexual interest than were heterosexual and lesbian women. Bisexual women's objectively measured sexual arousal or interest has not yet been reported in the literature; therefore, there exist no published results with which we can compare this finding. However, this finding is not surprising given that bisexual women have reported subjective sexual interest/arousal that is less category-specific compared to heterosexual and lesbian women (Blackford et al., 1996). Additionally, this finding supports that bisexual women's nonspecific sexual interest is different, at least in degree, from that of heterosexual women. Bisexual women's strongly nonspecific sexual interest may be an indicator of a bisexual *orientation*, whereas, heterosexual women's less strong nonspecific sexual interest/arousal may be merely an indicator of bisexual *fluidity* (Diamond, 2008).

Second, bisexual women in the present study did not demonstrate the same discrepancy between their objectively measured sexual interest and their subjective sexual expressions that has been demonstrated by heterosexual women (Chivers et al., 2004; 2007; Chivers & Bailey, 2005). It is theorized that, compared to men, heterosexual women demonstrate this discrepancy because they lack the external physical cues (e.g., erection) that inform them of their sexual arousal or sexual interest (for a review, see Chivers et al., 2010). Others suggest that this discrepancy is due to an invalid measurement technique (i.e., vaginal photoplethysmography) (Geer & Janssen, 2000). Further, it has been suggested that this discrepancy manifests because women cognitively process sexual material differently from men (Spiering, Everaerd, & Laan, 2004). The present finding that bisexual women (and lesbian women) do not demonstrate this

discrepancy is most consistent with those theories that attribute the observed discrepancies to the methodological limits of vaginal plethysmography as an objective measure of female sexual arousal.

Finally, bisexual women reported that *both* sexual and emotional factors were of at least some importance in determining their attractions to men and women. Specifically, 60% of bisexual women in the present study reported that emotional factors were of at least some importance. This finding is consistent with previous studies in that most women of all orientations report a significant emphasis on emotional/nonsexual factors in motivating their attractions to their preferred sex (Bailey et al., 1994; Blumstein & Schwartz, 1989; Diamond, 2000; Gramick 1984; Peplau & Cochran 1981; Vetere, 1983). Additionally, 80% of bisexual women in the present study reported that sexual factors were of at least some importance. This finding was surprising, as no previous research has indicated that bisexual women place a strong emphasis on sexual factors in motivating their attractions to their preferred sex (Diamond, 2008; Savin-Williams & Diamond, 2000, 2003). Future research on the relative importance of sexual and emotional factors in women's sexual preferences is needed to confirm this finding. If confirmed, bisexual women's stronger emphasis on sexual features, as compared to their heterosexual and homosexual counterparts, may be an important distinguishing factor between fluid nonspecific women and bisexually oriented nonspecific women, and in how and why such women self-identify their orientation as heterosexual or bisexual.

Research Implications

Bisexual men and women in the present study demonstrated a distinct sexual orientation pattern, unlike that of heterosexual and homosexual men and women.

However, the way in which research attempts to understand bisexuality is based primarily on our knowledge of heterosexuals and gay/lesbian men and women. Findings from the present study clearly indicate that the way in which bisexuals have been traditionally conceptualized is inaccurate, or at least incomplete. The present findings have important implications for how bisexuality is investigated. For men, bisexuality is not merely an extension of heterosexuality or homosexuality. It is a distinct sexual orientation and should be treated as such in future research. For women, bisexuality appears to belong on a continuum of category-specificity. That is, given bisexual women's uniform nonspecific sexual interest and sexual expressions, they would belong on the nonspecific extreme of this continuum, whereas, lesbian women, given their uniform specificity, would be placed on the specific extreme of this continuum. Heterosexual women, due to their nonspecific sexual interest and arousal and relatively specific sexual expressions, would fall somewhere in between. This theory is supported by research on women's same sex versus other sex subjective sexual interest (Klein et al., 1985; Thompson & Morgan, 2008; Weinrich & Klein, 2002).

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 maladjusted, experiencing identity conflict, and/or living in a transitional stage before proclaiming their "true" homosexual orientation (e.g., Fox, 2000; Zinik, 2000). Additionally, gay and lesbian identity development models have often regarded bisexuality as a delay or prevention of developing a successful homosexual identity (Fox, 2000). These "invalidating beliefs," as coined by Rust (1995), maintain the

struggle for bisexuals to develop a stable sexual identity. Rust stated, “It is difficult to assert and to live in accordance with an identity that is continually denied or misperceived by others” (2002, p. 202). The findings from the present study provide strong support for the validation of bisexuality (i.e., that bisexual men and women are distinct from their heterosexual and gay/lesbian counterparts). Acceptance of these conclusions could have a significant impact on the messages that bisexuals receive from the media, educators, and clinicians, 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

First, one might argue that including only those self-identified as bisexual in the present study was a limitation (Savin-Williams & Diamond, 2003). As mentioned previously, individuals who identify as bisexual are likely meaningfully different from those who merely report bisexual sexual expressions (Brooks, 2009; Diamond, 2003, 2006; Herek et al., 2010; Thompson & Morgan, 2008). Including only self-identified bisexuals was appropriate because: a) The male and female models of sexual orientation for heterosexual and gay/lesbian men and women also predominantly rely on research utilizing self-identification to classify sexual orientation, and b) utilizing self-identification allowed for a more direct response to Rieger and colleagues’ (2005) operationalization of bisexuality. However, including self-identified bisexual individuals as well as individuals who report bisexual sexual expressions may have provided a much richer picture of the phenomenon of bisexuality. Future quantitative and qualitative research comparing self-identified bisexuals, behavioral bisexuals, and all others who

report bisexual sexual expressions, may bring a better understanding of the complex phenomenon of bisexuality.

Also, given the relatively small sample size of bisexual individuals in the present study, all within group analyses lacked statistical power. Power is the probability that a statistical test will *not* make a false negative decision (i.e., Type II error); therefore, post-hoc, power is only relevant to discuss in the context of nonsignificant findings. A generally accepted standard for power is 80% (Ellis, 2010); however, the power for the three nonsignificant within-group findings ranged from .39 to .56. Power was lowest (.39 - .43) for the qualitative exploratory analyses, suggesting that any nonsignificant differences in the importance of sexual and emotional factors in determining attractions may, in fact, be statistically significant. For example, if power was increased, it may be that there is a statistically significant difference in bisexual women's report of the importance of sexual and emotional factors in determining attractions to men and women. Future research with a larger sample size will be necessary in order to determine to what extent power affected the three nonsignificant within-group results of the present study.

Another limitation involved our exploratory qualitative analyses of the nature of men's and women's attractions. These analyses did not involve direct comparisons with heterosexual and gay/lesbian groups. Any comparisons between these data and heterosexual and gay/lesbian men and women were based on findings from previous literature, and were speculative at best. Further, it was assumed that participants' mere mention of sexual and/or emotional factors in some way indicated that these factors were of importance in their sexual preference. Future research directly asking bisexual individuals the relative importance of these factors would help clarify these exploratory

findings. Third, the simple coding scheme utilized for this qualitative data considerably reduced its richness. A larger sample size would have allowed for a more sophisticated coding scheme (e.g., coding differences in the direction and/or degree of sexual and emotional attractions toward men and women) and potentially more informative results.

Additionally, although the stimuli and procedures in the present study were identical to those used with the heterosexual (Israel, 2006; Israel & Strassberg, 2009) and gay/lesbian groups (Rullo, 2008; Rullo et al., 2010), these studies were conducted during different years with samples that may have meaningfully differed in their demographics. Unfortunately, age was the only demographic variable collected across all three studies, leaving it unclear to what degree these samples may have differed on other demographic variables (e.g., ethnicity, socioeconomic status, education), and whether these potential differences might account for the present findings. Further, limited data were available for analyses involving heterosexuals, which restricted the depth of statistical investigation between the bisexual participants and the heterosexual group.

Finally, as with any study that utilizes erotic stimuli, the findings of the present study 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 would have impacted viewing times or appeal ratings. However, as mentioned previously, earlier studies of viewing time in our lab (i.e., Israel & Strassberg, 2009; Rullo et al., 2010) have reported a lack of significant within-category correlations between viewing times and sexual appeal ratings. This suggests that if different sexually appealing pictures

of men and women were used, participants' sexual appeal ratings of these pictures may be also different, but the sex-related viewing time differences would likely stay the same.

Future Directions

Given that the majority of men and women experience some degree of same and other sex sexual interest (i.e., some degree of bisexuality), it is curious why only a small percentage of these men and women identify as bisexual (Laumann et al., 1994). What factors motivate an individual to self-identify as bisexual, versus merely experience or report same- and other sex sexual interests? Diamond (2008) reported that the non-heterosexual women in her longitudinal study appeared to change their self-identification from nonexclusive (i.e., bisexual) to exclusive (i.e., lesbian or heterosexual) self-identification once 70% of their sexual expressions were directed toward a particular gender. Might bisexual men and women follow a similar 70% threshold regarding their self-identification? That is, for example, does a bisexually-identified man change his self-identification to gay once the percentage of his sexual interests toward the same sex (versus other sex) reaches or exceeds some figure like 70%? Additionally, research suggests that, compared to other nonheterosexuals, bisexually-identified individuals are often older (which was supported in the present study), perhaps because a bisexual identity is claimed later in life, as a shift from another sexual identity (e.g., heterosexual) (Diamond, 2008). Future investigation on why one identifies as bisexual would help clarify this question, and potentially provide valuable information about men and women's nonexclusive sexual preferences.

Additionally, future research on the phenomenon of nonexclusivity in sexual interest and expressions is needed to further clarify the complex nature of bisexuality.

The present study represents only one small piece of the puzzle of understanding bisexuality. It has been proposed that in order to investigate the fluid phenomenon of female sexuality, future research on women should emphasize same sex attractions and behavior rather than self-identified sexual orientation (Savin-Williams & Diamond, 2003). The author agrees with this proposal, especially in the context of understanding bisexuality. By extension, we propose that future research on *male* sexuality also follow this advice, as male sexuality may not be as inflexible and category-specific as previously concluded (Bailey & Chivers, 2005; Chivers et al., 2004, 2007; Rieger et al., 2005).

Further, Diamond (2005) has stated,

by turning attention to cases in which the multiply *determined* phenomenon of same-sex sexuality manifests itself in *multiple, conflicting outcomes* (i.e., concurrent or longitudinal inconsistencies among attractions, identities, behaviors, fantasies, and romantic affection), we might better begin to identify the specific mechanisms underlying the core person-environment transactions through which sexual 'predispositions' develop and operate over the lifespan. (p. 295)

Future qualitative studies exploring the motivational factors of heterosexual, gay/lesbian, and bisexual men and women's sexual preferences, over time, may provide a greater understanding of these specific mechanisms to which Diamond (2005) has referred.

Further, it would be important for any research on women's sexual motivational factors to include measures of hormonal differences, as recent research suggests that sexual motivation is directly related to fluctuations in the menstrual cycle (Diamond & Wallen, 2011).

Summary

The present study makes an important contribution to the research on bisexuality by providing the most compelling evidence to date that bisexual men and women

represent a sexual orientation distinct from heterosexual and gay/lesbian men and women. By extension, these findings suggest that as long as researchers continue to attempt to understand bisexuality from heterosexually derived research assumptions, bisexuals will continue to be socially invalidated, scientifically misunderstood, and ineffectively served by clinicians. Future research on sexual orientation must consider the distinctness of bisexuality in order to develop a more accurate and complete understanding of sexuality.

APPENDIX A

CODING DEFINITIONS AND OPEN CODING GUIDELINES

Are the nature of your attractions to men and women different? If yes, please explain.

1. Emotional only:
 - a. Definition: Participants who reported that their attractions toward men and women differ for only emotional reasons. No sexual reasons are mentioned.
 - b. Rules:
 - i. These participants only report emotional reasons for their attractions to men and women.
 - ii. These participants do not report any sexual reasons for their attractions to men and women.
 - iii. Romantic, relationship, seriously dating, mental attraction and personality characteristics are all indicative of emotional reasons.
 - c. Examples:
 - i. “The emotional component of my attraction to women is a little different.”
 - ii. “I have more romantic feelings toward men than women.”
2. Sexual only:
 - a. Definition: Participants who reported that their attractions toward men and women differ for only sexual reasons. No emotional reasons are mentioned.
 - b. Rules:
 - i. These participants only report sexual reasons for their attractions to men and women.
 - ii. These participants do not report any emotional reasons for their attractions to men and women.
 - iii. Sexual includes references to physical attraction, “looks,” and physical features.
 - c. Examples:
 - i. “Sex is totally different – equally enjoyable, but a different experience.”

- ii. "Seeing a naked or semi-naked man generates an immediate sexual response. I only respond sexually to my wife through direct genital stimulation."
- 3. Emotional and sexual
 - a. Definition: Participants who reported that their attractions toward men and women differ for emotional *and* sexual reasons.
 - b. Rules:
 - i. These participants report both emotional and sexual reasons for their attractions to men and women. Emotional and sexual are as defined above.
 - c. Examples:
 - i. "My attraction to men is more sexually driven. My attraction to women is also a physical attraction but more of a relationship attraction and connection.
 - ii. "Sex with my wife is an expression of love and commitment. Sex with men is simply sex for immediate gratification."
- 4. Non-sexual other:
 - a. Definition: Participants who reported that their attractions toward men and women differ for reasons that are not explicitly sexual, and not explicitly emotional.
 - b. Rules:
 - i. These participants report an orientation toward both men and women for an ambiguous reason.
 - ii. These participants do not report any emotional reasons for their attractions to men and women.
 - iii. These participants do not report any sexual reasons for their attractions to men and women.
 - c. Examples:
 - i. "I feel more strongly toward men than women."
 - ii. "I find myself more with a man than a woman."
- 5. No difference:
 - a. Definition: Participants who reported that their attractions toward men and women do not differ for any reason.
 - b. Rules:
 - i. These participants report no differences in their attractions to men and women.

- ii. This also includes those who stated that their attractions toward men and women are person-based, thus indicating that their attractions do not differ based on gender.
- c. Examples:
 - i. “It is person based.”
 - ii. “Gender does not matter.”

You self identify as bisexual, why?

1. Sexual Attraction Only

- a. Definition: Participants who reported that they identify as bisexual because they are sexually attracted to both men and women. These participants did *not* report engaging in sexual behaviors with or having romantic attractions toward both men and women.
- b. Rules:
 - i. These participants report that they identify as bisexual because they are sexually attracted to both men and women.
 - ii. This includes any participant who mentions sexual arousal, sexual fantasy, or sexual appeal instead of attraction.
 - iii. If a participant did not specify what type of attraction, arousal, fantasy, or appeal, the decision was made to code as sexual.
 - iv. These participants do not report engaging in sexual behavior with both men and women.
 - v. These participants do not report having romantic attractions toward both men and women.
- c. Examples:
 - i. “Because I am physically attracted to both men and women.”
 - ii. “I have always been turned-on by both males and females.”

2. Sexual Behavior and Sexual Attraction

- a. Definition: Participants who reported that they identify as bisexual because they are sexually attracted to, and have sex with, both men and women.
- b. Rules:
 - i. These participants report that they identify as bisexual because they are sexually attracted to both men and women and have sexual behaviors with both men and women.
 - ii. This includes participants who do not report sexual attraction to men and women, but report only having sex with both men and women.

- iii. The decision was made that if a participant reported engaging in sexual behavior with men and women, this implied sexual attractions toward both men and women.
 - iv. This includes participants who report that they are married.
 - v. These participants do not report having romantic attractions towards both men and women.
 - c. Examples:
 - i. "I have sex with women and men."
 - ii. "Because I enjoy sex with my wife but I also enjoy sex with men."
3. Sexual Attraction, Sexual Behavior, and Romantic Attraction
- a. Definition: Participants who reported that they identify as bisexual because they are sexually attracted to, have sex with, and enter into romantic relationships with, both men and women.
 - b. Rules:
 - i. These participants report they are sexually attracted to, have sex with, and enter into romantic relationships with both men and women.
 - ii. The decision was made that if a participant reported engaging in romantic relationships with men and women, this implied sexual attraction and sexual behaviors with both men and women.
 - iii. This includes participants who do not report sexual attraction to men and women, but report having romantic relationships with both men and women.
 - iv. This includes participants who do not report having sex with both men and women, but report having romantic relationships with both men and women.
 - v. Phrases such as dating, relationships, being partners with, or romantically involved with, are considered indicative of a romantic relationship.
 - c. Examples:
 - i. "Because I am open to romantic and sexual relationships with both genders, though my preference shifts back and forth."
 - ii. "I have had relationships with both men and women and for as far back as I remember, as long as I've been attracted to others it has been both men and women. I and my partner are polyamorous and I have as well had experiences with both men and women."
4. Ambiguous Interest in Both Sexes
- a. Definition: Participants who reported that they are oriented toward both men and women in a way that does not indicate sexual attractions, sexual behaviors, or romantic attractions.

- b. Rules:
 - i. These participants report that they are ambiguously oriented toward both sexes.
 - ii. These participants do not report sexual attractions as the reason for identifying as bisexual.
 - iii. These participants do not report sexual behaviors as the reason for identifying as bisexual.
 - iv. These participants do not report romantic attractions as the reason for identifying as bisexual.
 - c. Examples:
 - i. "I believe a male or female could give me what I like."
 - ii. "I like being with men and women."
5. Person-Centered Attraction
- a. Definition: Participants who explicitly reported that they are primarily attracted to the person and not the gender/sex.
 - b. Rules:
 - i. These participants report that they are primarily attracted to the person and not the gender/sex.
 - ii. This includes any participant who reports an attraction to the person or individual regardless of gender, sex, or genitals.
 - c. Examples:
 - i. "It seems as though people who don't understand the concept of being free to love whom you love regardless of gender need to label us or identify us. I feel open toward either gender."
 - ii. "I am attracted to people, not certain body parts or certain sexes. Easiest thing is to say I am bisexual."
6. Political/Social reasons.
- a. Definition: Participants who reported that they identify as bisexual primarily for societal reasons.
 - b. Rules:
 - i. These participants report that they identify as bisexual primarily for political, social, or ideological reasons.
 - ii. The participant may report sexual attractions, sexual behaviors, or romantic relationships with men and women, but the predominant reason for their identification is political or social ideals.
 - iii. This includes religious pressure to identify as bisexual.
 - c. Example:
 - i. "I feel that straight and gay are self or socially induced delusions."

- ii. “I find it appealing to defy the biological imperative to mate by engaging in intercourse with members of the same gender, but I’m equally excited by the concept of submitting to said imperative.”

7. Just Who I Am

- a. Definition: Participants who reported that they identify as bisexual because that is just who they are, with no further explanation.
- b. Rules:
 - i. These participants provide no other classifiable information beyond stating that they are who they are.
- c. Examples:
 - i. “This is just how I feel.”
 - ii. “This is just natural.”

APPENDIX B

ADDITIONAL SELF-REPORT MEASURES ANALYSES, AND DISCUSSION

Measures

Discomfort Viewing Pictures

Participants were asked the degree of discomfort they felt while viewing pictures of women and men (responses ranged from 1, not at all, to 5, extremely). It has been suggested that, unlike heterosexual and gay/lesbian men and women, bisexual men and women do not experience a significant aversion (whether sexual, social, or emotional) to men or women (L. Beckstead, personal communication, June 10, 2011). Consistent with this suggestion, while viewing erotic videos of their nonpreferred sex, heterosexual and gay men have demonstrated a brain activation pattern that suggests aversion (Paul et al., 2008). Therefore, participants in the present study were asked their degree of discomfort while viewing erotic pictures in order to indirectly assess participants' degree of aversion (i.e., degree of discomfort) toward viewing pictures of men and women.

Frequency Viewing Pictures

Participants were asked on a five-point scale how often they viewed pictures similar to those presented in the study (responses ranged from 1, daily, to 5, never). According to research, individuals who are more erotophilic, and thus more comfortable with things sexual, are less likely to avoid exposure to sexual material (Fisher, Byrne,

White, & Kelley, 1988). Therefore, it is possible that participants' level of comfort viewing erotic pictures is related to the frequency in which they view such pictures.

Current Attractions

Participants were asked on a five-point Likert type scale how attracted they currently are to men and women, separately. Responses ranged from 1, not at all, to 5, extremely. It has been suggested that the more same-sex attracted a bisexual woman (according to Kinsey scale ratings of attraction), the more category-specific her sexual arousal (L. Diamond, personal communication, June 8, 2011). No such predictions have been made regarding men; therefore, this question was utilized to determine the correlation between self-reported same-sex attraction and sexual interest for women only.

Why Identify as Bisexual

At the completion of the presentation and rating of stimulus materials, participants responded to an additional open-ended, computer-presented question pertaining to their self-identified sexual orientation. The question was as follows: a) You self-identify as bisexual, why? In preparation to code these qualitative responses, two independent researchers independently utilized open coding of an identical unpublished qualitative dataset collected from bisexual individuals at a local Pride festival ($n = 35$). Given that there were no predictions based on this question, this question was analyzed utilizing a grounded theory approach (Glasser & Strauss, 1967). Seven themes emerged. Once saturation of the themes was achieved, the researchers developed coding guidelines (see Appendix A for descriptions of these themes, response examples, and the coding guidelines). Following these guidelines, the investigators independently coded the

qualitative data from the present dataset into the seven established themes. The interrater agreement of these independently coded themes was determined utilizing Cohen's kappa coefficient (Carletta, 1996). Kappa equaled 93% agreement.

Importance of Gender

Participants were asked on a five-point Likert type scale the importance of gender when choosing a partner. Responses ranged from 1, not at all, to 5, extremely. Bisexual individuals in previous research studies have reported that gender was not of high importance relative to a number of other constructs related to attractiveness of romantic partners (Diamond, 2008; Ross & Paul, 1992; Rust, 2002).

Results

Discomfort Level of Viewing Pictures

To determine level of discomfort viewing pictures of women among all three sexual orientation groups, a 2 (Sex: Male, Female) x 3 (Sexual Orientation: Heterosexual, Bisexual, Gay/Lesbian) analysis of variance (ANOVA) was conducted. This analysis revealed a significant effect for sexual orientation, $F(2, 308) = 10.1, p < .001$, and for the sex by sexual orientation interaction, $F(2, 308) = 10.9, p < .001$. The significant interaction was examined further through univariate ANOVAs comparing ratings of discomfort separately by participant sex.

For men, there was a significant effect for sexual orientation, $F(2, 153) = 5.84, p < .01$. Bisexual men reported the least discomfort viewing pictures of women ($M = 1.46; SE = .141$), followed by the report of discomfort by heterosexual men ($M = 1.59; SE = .140$) and the report of discomfort by gay men ($M = 2.10; SE = .138$). Post-hoc testing

(Bonferroni) revealed that the contrast between the report of gay men and bisexual men ($p < .01$), and the contrast between the report of gay men and heterosexual men ($p < .05$) were significant. The contrast between the report of bisexual men and heterosexual men was not significant ($p = .519$).

For women, there was also a significant effect for sexual orientation, $F(2, 155) = 17.7$, $p < .001$. Bisexual women reported the least discomfort viewing pictures of women ($M = 1.19$; $SE = .116$), followed by the report of discomfort by lesbian women ($M = 1.46$; $SE = .125$), and the report of discomfort by heterosexual women ($M = 2.13$; $SE = .115$). Post-hoc testing (Bonferroni) revealed that the contrast between the report of discomfort by heterosexual women and the report of discomfort by bisexual women was significant, and the contrast between the report of discomfort by heterosexual women and the report of discomfort by lesbian women was significant (both $ps < .01$). The contrast between the report of discomfort by bisexual women and the report of discomfort by lesbian women was not significant ($p = .113$).

To determine level of discomfort viewing pictures of men among all three sexual orientation groups, a 2 (Sex: Male, Female) x 3 (Sexual Orientation: Heterosexual, Bisexual, Gay/Lesbian) analysis of variance (ANOVA) was conducted. This analysis revealed a significant effect for sexual orientation, $F(2, 308) = 43.2$, $p < .001$, and for the sex by sexual orientation interaction, $F(2, 308) = 41.8$, $p < .001$. The significant interaction was examined further through univariate ANOVAs comparing ratings of discomfort separately by participant sex.

For men, there was a significant effect for sexual orientation, $F(2, 153) = 89.6$, $p < .001$. Bisexual men reported the least discomfort viewing pictures of men ($M = 1.20$;

$SE = .128$), followed by the report of discomfort by gay men ($M = 1.35$; $SE = .126$), and the report of discomfort by heterosexual men ($M = 3.35$; $SE = .127$). Post-hoc testing (Bonferroni) revealed that the contrast between the report of discomfort by heterosexual men and bisexual men, and the contrast between the report of discomfort by heterosexual men and gay men, were significant (all $ps < .001$). The contrast between the report of bisexual men and gay men was not significant ($p = .417$).

For women, there was a nonsignificant trend for sexual orientation, $F(2, 155) = 2.73$ $p = .068$. Bisexual women reported the least discomfort viewing pictures of men ($M = 1.72$; $SE = .137$), followed by the report of discomfort by heterosexual women ($M = 1.95$; $SE = .136$) and the report of discomfort by lesbian women ($M = 2.20$; $SE = .149$). Post-hoc testing (Bonferroni) revealed that the contrast between the report of discomfort by lesbian women and the report of discomfort by bisexual women was significant ($p < .05$). No other contrasts were statistically significant. Figures 5 and 6 display the mean discomfort ratings for the bisexual, heterosexual, and gay/lesbian men and women.

Frequency Viewing Pictures

To determine if heterosexual, gay/lesbian, and bisexual men and women encountered erotic pictures of one sex significantly more frequently than erotic pictures of the other sex, a series of t -tests were conducted.

A t -test revealed that heterosexual men encountered erotic pictures of women significantly more frequently ($M = 1.84$; $SE = .110$) than they encountered erotic pictures of men ($M = 2.84$; $SE = .182$), $t(50) = -9.08$, $p < .001$.

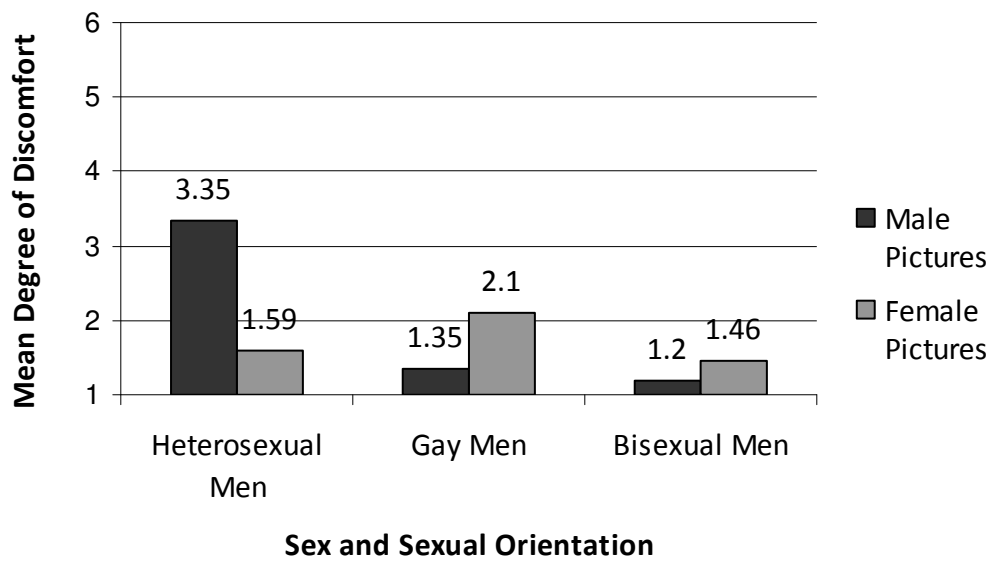


Figure 5. Mean discomfort ratings for men by participant sexual orientation and picture type.

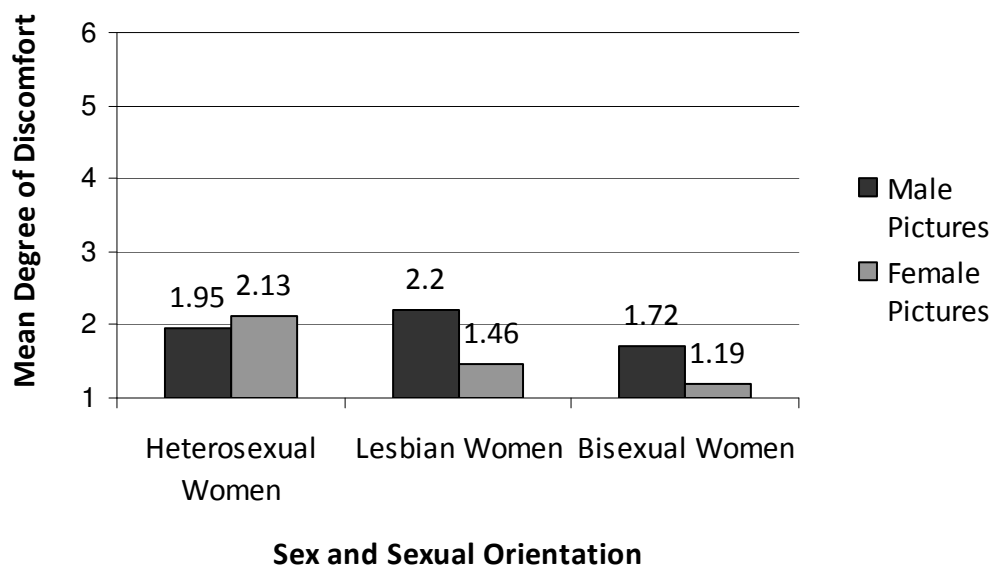


Figure 6. Mean discomfort ratings for women by participant sexual orientation and picture type.

A *t*-test revealed that heterosexual women encountered erotic pictures of women significantly more frequently ($M = 1.87$; $SE = .142$) than they encountered erotic pictures of men ($M = 2.31$; $SE = .129$), $t(54) = -3.07$, $p < .01$.

A *t*-test revealed that gay men encountered erotic pictures of men significantly more frequently ($M = 1.52$; $SE = .093$) than they encountered erotic pictures of women ($M = 1.94$; $SE = .133$), $t(51) = 3.18$, $p < .01$.

A *t*-test revealed that lesbian women encountered erotic pictures of women significantly more frequently ($M = 1.98$; $SE = .134$) than they encountered erotic pictures of men ($M = 2.45$; $SE = .148$), $t(46) = -3.51$, $p = .001$.

A *t*-test revealed that bisexual men encountered erotic pictures of men no more frequently ($M = 1.78$; $SE = .100$) than they encountered erotic pictures of women ($M = 1.94$; $SE = .112$), $t(49) = 1.43$, $p > .10$.

A *t*-test revealed that bisexual women encountered erotic pictures of women significantly more frequently ($M = 1.80$; $SE = .117$) than they encountered erotic pictures of men ($M = 2.52$; $SE = .110$), $t(53) = -6.57$, $p < .001$.

Current Sexual Attraction

Participants were asked on a five-point Likert type scale how attracted they currently are to men and women, separately. Responses ranged from 1, not at all, to 5, extremely. One female participant did not answer these questions. See Table 9 for the distribution of bisexual women's current degree of attraction to men and women. A viewing time difference score was computed by subtracting bisexual women's viewing times of men from their viewing times of women. This difference score served as an indicator of degree of category-specificity (i.e., the smaller the difference the more

Table 9

*Frequencies of Bisexual Women's Ratings of
Current Attraction to Men and Women*

	Rating scale of attraction	Female participant frequency
Men	Not at all attracted	0 (0)
	Slightly attracted	3 (6)
	Moderately attracted	18 (34)
	Quite a lot attracted	19 (35)
	Extremely attracted	13 (25)
	Total	53 (100)
Women	Not at all attracted	0 (0)
	Slightly attracted	0 (0)
	Moderately attracted	8 (15)
	Quite a lot attracted	32 (60)
	Extremely attracted	13 (25)
	Total	53 (100)

Note: Values enclosed in parentheses represent percentages within gender.

nonspecific sexual interest). A Pearson product-moment correlation coefficient was computed to assess the relationship between female participants' report of their attraction to women and the difference in their viewing times between men and women. The correlation yielded was nonsignificant $r(53) = -.07$, $p = .624$. An identical correlation was run utilizing only female participants who viewed women longer than men. The correlation yielded was also nonsignificant, $r(39) = .18$, $p = .274$, suggesting that degree

of same-sex attraction is not related to degree of category-specificity in bisexual women's sexual interest.

Why Identify as Bisexual?

Bisexual participants were asked why they identify as bisexual. Participants' responses were open-coded into seven categories. See Table 10 for the frequencies of participants' open-coded responses. Six participants did not answer this question and 1 participant provided an uninterpretable answer; therefore, their data were analyzed as missing.

Table 10

Frequencies of Bisexual Participants' Open-Coded Responses to Why Do you Identify as Bisexual?

Open-coded responses	Frequency
Sexual attraction only	35 (36)
Sexual behavior and sexual attraction	23 (24)
Sexual attraction, sexual behavior, and romantic attraction	24 (25)
Ambiguous interest in both sexes	8 (8)
Person-centered attraction	5 (5)
Political/social reasons	2 (2)
Just who I am	1 (1)
Total	98(100)

Note: Values enclosed in parentheses represent percentages within participants.

Importance of Gender

Bisexual participants were asked the importance of gender in choosing a partner. Participants' choices included 1, not at all important, to 5, extremely important. Six participants did not answer this question. Their data were classified as missing. See Table 11 for the distribution of importance of gender ratings.

Discussion

Comfort Viewing Pictures

Bisexual men and women were the only participants who did not report any significant discomfort while viewing men or women. All other participants reported significant discomfort while viewing pictures of their nonpreferred sex. Additionally, heterosexual women were distinct in that they were the only participants to also report some degree of discomfort viewing their preferred sex. Each of these findings will be discussed below.

Table 11

Frequencies of Importance of Gender Ratings

	Ratings					Total
	Not at All	Slightly	Moderately	Quite a lot	Extremely	
Participant frequency	27 (28)	21 (21)	23 (24)	20 (20)	7 (7)	98

Note: Values enclosed in parentheses represent percentages within participants.

First, these findings support that, compared to heterosexual and gay/lesbian men and women, bisexual men and women do not experience significant discomfort, or an aversion, to viewing pictures of men or women (L. Beckstead, personal communication, June 10, 2011; Paul et al., 2008). These findings are not surprising given societal pressures. Specifically, heterosexual men are pressured by a hypermasculine society to suppress any sexual interest in their nonpreferred sex (i.e., men) (e.g., Parrott, Adams & Zeichner, 2002; Sullivan, 2003; Ward, 2005). Additionally, lesbian women and gay men may express a strong *lack* of interest in their nonpreferred sex due to pressure to *not* be labeled (or stigmatized) as bisexual (e.g., Golden, Savin-Williams, & Cohen, 1996; Herek, Gillis, & Cogan, 2009; Hoagland & Penelope, 1991; Whisman, 1993). However, bisexual men and women do not have the same social pressures as heterosexual men and gay/lesbian men and women. In fact, bisexual men and women are pressured to report sexual interest in *both* men and women, to near equal degrees, in order to be considered legitimately bisexual (Blumstein & Schwartz, 1976; MacDonald, 1981).

Alternatively, one might argue that frequency of exposure to erotic pictures of men and women, rather than societal pressures, might better account for one's level of comfort viewing erotic pictures of men and women. That is, the more frequently an individual has been exposed to erotic pictures, the more comfortable he or she will be when viewing those pictures. In support of this hypothesis, all individuals who reported significantly greater comfort viewing pictures of their preferred sex than their non-preferred sex, also reported that they were significantly more frequently exposed to pictures of their preferred versus nonpreferred sex. Further, bisexual men (who reported equal comfort viewing men and women) reported that they encountered erotic pictures of

men as frequently as pictures of women. However, in contrast to this hypothesis, findings reveal that bisexual women, who reported equal comfort viewing erotic pictures of men and women, actually encountered pictures of women significantly more frequently than pictures of men. This finding suggests that increased exposure to erotic pictures may not increase one's comfort level viewing them.

Second, it is interesting that, compared to heterosexual men, bisexuals, and gay/lesbian men and women, heterosexual women were the only individuals to report some degree of discomfort in viewing pictures of their *preferred* sex. Speculatively, it may be that heterosexual women reported discomfort viewing erotic pictures of men because, unlike heterosexual men, gay men and lesbian women, society has pressured heterosexual women to suppress their sexual interest (e.g., Baumeister & Twenge, 2002; Bay-Cheng & Lewis, 2006; Hartley & Drew, 2001). For example, heterosexual women who express too much sexuality may be considered by society as promiscuous (e.g., Attwood, 2007; Liston, Moore-Rahimi, Bettis, & Adams, 2005; Luschen & Books, 2007).

Alternatively, perhaps heterosexual women's relative lack of comfort to erotic pictures of men is related to their lack of exposure to erotic pictures of men. Findings reveal that heterosexual women were significantly less likely to have been exposed to pictures of their preferred sex (i.e., men) compared to their nonpreferred sex (i.e., women). However, this hypothesis is refuted by the fact that bisexual women are also significantly less likely to have been exposed to pictures of men compared to pictures of women, yet report equal comfort viewing pictures of both sexes.

Current Attractions

It has been suggested that the more same-sex attracted a woman (based on her Kinsey scale ratings of attraction), the more category-specific her sexual interest (L. Diamond, personal communication, June 8, 2011). This hypothesis is based on the findings that exclusively same-sex attracted women (e.g., lesbian women) are significantly more category-specific in their sexual arousal and sexual expressions than exclusively other-sex attracted women (e.g., heterosexual) (Chivers et al., 2004, 2007; Rullo et al., 2010). However, the present study did not find a relationship between same-sex sexual attractions of bisexual women and their degree of category-specificity. It may be that this relationship does, in fact, exist, but that our measure of sexual attraction (i.e., how attracted are you currently to women?) has poor convergent validity with the Kinsey scale ratings of attraction. Future research is needed to determine if a relationship exists between same-sex attractions and category-specificity in women. If this relationship does exist, this suggests that there is a continuum of bisexual women whose degree of category-specificity is correlated with their sexual interest in the same-sex (L. Diamond, personal communication, June 8, 2011).

Why Identify as Bisexual?

Participants were asked to explain why they identify as bisexual. The most frequently reported answer (35.7%) was because they are attracted to both men and women. Second to this response, 23.5% of participants reported that they identify as bisexual because they have sex with and are attracted to both men and women, and 24.5% reported that they identify as bisexual because they are attracted to, have sex with, and have romantic relationships with both men and women. One of the least frequently

(5.1%) reported answers was that they identify as bisexual because of a person-centered attraction, (e.g., “I am attracted to the person, not the gender”). Each of these findings will be discussed below.

First, the three most common reported themes are not surprising, given that sexual attractions, romantic attractions, and sexual behaviors are the three most commonly reported dimensions of sexual orientation (Chung & Katayama, 1996). However, it is important to note that participants’ report of “attractions” to both men and women does not necessarily mean “sexual” attractions. Findings from the present study suggest that bisexual participants’ attractions involve both sexual and emotional factors. Additionally, findings from the present study indicate that “attractions” may mean different things to each gender. Specifically, bisexual women in the present study referred to attractions as being purely sexual, purely emotional, or a combination of both, whereas, bisexual men in the present study were potentially more likely to refer to attractions as a combination of sexual and emotional factors. Future research on how participants define and interpret attractions would be important in order to clarify what exactly researchers are measuring when they assess one’s attractions.

Second, one of the least reported themes for why one identifies as bisexual is a self-reported attraction to the person, not their gender. Diamond (2008) defined person-based attractions as a “gender free” sexuality, where the gender of potential partners is irrelevant. In previous studies, bisexual individuals have reported that gender is not of high importance relative to a number of other constructs related to attractiveness of romantic partners (Diamond, 2008; Ross & Paul, 1992; Rust, 2002). In the present study, very few (5.1%) participants indicated that a person-based attraction is the reason they

identify as bisexual. However, consistent with previous studies, the majority (73%) of bisexual individuals in the present study reported that gender was less than extremely important in choosing a potential partner (Diamond, 2008; Ross & Paul, 1992; Rust, 2002). These findings suggest that person-based attractions are common among bisexual individuals, but not necessarily the determinant of their bisexuality. Further, these findings, coupled with the finding that the majority (88%) of bisexual individuals in the present study reported that the nature of their attractions to each gender was different, suggests that a “gender free” sexuality is not one in which gender is irrelevant, but instead, is one in which there is a heightened appreciation for each gender (Diamond, 2008). Future research is needed to clarify bisexual individuals’ phenomenological experiences of person based attractions.

REFERENCES

- Abel, G. G., Huffman, J., Warberg, B., & Holland, C. L. (1998). Visual reaction time and plethysmography as measures of sexual interest in child molesters. *Sexual Abuse: Journal of Research and Treatment, 10*(2), 81–95.
- Abel, G. G., Lawry, S. S., Karlstrom, E., Osborn, C. A., & Gillespie, C. F. (1994). Screening tests for pedophilia. *Criminal Justice and Behavior, 21*, 115–131.
- Attwood, F. (2007). Sluts and riot grrrls: Female identity and sexual agency. *Journal of Gender Studies, 16*(3), 233–247.
- Bailey, J. M. (2009). What is sexual orientation and do women have one? In D. A. Hope (Ed.), *Contemporary perspectives on lesbian, gay, and bisexual identities*. (pp. 43–63). New York, NY US: Springer Science + Business Media.
- Bailey, J. M., Dunne, M. P., & Martin, N. G. (2000). Genetic and environmental influences on sexual orientation and its correlates in an Australian twin sample. *Journal of Personality and Social Psychology, 78*(3), 524–536.
- Bailey, J. M., Gaulin, S., Agyei, Y., & Gladue, B.A. (1994). Effects of gender and sexual orientation on evolutionary relevant aspects of human mating psychology. *Journal of Personality and Social Psychology, 66*, 1081–1093.
- Baumeister, R. F. (2000). Gender differences in erotic plasticity: The female sex drive as socially flexible and responsive. *Psychological Bulletin, 126*(3), 347–374.
- Baumeister, R. F., & Twenge, J. M. (2002). Cultural suppression of female sexuality. *Review of General Psychology, 6*(2), 166–203.
- Bay-Cheng, L. Y., & Lewis, A. E. (2006). Our "ideal girl": Prescriptions of female adolescent sexuality in a feminist mentorship program. *Affilia: Journal of Women & Social Work, 21*(1), 71–83.
- Bell, A. P., Weinberg, M., & Hammersmith, S. K. (1981). *Sexual preference: Its development in men and women*. Bloomington, IN: Indiana University Press.
- Blackford, L., Doty, S., & Pollack, R. (1996). Differences in subjective sexual arousal in heterosexual, bisexual, and lesbian women. *Canadian Journal of Human Sexuality, 5*(3), 157–167.

- Blumstein, P. W., & Schwartz, P. (1976). Bisexuality in women. *Archives of Sexual Behavior*, 5(2), 171–181.
- Blumstein, P. W., & Schwartz, P. (1989). Intimate relationships and the creation of sexuality. In B. Risman & P. Schwartz (Eds.), *Gender in intimate relationships: A microstructural approach* (pp. 120–129). Belmont, CA: Wadsworth.
- Brooks, K. D., & Quina, K. (2009). Women's sexual identity patterns: Differences between lesbian, gay and unlabeled women. *Journal of Homosexuality*, 56, 1030–1045.
- Carletta, J. (1996). Assessing agreement on classification tasks: The kappa statistic. *Computational Linguistics*, 22(2), 249–254.
- Cerny, J. A., & Janssen, E. (2011). Patterns of sexual arousal in homosexual, bisexual, and heterosexual men. *Archives of Sexual Behavior*, 40(1), 1–4. doi: 10.1007/s10508-011-9746-0
- Chivers, M. L. A brief update on the specificity of sexual arousal. (2010). *Sexual & Relationship Therapy*, 25(4), 407–14.
- Chivers, M. L., & Bailey, J. M. (2005). A sex difference in features that elicit genital response. *Biological Psychology*, 70(2), 115–120.
- Chivers, M. L., Rieger, G., Latty, E., & Bailey, M. J. (2004). A sex difference in the specificity of sexual arousal. *Psychological Science*, 15(11), 736–744.
- Chivers, M. L., Seto, M. C., & Blanchard, R. (2007). Gender and sexual orientation differences in sexual response to sexual activities versus gender of actors in sexual films. *Journal of Personality and Social Psychology*, 93(6), 1108–1121.
- Chivers, M. L., Seto, M. C., Lalumière, M. L., Laan, E., & Grimbos, T. (2010). Agreement of self-reported and genital measures of sexual arousal in men and women: A meta-analysis. *Archives of Sexual Behavior*, 39, 5–56.
- Chung, Y. B., & Katayama, M. (1996). Assessment of sexual orientation in lesbian/gay/bisexual. *Journal of Homosexuality*, 30(4), 49.
- Cochran, S. D., & Mays, V. M. (1988). Disclosure of sexual preference to physicians by black lesbian and bisexual women. *The Western Journal of Medicine*, 149(5), 616–619.
- Cohen, K. M. (2002). Relationships among childhood sex-atypical behavior, spatial ability, handedness, and sexual orientation in men. *Archives of Sexual Behavior*, 31(1), 129–143.

- Diamond, L. M. (2000). Sexual identity, attractions, and behavior among young sexual-minority women over a 2-year period. *Developmental Psychology*, *36*, 241–250.
- Diamond, L. M. (2003). Was it a phase? Young women's relinquishment of lesbian/bisexual identities over a 5-year period. *Journal of Personality and Social Psychology*, *84*(2), 352–364.
- Diamond, L.M. (2005). Toward greater specificity in modeling the ecological context of desire. *Human Development*, *48*, 291–297.
- Diamond, L. M. (2008). *Sexual fluidity; Understanding women's love and desire*. Cambridge, MA: Harvard University Press.
- Diamond, L. M., & Wallen, K. (2011). Sexual minority women's sexual motivation around the time of ovulation. *Archives of Sexual Behavior*, *40*, 237–246.
- Ellis, P.D. (2010). *The essential guide to effect sizes: An introduction to statistical power, meta-analysis, and the interpretation of research results*. Cambridge, United Kingdom: University Press.
- Fischer, L. (2000). The Abel Screen: A non-intrusive alternative? In D. R. Laws, S. M. Hudson, & T. Ward (Eds.), *Remaking relapse prevention with sexual offenders: A sourcebook* (pp. 303–318). Thousand Oaks, CA: Sage.
- Fisher, W. A., Byrne, D., White, L. A., & Kelley, K. (1988). Erotophobia-erotophilia as a dimension of personality. *The Journal of Sex Research*, *25*(1), 123–151.
- Fox, R. C. (2000). Bisexuality in perspective: A review of theory and research. In B. Greene & G. L. Croom (Ed.), *Education, research, and practice in lesbian, gay, bisexual, and transgendered psychology: A resource manual* (pp. 161–206). Thousand Oaks, CA: Sage Publications.
- Freund, K. (1963). A laboratory method for diagnosing predominance or homo- or hetero- erotic interest in male. *Behaviour Research and Therapy*, *1*, 85–93.
- Freund, K. W. (1974). Male homosexuality: An analysis of the pattern. In J.A. Loraine (Ed.), *Understanding homosexuality: Its biological and psychological bases* (pp. 25–81). New York, NY: Elsevier.
- Freund, K., Watson, R., & Rienzo, D. (1989). Heterosexuality, homosexuality, and erotic Age preference. *Journal of Sex Research*, *26*(1), 107.
- Gates, G. J. (2011). *How many people are lesbian, gay, bisexual, and transgender?* Retrieved from <http://www3.law.ucla.edu/williamsinstitute/pdf/How-many-people-are-LGBT-Final.pdf>

- Geer, J. H., & Janssen, E., (2000). The sexual response system. In J. T. Cacioppo, L. G. Tassinary, & G. G. Bernston (Eds.), *Handbook of psychophysiology* (pp. 315–341). Cambridge: Cambridge University Press.
- Geer, J. H., Morokoff, P., & Greenwood, P. (1974). Sexual arousal in women: The development of a measurement device for vaginal blood volume. *Archives of Sexual Behavior*, 3, 559–564.
- Glaser, B., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine.
- Golde, J. A., Strassberg, D. S., & Turner, C. M. (2000). Psychophysiologic assessment of erectile response and its suppression as a function of stimulus media and previous experience with plethysmography. *The Journal of Sex Research*, 37(1), 53–59.
- Golden, C., Savin-Williams, R. C., & Cohen, K. M. (1996). *What's in a name? Sexual self-identification among women*. Orlando, FL: Harcourt Brace College Publishers.
- Goy, R.W., & McEwen, B. S. (1980). *Sexual differentiation of the brain*. Cambridge, MA: MIT Press.
- Gramick, J. (1984). Developing a lesbian identity. In T. Darty & S. Potter (Eds.) *Women-identified women*, pp. 31–44. Palo Alto, CA: Mayfield.
- Gress, C. L. Z. (2005). Viewing time measures and sexual interest: Another piece of the puzzle. *Journal of Sexual Aggression*, 11(2), 117–125.
- Harris, G. T., Rice, M. E., Quinsey, V. L., & Chaplin, T. C. (1996). Viewing time as a measure of sexual interest among child molesters and normal heterosexual men. *Behavioral Research and Therapy*, 34, 389–394.
- Hartley, H., & Drew, T. (2001). Gendered messages in sex ed films: Trends and implications for female sexual problems. *Women and Therapy*, 24(1), 133–146.
- Hatch, J. P. (1979). Vaginal photoplethysmography: Methodological considerations. *Archives of Sexual Behavior*, 8, 357–374.
- Herek, G. M., Gillis, J. R., & Cogan, J. C. (2009). Internalized stigma among sexual minority adults: Insights from a social psychological perspective. *Journal of Counseling Psychology*, 56(1), 32–43.
- Herek, G. M., Norton, A. T., Allen, T. J., & Sims, C. L. (2010). Demographic, psychological, and social characteristics of self-identified lesbian, gay, and bisexual adults in a US probability sample. *Sex Research Social Policy*, 7, 176–200.

- Hirschfeld, M. (2001). *Die homosexualität des mannes und des weibes*. Berlin, Germany: Walter de Gruyter. (Original work published 1914).
- Hoagland, S. L., & Penelope, J. (1991). *For lesbians only*. London, England: Onlywoman Press.
- Hoburg, R., Konik, J., Williams, M., & Crawford, M. (2004). Bisexuality among self-identified heterosexual college students. *Journal of Bisexuality, 4*(1/2), 25–36.
- Hoon, P. W., Wincze, J. P., & Hoon, E. F. (1976). Physiological assessment of sexual arousal in women. *Psychophysiology, 13*(3), 196–204.
- Israel, E. (2006). *Viewing time as an objective measure of sexual interest in heterosexual men and women* (master's thesis). Salt Lake City, UT. University of Utah.
- Israel, E., & Strassberg, D. S. (2009). Viewing time as an objective measure of sexual interest in heterosexual men and women. *Archives of Sexual Behavior, 38*(4), 551–558.
- Janssen, E., (2011). Sexual arousal in men: A review and conceptual analysis. *Hormones and Behavior, 59*(5), 708–716. doi:10.1016/j.yhbeh.2011.03.004
- Janssen, E., Vorst, H., Finn, P., & Bancroft, J. (2002). The sexual inhibition (SIS) and sexual excitation (SES) scales: II. Predicting psychophysiological response patterns. *The Journal of Sex Research, 39*(2), 127–132.
- Kinnish, K., Strassberg, D. S., & Turner, C. (2005). Sex differences in the flexibility of sexual orientation: A multidimensional retrospective assessment. *Archives of Sexual Behavior, 34*(2), 173–183.
- Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Gebhard, P. H. (1953). *Sexual behavior in the human female*. Oxford, England: Saunders.
- Klein, F., Sepekoff, B., & Wolf, T. J. (1985). Sexual orientation: A multi-variable dynamic process, *Journal of Homosexuality, 11*, 35–49.
- Klinkenberg, D., & Rose, S. (1994). Dating scripts of gay men and lesbians. *Journal of Homosexuality, 26*(4), 23–35.
- Laan, E., & Everaerd, W. (1995). Habituation of female sexual arousal to slides and film. *Archives of Sexual Behavior, 24*(5), 517–542.
- Laan, E., Everaerd, W., & Evers, A. (1995). Assessment of female sexual arousal: Response specificity and construct validity. *Psychophysiology, 32*, 476–485.

- Laumann, E. O., Gagnon, J. H., Michael, R. T., Michaels, S., & Heiman, J. (1994). *The social organization of sexuality: Sexual practices in the United States*. Chicago, IL: University of Chicago Press.
- Lawrence, A., Latty, E., Chivers, M., & Bailey, J. (2005). Measurement of sexual arousal in postoperative male-to-female transsexuals using vaginal photoplethysmography. *Archives of Sexual Behavior, 34*(2), 135–145.
- Lee-Evans, M., Graham, J., Harbison, J. J. M., McAllister, H., & Quinn, J. T. (1975). Penile plethysmographic assessment of sexual orientation. *European Journal of Behavioural Analysis Modification, 1*, 20–26.
- Letourneau, E. J. (2002). A comparison of objective measures of sexual arousal and interest: Visual reaction time and penile plethysmography. *Sexual Abuse: A Journal of Research & Treatment, 14*(3), 207–224.
- LeVay, S. (1993). *The sexual brain*. Cambridge, MA: The MIT Press.
- Liston, D. D., Moore-Rahimi, R. E., Bettis, P. J., & Adams, N. G. (2005). *Disputation of a bad reputation: Adverse sexual labels and the lives of 12 southern women*. Mahwah, NJ: Lawrence Erlbaum.
- Luschen, K. V., & Books, S. (2007). *'Does this mean I can't be your daughter?': Troubling representations of White working-class teen mothers*. Mahwah, NJ: Lawrence Erlbaum.
- Macdonald, A. P. (1981). Bisexuality: Some comments on research and theory, *Journal of Homosexuality, 6*, 21–30.
- Mahoney, J. M., & Strassberg, D. S. (1991). Voluntary control of male sexual arousal. *Archives of Sexual Behavior, 20*, 1–16.
- McConaghy, N., & Blaszczyński, A. (1991). Initial stages of validation by penile volume assessment that sexual orientation is distributed dimensionally. *Comprehensive Psychiatry, 32*(1), 52–58.
- Meston, C. (2000). The psychophysiological assessment of female sexual function. *Journal of Sex Education and Therapy, 25*, 6–16.
- Moore, D. L., & Norris, F. H. (2005). Empirical investigation of the conflict and flexibility models of bisexuality. *Journal of Bisexuality, 5*(1), 5–25.
- Morokoff, P. J. (1985). Effects of sex guilt, repression, sexual “arousability,” and sexual experience on female sexual arousal during erotica and fantasy. *Journal of Personality and Social Psychology, 49*, 177–187.

- Mosher, D. L., & Abramson, P. R. (1977). Subjective sexual arousal to films of masturbation. *Journal of Clinical and Consulting Psychology, 45*(5), 796–807.
- Mustanski, B. S., Chivers, M., & Bailey, J. (2002). A critical review of recent biological research on human sexual orientation. *Annual Review of Sex Research, 13*, 89.
- Parker, B. A., Adams, H. L., & Phillips, L. D. (2007). Decentering gender: Bisexual identity as an expression of a non-dichotomous worldview. *Identity, 7*(3), 205–224.
- Parrott, D. J., Adams, H. E., & Zeichner, A. (2002). Homophobia: Personality and attitudinal correlates. *Personality and Individual Differences, 32*(7), 1269.
- Pattatucci, A. M., & Hamer, D. H. (1995). Development and familiarity of sexual orientation in females. *Behavior Genetics, 25*(5), 407–420.
- Paul, T., Schiffer, B., Zwarg, T., Kruger, T. H. C., Karama, S., Schedlowski, M., . . . Gizewski, E. R. (2008). Brain response to visual sexual stimuli in heterosexual and homosexual males. *Human Brain Mapping, 29*, 726–725.
- Peplau, L. A., & Cochran, S. D. (1981). Value orientations in the intimate relationships of gay men. *Journal of Homosexuality, 6*(3), 1–19.
- Peplau, L. A., Spalding, L. R., Conley, T. D., & Veniegas, R. C. (1999). The development of sexual orientation in women. *Annual Review of Sex Research, 10*, 70.
- Ponseti, J., & Bosinski, H. A. G. (2010). Subliminal sexual stimuli facilitate genital response in women, *Archives of Sexual Behavior, 39*, 1073–1079.
- Quinsey, V. L., Ketsetzis, V., Earls, C., & Karamanoukian, J. (1996). Viewing time as a measure of sexual interest. *Ethology and Sociobiology, 17*, 341–354.
- Quinsey, V. L., Rice, M.E., Harris, G.T., & Reid, K.S. (1993). *The phylogenetic and ontogenetic development of sexual age preferences in males: Conceptual and measurement issues*. New York, NY: Guilford Press.
- Rieger, G., Chivers, M. L., & Bailey, J. M. (2005). Sexual arousal patterns of bisexual men. *Psychological Science, 16*(8), 579–584.
- Rosario, M., Schrimshaw, E. W., Hunter, J., & Braun, L. (2006). Sexual identity development among lesbian, gay, and bisexual youths: Consistency and change over time. *Journal of Sex Research, 43*(1), 46–58.
- Ross, M. W., & Paul, J. P. (1992). Beyond gender: The basis of sexual attraction in bisexual men and women. *Psychological Reports, 71*(3, part 2), 1283–1290.

- Rullo, J. E. (2008). *Category-specificity in sexual arousal/interest as a complex function of sex and sexual orientation* (master's thesis). Salt Lake City, UT: University of Utah.
- Rullo, J. E., Strassberg, D. S., & Israel, E. (2010). Category-specificity in sexual interest in gay men and lesbians. *Archives of Sexual Behavior, 39*(4), 874–879.
- Rullo, J. E., Strassberg, D. S., & Kinnish, K. (2006). *Sex differences in the specificity of sexual behavior, fantasy, and attraction*. Paper presented at the Society for the Scientific Study of Sexuality Western Region.
- Rust, P. C. (1992). The politics of sexual identity: Sexual attraction and behavior among lesbian and bisexual women. *Social Problems, 39*(4), 366–386.
- Rust, P. C. (1995). *Bisexuality and the challenge to lesbian politics: Sex, loyalty, and revolution*. New York: New York University Press.
- Rust, P. C. (2000). *Bisexuality in the United States: A social science reader*. New York, NY: Columbia University Press.
- Rust, P. C. (2002). Bisexuality: The State of the Union. *Annual Review of Sex Research, 13*, 180.
- Saghir, M. T., & Robins, E. (1973). *Male and female homosexuality: A comprehensive investigation*. Oxford, England: Williams and Wilkins.
- Savin-Williams, R. C. (1998). “ . . . And Then I Became Gay ”: *Young Men's Stories*. New York, NY: Routledge.
- Savin-Williams, R. C., & Diamond, L. M. (2000). Sexual identity trajectories among sexual-minority youths: Gender comparisons. *Archives of Sexual Behavior, 29*(6), 607–627.
- Savin-Williams, R. C., & Diamond, L. M. (2003). Explaining diversity in the development of same-sex sexuality among young women. In L. Garnets & D. C. Kimmel (Eds.), *Psychological perspectives on lesbian, gay, and bisexual experiences* (pp. 130–148). New York, NY: Columbia University Press.
- Schneider, M. S. (2001). Toward a reconceptualization of the coming-out process for adolescent females. In A. R. D'Augelli & C. J. Patterson (Eds.), *Lesbian, gay, and bisexual identities and youth: Psychological perspectives* (pp. 71–96). New York, NY: Oxford University Press.
- Sintchak, G., & Geer, J. H. (1975). A vaginal plethysmograph system. *Psychophysiology, 12*(1), 113–115.

- Spiering, M., Everaerd, W., & Laan, E. (2004). Conscious processing of sexual information: Mechanisms of appraisal. *Archives of Sexual Behavior, 33*, 369–380.
- Stokes, J. P., Damon, W., & McKirnan, D. J. (1997). Predictors of movement toward homosexuality: A longitudinal study of bisexual men. *Journal of Sex Research, 34*(3), 304–312.
- Stokes, J. P., McKirnan, D. J., & Burzette, R. G. (1993). Sexual behavior, condom use, disclosure of sexuality, and stability of sexual orientation in bisexual men. *Journal of Sex Research, 30*(3), 203–213.
- Stokes, J. P., Venable, P., & McKirnan, D. J. (1997). Comparing gay and bisexual men on sexual behavior, condom use, and psychosocial variables related to HIV/AIDS. *Archives of Sexual Behavior, 26*(4), 383–397.
- Storms, M. D. (1980). Theories of sexual orientation. *Journal of Personality and Social Psychology, 38*(5), 783–792.
- Strassberg, D. S., & Lowe, K. (1995). Volunteer bias in sexuality research. *Archives of Sexual Behavior, 24*(4), 369.
- Sullivan, M. K. (2003). Homophobia, history, and homosexuality: Trends for sexual minorities. *Journal of Human Behavior in the Social Environment, 8*(2), 1–13.
- Thompson, E. M., & Morgan, E. M. (2008). “Mostly straight” young women: Variations in sexual behavior and identity development. *Developmental Psychology, 44*(1), 15–21.
- Tollison, C. D., Adams, H. E., & Tollison, J. W. (1979). Cognitive and physiological indices of sexual arousal in homosexual, bisexual, and heterosexual males. *Journal of Behavioral Assessment, 1*, 305–314.
- Vetere, V. A. (1983). The role of friendships in the development and maintenance of lesbian love relationships. *Journal of Homosexuality, 8*(2), 51–65.
- Ward, E. G. (2005). Homophobia, hypermasculinity, and the US black church. *Culture, Health and Sexuality, 7*(5), 493–504.
- Weinberg, M. S., Williams, C. J., & Pryor, D. W. (1994). *Dual attraction: Understanding bisexuality*. New York, NY: Oxford University Press.
- Weinrich, J. D., & Klein, F. (2003). Bi-gay, bi-straight, and bi-bi: Three bisexual subgroups identified using cluster analysis of the Klein Sexual Orientation Grid. *Journal of Bisexuality, 2*, 111–139.
- Whisman, V. (1993). Who is a lesbian, anyway? In A. Stein (Ed.), *Sisters, sexperts, queers: Beyond the lesbian nation* (pp. 47–60). New York, NY: Penguin.

- Wolchik, S. A., Braver, S. L., & Jensen, K. (1985). Volunteer bias in erotica research: Effects of intrusiveness of measure and sexual background. *Archives of Sexual Behavior, 14*(2), 93–107.
- Wolchik, S. A., Spencer, S. L., & Iris, I. S. (1983). Volunteer bias in research employing vaginal measures of sexual arousal. *Archives of Sexual Behavior, 12*, 399–408.
- Wright, L. W., & Adams, H. E. (1999). The effects of stimuli that vary in erotic content on cognitive processes. *The Journal of Sex Research, 36*(2), 145–151.
- Yoshino, K. (2000). The epistemic contract of bisexual erasure. *Stanford Law Review, 52*(2), 352–461.
- Zamansky, H. S. (1956). A technique for assessing homosexual tendencies. *Journal of Personality 24*, 436–448.
- Zinik, G. (2000). Identity conflict or adaptive flexibility? Bisexuality reconsidered. In P. C. R. Rust (Ed.), *Bisexuality in the United States* (pp. 55–60). New York, NY: Columbia University Press.